Public Comments on the Jordan Cove Energy Project and Pacific Connector Pipeline Application for Clean Water Act 401 State Water Quality Certification (U.S. Army Corps NWP-2017-41/Oregon Dept. of State Lands APP0060697)

Submitted to the Oregon Department of Environmental Quality on behalf of:

Rogue Riverkeeper
Rogue Climate
Oregon Coast Alliance
Northwest Environmental Defense Center
Oregon Wild
Center for Sustainable Economy
Citizens For Renewables/Citizens Against LNG
Oregon Physicians for Social Responsibility
Pipeline Awareness Southern Oregon
University of Oregon Climate Justice League
350 Eugene
Food & Water Watch
Jordan Cove Resistance Douglas County
350 Seattle
350 Corvallis
Honor the Earth
Western Environmental Law Center
Bob Barker, Affected Landowner
Center for Biological Diversity
Stop Fracked Gas PDX
Cascadia Wildlands
Friends of Living Oregon Waters (FLOW)
Douglas County Global Warming Coalition
Rogue Fly Fishers
Onward Oregon
Oregon Shores Conservation Coalition
OPAL Environmental Justice Oregon
Oregon Just Transition Alliance
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Scholars for Social Responsibility
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Columbia Riverkeeper
Climate Action Coalition
Our Revolution Southern Oregon
Craig and Stacey McLaughlin, Affected Landowners

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August 8, 2018

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August 8, 2018

RE: U.S. Army Corps NWP-2017-41/Oregon Dept. of State Lands APP0060697 Jordan Cove Energy Project and Pacific Connector Pipeline Application for Clean Water Act 401 State Water Quality Certification

Please accept these comments on the Oregon Department of Environmental Quality Water Quality 401 Certification Application (USACE NWP-2017-41/DSL APP0060697) that has been made by Jordan Cove LNG, LLC ("the applicants") for the Jordan Cove Energy Project ("JCEP") and Pacific Connector Pipeline ("PCP"). We submit these comments on behalf of Rogue Riverkeeper, Rogue Climate, Oregon Coast Alliance, Northwest Environmental Defense Center, Oregon Wild, Center for Sustainable Economy, Citizens For Renewables/Citizens Against LNG, Oregon Physicians for Social Responsibility, Pipeline Awareness Southern Oregon, University of Oregon Climate Justice League, 350 Eugene, Food & Water Watch, Jordan Cove Resistance Douglas County , 350 Seattle, 350 Corvallis, Honor the Earth, Western Environmental Law Center, Bob Barker, Center for Biological Diversity, Stop Fracked Gas PDX, Cascadia Wildlands, Friends of Living Oregon Waters (FLOW), Douglas County Global Warming Coalition, Rogue Fly Fishers, Onward Oregon, Oregon Shores Conservation Coalition, OPAL Environmental Justice Oregon, Oregon Just Transition Alliance, Evans Schaaf Family, LLC, 350 Salem, Hair on Fire Oregon, Signal Fire, Scholars for Social Responsibility, Sierra Club, Columbia Riverkeeper, Climate Action Coalition, Our Revolution Southern Oregon, Craig and Stacey McLaughlin, Affected Landowners, 350 PDX, and Waterkeeper Alliance.

Members of the Coalition have direct and personal interests in the proceeding, including rights to property, safety, and to a livable environment, and these interests would be directly and adversely impacted by project approval. Commenters here have been recognized as parties to the proceeding and have submitted lengthy, detailed comments on previous rounds of the proposed project including, but not limited to, the Draft Environmental Impact Statements ("DEIS") in 2008 and Final Environmental Impact Statements ("FEIS") in 2009 submitted for the import project round 1 and the DEIS and FEIS in 2015 for the export project round 2, local land use proceedings in Douglas and Coos Counties, and scoping comments on the current third round of the project to the Federal Energy Regulatory Commission ("FERC").

The Environmental Impact Statements and the procedures of the National Environmental Policy Act ("NEPA") are especially important here, on a project of such magnitude, complexity and significance. Commenters hereby adopt in full and incorporate by reference our scoping comments and interventions with FERC as they apply to the Oregon Department of Environmental Quality ("DEQ") permitting, and expect that further NEPA documents and comments will be fully and properly considered by DEQ. These include references to the Draft Environmental Impact Statement (DEIS) and Final Environmental Impact Statement (FEIS) for the previous, related Liquid Natural Gas ("LNG") import facility in Coos Bay, Oregon in 2005, as well as the second iteration of this project designed for export in 2014. Additional supporting documents are included as appendices and should be adopted in full and incorporated by reference.

Over the last decade, scores of individuals, organizations, and agencies have spent an enormous amount of time and resources analyzing and battling a project that is not in the public's interest and that significantly threatens Oregon's rivers, lakes, and streams. DEQ has the opportunity to use its authority as a state agency working on behalf of all Oregonians and our shared water resources to carefully and independently evaluate the effects of the proposed project on a whole host of public resources. The following comments identify issues we ask DEQ to thoroughly analyze in its evaluation of the applicants' application for certification under Clean Water Act Section 401. Our comments identify the lack of reasonable assurance provided by the applicants that the project will not violate state water quality standards. DEQ must deny the 401 certification for the project because the applicants have not provided reasonable assurances that the proposed activities will not violate state water quality standards. 40 C.F.R. § 121.2(a)(3).

I. Introduction

A. The Jordan Cove Energy Project and Pacific Connector Pipeline

1. Project History

a. Import Project, Round 1 (2004-2010)

In 2004, the Jordan Cove Energy Project (JCEP) and a 234-mile Pacific Connector Pipeline (PCP) project was first proposed as an import facility. In 2006, Jordan Cove filed an application for the project with FERC. In December 2009, the County Planning Commission granted a Conditional Use Permit ("CUP") for the construction of the Pacific Connector Gas Pipeline for import only of natural gas. That month, FERC granted the Pacific Connector Certificate for the construction of the Pacific Connector Gas Pipeline to import natural gas. Also in 2009, FERC initiated the Environmental Impact Statement ("EIS") process under NEPA for the project. Comments on the DEIS were submitted in June 2009. Many of the undersigned organizations submitted comments during the EIS process.

b. Export Project, Round 2 (2011-2016)

In July 2011, Jordan Cove applied to the Department of Energy for authorization to export LNG, in violation of its Douglas County CUP import only restriction. In September 2011, Jordan Cove

filed an application with Federal agencies to export LNG in violation of the Douglas County CUP import only restriction. After Jordan Cove filed a request for extension, Douglas County granted the extension request in October 2011 in violation of CUP 09-045's import only condition.

In April 2012, FERC vacated its approval of the December 17, 2009 order to construct pipeline facilities. In December 2012, Douglas County granted a second extension on a CUP with conditions that the project was for natural gas import only and required a FERC Certificate. The applicant announced plans to export, FERC's order to import was vacated nine months earlier, and no new application for the project had been filed with FERC.

On 21 May 2013, Jordan Cove filed an application under section 3 of the Natural Gas Act ("NGA") and Parts 153 and 380 of the Commission's regulations for the Jordan Cove Energy Project (CP13-483-000) and Pacific Connector Pipeline. On June 6, 2013 Pacific Connector filed an application to FERC under NGA section 7(c) and Part 157 of the Commission's regulations for a certificate of public convenience and necessity to construct and operate a 232-mile Pacific Connector Pipeline (CP13-492-000) to export natural gas.

On 7 May 2014, FERC sent a data request to Pacific Connector requesting the current status of Jordan Cove's negotiations with liquefaction contracts for the LNG terminal and Pacific Connector's actions to enter an open season and enter into precedent agreements for pipeline capacity. FERC submitted multiple data requests to Pacific Connector over the next year. Concurrently, FERC initiated the EIS process under NEPA between 2014 and 2015. Many of the undersigned organizations submitted comments on the EIS process.

On 20 May 2015, FERC sent a third data request to Pacific Connector, stating that:

> The Commission's Certificate Policy Statement requires the Commission to balance the public benefits of a pipeline proposal against its potential adverse impacts, and that Pacific Connector must show that the public benefits of its proposal outweigh the project's adverse impacts.[1]

On 30 September 2015, FERC issued the FEIS for the Jordan Cove Energy Project and the Pacific Connector Pipeline (CP13-483-000 and CP13-492-000). On 14 October 2015, FERC staff submitted a fourth data request to Pacific Connector regarding the existence of firm commitments for service on the pipeline, potential liquefaction and transportation customers, whether the company entered into precedent agreements, and when the open season would be held. On 11 March 2016, FERC issued an order denying applications for certificate and Section 3 Natural Gas Act authorization. In its denial, FERC states:

> Here, Pacific Connector has presented little or no evidence of need for the Pacific Connector Pipeline. Pacific Connector has neither entered into any precedent agreements for its project, nor conducted an open season, which might (or might not) have resulted in

[1] Federal Energy Regulatory Commission. ORDER DENYING APPLICATIONS FOR CERTIFICATE AND SECTION 3 AUTHORIZATION. 11 March 2016. P. 8.

> "expressions of interest" the company could have claimed as indicia of demand. As it stands, Pacific Connector states that the pipeline will benefit the public by delivering gas supply from the Rocky Mountains and Canada to the Jordan Cove LNG Terminal and by providing an additional source of gas supply to communities in southern Oregon (though, again, it has presented no evidence of demand for such service). Pacific Connector also contends that construction of the pipeline and LNG terminal will create temporary construction jobs and full-time operation jobs and millions of dollars in property, sales, and use taxes to state and local governments. Finally, Pacific Connector contends that the Commission has previously found that the benefits provided by pipelines that deliver feed gas to export terminals outweigh the minimal adverse impacts and such projects are required by the public convenience and necessity.[2]

Ultimately, in its 11 March 2016 order denying the certificate for the project, FERC stated:

> We find the generalized allegations of need proffered by Pacific Connector ***do not outweigh the potential for adverse impact*** on landowners and communities… Because the record does not support a finding that the public benefits of the Pacific Connector Pipeline outweigh the adverse effects on landowners, we deny Pacific Connector's request for certificate authority to construct and operate its project[3]

In April 2016, Jordan Cove appealed FERC's decision. On 9 December 2016, FERC upheld its decision to deny the certificate for the project.

c. Export Project Round 3 (2017 – Present)

In January 2017, Jordan Cove submitted a pre-filing request to FERC for the Jordan Cove Energy Project and Pacific Connector Pipeline project. In March 2017, Jordan Cove held Open Houses regarding the project. In June 2017, FERC initiated the scoping period for the Jordan Cove Energy Project and Pacific Connector Pipeline project and held scoping hearings in Coos Bay, Douglas County, and Klamath Falls. On 24 September 2017, Jordan Cove submitted the final application to FERC. On 23 October 2017, Jordan Cove submitted a Joint Permit Application ("JPA") to the U.S. Army Corps of Engineers ("the Corps") for the Clean Water Act and, to the best of our knowledge, emailed the Oregon Department of Environmental Quality ("DEQ") a copy of the application.

On 6 February 2018, Jordan Cove submitted "a combined electronic Section 401 Water Quality Package to DEQ for the Jordan Cove Energy Project ("JCEP") and Pacific Connector Gas Pipeline ("PCGP") projects" as a "supplement to the Section 404/10 permit application provided to the U.S. Army Corps of Engineers on October 23, 2017."[4] This package included materials

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[2] Federal Energy Regulatory Commission. ORDER DENYING APPLICATIONS FOR CERTIFICATE AND SECTION 3 AUTHORIZATION. 11 March 2016. P. 17.

[3] Federal Energy Regulatory Commission. ORDER DENYING APPLICATIONS FOR CERTIFICATE AND SECTION 3 AUTHORIZATION. 11 March 2016. P. 18. Emphasis added.

[4] David Evans and Associates letter to Oregon DEQ. SUBJECT: Jordan Cove Energy Project / Pacific Connector Gas Pipeline - 401 Water Quality Package (NWP-2017/41). 6 February 2018.

submitted in October 2017 and additional materials. On 3 November 2017, Jordan Cove submitted a removal-fill permit application to the Department of State Lands ("DSL"). On 1 December 2017, DSL found that the application was incomplete. On 8 May 2018, Jordan Cove submitted current and new materials to DEQ. To the best of our ability, when our comments refer to these Joint Permit Application ("JPA") documents, we identify them specifically by date. On 22 May 2018, the Corps and DEQ initiated a public comment period for Jordan Cove's application for a Clean Water Act Section 404 removal-fill permit and Clean Water Act Section 401 state water quality certification.

2. Jordan Cove Energy Project Today

Jordan Cove proposes to site, construct, and operate a Liquefied Natural Gas (LNG) terminal that would receive a maximum of 1.2 million dekatherms per day of natural gas and produce a maximum of 7.8 million tons of LNG for export each year. The LNG terminal will cool natural gas into its liquid form to in preparation for export from Coos Bay.[5]

Referred to as the Jordan Cove Energy Project ("JCEP"), the project is composed of:

- LNG terminal site
- Slip and access channel
- Materials Offloading Facility ("MOF")
- Navigation Reliability Improvements ("NRIs")
- Meteorological Station
- Industrial Wastewater Pipeline ("IWWP")
- Trans Pacific Parkway ("TPP") / US 101 Widening
- APCO Sites 1 and 2
- Kentuck Site
- Eelgrass Mitigation Site
- Temporary Construction Areas
- LNG Carrier Operation

The LNG terminal is composed of Ingram Yard, South Dunes site, the Access and Utility Corridor, and the Roseburg Forest Products property. The LNG terminal and associated facilities would cover 538-acres of land, including 5.2 acres of open water and 169-acres of wetlands.[6]At the LNG terminal site, the Ingram Yard will store LNG tanks and liquefaction equipment. The South Dunes site includes the Workforce Housing Facility, metering station, administrative building, and the Southwest Oregon Regional Safety Center ("SORSC"). The Roseburg Forest Products property will be used as a temporary construction staging area and for upland dredge disposal, contained with an on-site berm. The LNG terminal itself consists of a connection to the Pacific Connector Pipeline metering station, gas inlet facilities, a gas conditioning plant, liquefaction facilities, two full-containment LNG storage tanks, an LNG loading line, LNG

[5] Betz, Sarah and Derik Vowels. Technical Memorandum. Water Quality Considerations – Implications for Clean Water Act Sections 401 and 404 Permitting. 2 February 2018. 8 May 2018 Pacific Connector Pipeline. P. 1.
[6] U.S. Army Corps of Engineers. Public Notice Application for Permit to Alter Federally Authorized Projects. 22 May 2018. NWP-2017-41. P. 3

loading facilities, and a marine slip and access channel for LNG carriers. According to the applicants, construction and operation of the LNG terminal may impact water quality through upland site preparation and facilities construction, placement of permanent infrastructure, construction and operational stormwater runoff, potential construction and operational fuel and chemical spills, hydrostatic testing, wastewater discharge, dredge soil disposal and dewatering/decanting, and Operation of construction vehicles and equipment.[7]

Construction of the marine slip would require excavating 38-acres from uplands. The slip and access channel combined would equal 60-acres and result in the permanent loss of 14.5-acres of shallow subtidal and intertidal habitat, 0.6-acres of estuarine saltmarsh habitat, and 1.9 acres of submerged aquatic vegetation habitat. Additionally, the applicants propose to dredge 5.7 million cubic yards of material to create the slip basin and access channel. Dredged material would be disposed of at the LNG terminal, Roseburg Forest Products Site, South Dunes Site, or Kentuck Site. Dredging for the temporary berth would require dredging approximately 45,000 cubic yards of material. Dredging of the existing navigation channel would remove 700,000 cubic yards of material and would construct a temporary pipeline on the bottom of the channel over 8.3 miles to remove the dredged material. Widening of the Transpacific Parkway/Highway 101 intersection would require permanently filling in 0.51 acres of intertidal habitat. Future maintenance dredging at the slip, access channel, and navigation channel (NRI areas) would require dredging of between 34,600 – 37,700 cubic yards of material annually and additional dredging of the navigation channel of between 27,900 – 49,800 cubic yards of material every three years.[8]

By constructing the Kentuck mitigation site, applicants propose to reconstruct and enhance 100-acres of tide channels, mudflats, saltmarsh, and freshwater wetlands. At the eelgrass mitigation site, the applicants propose establishing approximately 9-acres of eelgrass beds at different densities.

Maintenance dredging of the access channel, marine slip, and NRI area will involve dredging between 34,600 cubic yards and 37,700 cubic yards of material from the access channel and slip every year and dredging between 27,900 cubic yards and 49,800 cubic yards of material from the NRI area every three years.

3. Pacific Connector Pipeline Today

Jordan Cove also proposes to construct a 36-inch underground 229-mile natural gas pipeline from Malin, Oregon to the coast at Coos Bay, Oregon. As noted by DEQ and the Corps in the Public Notice, the pipeline will necessitate direct impacts to waters at 485 locations, including 326 perennial and/or intermittent waterways, seven lakes and/or ponds, two estuarine waters, and 150 wetlands.[9] However, in the JPA under Resource Report 2, the applicants state the following:

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[7] Betz, Sarah and Derik Vowels. Technical Memorandum. Water Quality Considerations – Implications for Clean Water Act Sections 401 and 404 Permitting. 2 February 2018. 8 May 2018 Pacific Connector Pipeline. P. 3.

[8] U.S. Army Corps of Engineers. Public Notice Application for Permit and to Alter Federally Authorized Projects. 60-day notice. NWP-2017-41. 22 May 2018. P. 3-6.

[9] Public Notice Application for Permit and to Alter Federally Authorized Projects. U.S. Army Corps of Engineers. P. 7

> The Pipeline will cross 326 waterbodies within these Fifth Field Watersheds; 61 of these are not crossed by the centerline (29 streams, 10 ponds, 21 ditches, and 1 estuarine feature) but are within the right-of-way or workspaces. Of the 326 waterbodies crossed, 66 are perennial, 148 are intermittent, 98 are ditches, 10 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).[10]

It is unclear whether all impacted waterways have been identified by the applicants.

Additionally, over the 229-mile pipeline route, the applicants propose to cross Coos Bay, the South Coast watershed (Coos and Coquille Subbasins), the Umpqua watershed, the Rogue watershed, and the Klamath watershed (Upper Klamath and Lost Subbasins). Overall pipeline construction would impact 30,778-feet (5.83 miles) of wetlands and 3,028-feet of waterways. Approximately 48,675 cubic yards of material would be excavated and discharged into wetlands and 9,519 cubic yards of material would be excavated and discharged into waterways.[11]

Horizontal Directional Drilling is proposed for Coos Bay, the Coos River, the Rogue, and the Klamath Rivers. Within Coos Bay, Jordan Cove proposes to install the 36-inch pipeline across the bay using two horizontal directional drills ("HDD") of 5,200 and 9,000 feet each. This is a significant change from the prior proposal, in both alignment and construction method. The prior proposed route would have crossed through Haynes Inlet at the north of Coos Bay and away from the navigation channel, constructed using an open wet cut method, after rejecting the use of HDD for the Coos Bay crossing. It is unclear how the applicants have altered the proposal in a way that two proposed HDD crossings are now determined to be feasible. The currently proposed pipeline alignment would require not one but two HDD crossings of Coos Bay, for a total of over 14,000 feet.[12] All other waterways will be crossed using a dry open-cut method. Construction right-of-ways at each crossing would require clearing a 75-foot buffer.

Table 1. Summary of Waterways Impacted by Pipeline

County	Impacted Waters Identified by Applicants
Coos	44 perennial and/or intermittent waterways, 2 estuarine waters, and 29 wetlands
Douglas	86 perennial and/or intermittent waterways, 1 pond, and 38 wetlands
Jackson	89 perennial and/or intermittent waterways, 2 lakes and/or ponds, and 22 wetlands
Klamath	107 perennial and/or intermittent waterways, 4 ponds, and 61 wetlands

B. The Clean Water Act

[10] Pacific Connector Gas Pipeline Project Resource Report 2 Water Use and Quality. P. 7. Part 2 Attachment C. PCP A-B Part 6 p. 217.

[11] Public Notice Application for Permit and to Alter Federally Authorized Projects. U.S. Army Corps of Engineers. P. 7 – 8.

[12] GeoEngineers Memorandum, Coos Bay West HDD Crossing (Sept. 14, 2017) at 2.

The purpose of the Clean Water Act ("CWA"), 33 U.S.C. § 1251 *et seq.*, is to restore and maintain the chemical, physical, and biological integrity of waters of the United States.

Under Section 401(a) of the CWA, any applicant for a Federal license or permit to conduct any activity that may result in a discharge to navigable waters in Oregon must obtain a certification from DEQ stating that the discharge from the proposed action will comply with the requirements of the CWA. *See* 33 U.S.C. § 1341.

Before DEQ may certify the Project, it must affirm "that there is a reasonable assurance that the activity will be conducted in a manner which will not violate water quality standards." 40 C.F.R. § 121.2(a)(3). DEQ has made clear in its regulations and guidance documents that the applicant bears the burden of persuasion and the burden of proof in this review. As a result, the applicant must not only demonstrate that the activity will comply with water quality standards, but it must also provide DEQ with adequate information supporting that position. Stated another way, DEQ must work from the presumption that the activity will violate water quality standards and must require the applicant to prove otherwise and support its conclusion.

An application for certification must contain "environmental information submitted to the federal licensing or permitting agency . . . and evaluations as necessary to demonstrate that the activity will comply with applicable provisions of" the CWA. OAR 340-048-0020(2)(g). DEQ may consider the potential water quality impacts of the proposed project as a whole in its 401 certification analysis, not just the significant effects of the discharge itself. *PUD No. 1 of Jefferson County v. Washington Department of Ecology*, 511 U.S. 700, 712 (1994); 40 C.F.R. § 121.2(a)(3) (requiring the state to find "a reasonable assurance that the activity will be conducted in a manner which will not violate applicable water quality standards") (emphasis added).

Water quality standards include three elements: (1) one or more designated "uses" of a waterway; (2) numeric and narrative "criteria" specifying the water quality conditions, such as maximum amounts of toxic pollutants, maximum temperature levels, and the like, that are necessary to protect the designated uses; and (3) an antidegradation policy that ensures that uses dating to 1975 are protected and high quality waters will be maintained and protected. 33 U.S.C. §§ 1313(c)(2), 1313(d)(4)(B); 40 C.F.R. Part 131, Subpart B. Compliance with water quality standards requires protection of all three of these components.

DEQ must deny the 401 certification for the project because the applicants have not provided reasonable assurances that the proposed activities will not violate state water quality standards.

C. Environmental Justice and Tribal Sovereignty

Tribal interests are held and asserted most importantly and fundamentally by tribes themselves. Commenters insist, however, that our government respect tribal sovereignty and give those interests their due regard, and give them heavy weight in DEQ's analysis. In this regard, we call attention to the recent findings of the Oregon Environmental Justice Task Force. Tribal leaders from four tribes testified to Oregon's Environmental Justice Task Force Committee on June 8, 2018 in Klamath Falls about their concerns regarding the negative impacts of building and

operating the Pacific Connector Gas Pipeline and the Jordan Cove LNG Export Terminal. Each tribe is a sovereign nation with corresponding rights of their own. Those rights do not rely on this legal process, much less on non-tribal public commenters. Rather, state and federal governments have obligations to honor those rights and interests.

We are concerned that, in working with the State of Oregon and various state agencies, representatives of several tribes have expressed their frustration in not being adequately consulted about the impacts this project would have on their tribal people and tribal lands. We stand in solidarity with these tribes as they assert their rights, and agree with the Environmental Justice Task Force that this project is not in the public interest because of its disproportionate negative impacts on tribes. A project cannot be in the "public interest" if it violates fundamental obligations to tribes.

By way of emphasis, a summary of that recent Environmental Justice Task Force meeting, which contains some detail regarding the important tribal interests at stake, follows:

> Oregon Physicians for Social Responsibility (PSR) Partial Summary of June 8, 2018 Public Meeting of Oregon Environmental Justice Task Force ("EJTF") and Confederated Tribes of Coos, Lower Umpqua and Siuslaw, The Klamath Tribes, The Yurok Tribe, and The Cow Creek Band of Umpqua Tribe of Indians:
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> > Ben Duncan, Environmental Justice Task Force member, began with two quotes from a Klamath Tribal Council member in a closed meeting the previous day, "We are not as important as everyone else" and "we are beat down over and over." These quotes emphasize the issue of disparity that tribes experience overall and in working with the state and the federal government. He also noted that the state "statute that created the EJTF requires natural resource agencies, that is fourteen agencies, "shall consider the environmental justice impact when making determinations on how and when to act."
> >
> > <u>The Klamath Tribes</u>
> > Chairman Don Gentry of the Klamath Tribes stated that "History has shown that what we think should be important has not been that important to other people. The fact that our interests have been marginalized, we're still marginalized, our fish aren't as important as the ag community or money; our people aren't. This is the here and now. Environmental justice is something that is real. I think it is a legal, I think it is a moral, I think it is a spiritual obligation." Chairman Gentry noted that the pipeline would go through burial grounds, where there are cultural and human remains, and emphasized the negative impacts this will have on the psyche and world view of First Peoples. He noted that, although cultural resource laws require consulting with the tribes to figure out beforehand what to do with remains, not all burial grounds are known and may only be discovered as the pipeline is laid. There is inadequate legal protection of ancestral lands and their cultural significance, i.e. how the impact of destruction of these lands affects tribal people.

Confederated Tribes of Coos, Lower Umpqua, and Siuslaw

Margaret Corvi, Director of the Department of Natural Resources of the Confederated Tribes of Coos, Lower Umpqua, and Siuslaw, spoke for the Tribes, emphasizing the importance of tribal identity and connection to the land. Calling out the "traumatic and heartbreaking" history of tribes in Oregon that have already experienced "a lot of loss," she expressed strong concerns about the Jordan Cove project's harmful impacts to her tribe. She noted that the project has changed dramatically since it was initially envisioned in 2006, growing much, much larger and, therefore, having the potential for much more significant and dramatic impacts to tribal people and to the land. The following are some of the concerns she expressed at the meeting about negative impacts of the proposed project to the water and water resources on tribal land:

- The removal of massive amounts of dirt in the area will cause a significant amount of ground disturbance. The bay is a constellation of village sites which moved around over the years with the changing of the estuary and channel. Some of the burial sites are known but some are unknown. Disturbing these sites would be devastating to the cultural and spiritual lives of the tribes, re-traumatizing the tribes by digging up their ancestors.
- There has already of been an issue of soil and water contamination and a huge concern about the ability of the tribes to continue to use the area for gathering of roots and basketry materials and for harvesting shellfish. Coos Bay has had one of the most robust areas for harvesting shellfish and is home to one of the largest intact fish weirs.
- The project of channel modification with widening and deepening of the channel to increase large vessel traffic will cause erosion, less access to fishing, and fewer fish overall. This will result in environmental degradation and cause the negative health impact of less access to a source of healthy foods.
- The dredged materials may be contaminated; how to prevent these materials from affecting the area has not been addressed. A tsunami would spread the contaminated materials over a much larger area and increased wave action would further degrade both natural and cultural resources.
- The construction and operation of the export terminal will generate high levels of noise, disturbing fish and wildlife, such that tribal members may not want to fish or participate in other traditional cultural practices.
- There has not been meaningful consultation with tribes by either the federal government, including FERC, or state agencies to address the avoidance or mitigation of harm to tribal resources. This includes a lack of adequate surveys and survey design for identifying cultural resources, including burial grounds, and a failure to address the issue of the length of the project and its cumulative and, in some cases, permanent impacts to resources. For example, the DEQ has issued cleanup permits for contaminated soil but nothing has happened because 85% of the DEQ's

permits are back logged; even though permits are issued, no action is taken.

● Ms. Corvi raised questions about a DOE permit, a DOGAMI permit, and a plan for coordination of the permits as well as a plan for coordination with FERC.

● She also expressed serious concerns about both water and air quality and the impact of global warming and increased greenhouse gases.

● Ms. Corvi expressed the "lack of support for the disproportional impacts to tribes. So, these are not renewable resources in a lot of cases to tribes and highly valued for cultural reasons."

The Yurok Tribe

David Gensaw, Vice Chairman of the Yurok Tribal Council, spoke about their tradition of being hunters, gatherers, fisherman, prayer people and spiritual healers, and the past history of massacres and loss of their land, as well as attempts to destroy their language and religion. Nevertheless, the Yurok continue to live as they have for thousands of years.

He stated that "We oppose this LNG, this Pacific Connector Pipeline. We know what it's going to do. We know the devastation. We've been through devastation." He expressed concern that the oil and gas developers are not concerned about what would be destroyed by the terminal and pipeline, specifically from the negative effects of climate change, global warming, already a reality that will worsen, affecting ecosystems that the tribe and everyone depends upon. For example, in 2014, 80% of the juvenile salmon run was lost and, in 2015, 90% was lost on the Klamath River, due to warm water conditions. He emphasized that the pipeline will go through and devastate 250 miles of land and five rivers, destroying farmlands, private, public, forest and tribal lands. Because of this, the Yurok fight not only for themselves but for everybody and call on others to stand in solidarity with them to protect current and future generations of all people.

The Cow Creek Band of Umpqua Tribe of Indians

Jason Robison, Director of Natural Resources of the Cow Creek Band of Umpqua Tribe of Indians, spoke on behalf of the Tribes, first calling out their deep connection to the land, noting that the tribes have been here "from time immemorial" and will continue to be here.

He noted the following:

● There are 6.2 million acres of ancestral tribal land, including the Umpqua and Rogue River basins, providing services for 1800 tribal members.

● The tribe tracks, monitors and provides feedback for the pipeline portion of this project and notes that it has the potential to impact their ancestral territory in many ways, including environmental degradation, impacts to fish and wildlife populations, a direct impact to cultural resource sites, to

> cultural resources and artifacts, and to the tribal community and its social wellbeing.
> ● The pipeline will transect 123 miles of ancestral land, creating a disproportionate burden on the tribe. He emphasizes that this requires a proper consultation, coordination and collaboration. Each tribe is a sovereign government - not just a stakeholder. As such, federal and state agencies have an obligation to consult with tribes at a level much different than anyone else on this project. At this time, the surface has only been scratched with regard to consultation. There is a need for individual consultation with tribes to address their specific issues and concerns about their ancestral territory and this is not happening.
> ● Jordan Cove and the pipeline will have a disproportionate effect on tribes' interests within their ancestral territory. "Tribes have been here forever and they will be here forever. They have to live with the impacts of their actions as well as the impacts of actions of others. Once again, they can't simply pick up and move the culture." As sovereign governments, tribes should be respected and treated as such.

Finally, following the testimony of the four tribes, the Oregon EJTF concluded that the Pacific Connector Pipeline project is not in the best interests of the state of Oregon. The Chair noted that it "could irrevocably change Oregon." The group committed to communicating with the Governor, the Governor's office, and state agencies and share the perspective of the Tribes and the EJTF.

In conclusion, we urge the State of Oregon to respect tribal sovereignty and to give tribal interests their due regard in this process. DEQ should carefully consider the environmental justice impacts of the project as identified by the Oregon Environmental Justice Task Force.

D. Conclusion

DEQ must deny the 401 certification for the project because the applicants have not provided reasonable assurances that the proposed activities will not violate state water quality standards. More specifically:

- The application fails to contain the mandatory minimum information (*See* Section II infra);
- There is no reasonable assurance that the project will comply with Oregon's antidegradation implementation policy (*See* Section III infra);
- There is no reasonable assurance that designated beneficial uses will be protected (*See* Section IV infra);
- There is no reasonable assurance that numeric criteria will not be violated (*See* Section V infra); and
- There is no reasonable assurance that narrative criteria will not be violated (*See* Section VI infra).

Each of these points will be discussed in further detail in the following sections. In addition to general comments regarding the lack of reasonable assurance from the applicants that the project will not violate water quality standards, we have provided specific examples and detailed information regarding each of the impacted watersheds in Section VII infra.

II. DEQ Must Deny the Certification Because the Application Fails to Contain the Mandatory Minimum Information

DEQ must deny the 401 certification for the project because the applicants have not provided reasonable assurances that the proposed activities will not violate state water quality standards. Specifically, the applicants have failed to provide the mandatory minimum information required by DEQ's regulations. Pursuant to DEQ's regulations, at a minimum, applications for a 401 certification filed with the state must contain "information and evaluations as necessary to demonstrate that the activity will comply with" the Clean Water Act and Oregon's water quality standards. OAR 340-048-0020(2)(g). Specifically, Oregon's Administrative Rules under OAR 340-048-0020(2) require:

> An application filed with the department must contain, at a minimum, the following information…
> (c) A description of the activity's location sufficient to locate and distinguish existing and proposed facilities and other features relevant to the water quality effects of the activity; …
> (e) A complete written description of the activity, including maps, diagrams, and other necessary information;
> (f) The names of affected waterways, lakes, or other water bodies.

When necessary, DEQ must "request any additional information to complete an application or to assist the department in evaluating an activity's impacts on water quality." OAR 340-048-0020(3). "An applicant's failure to complete an application or provide requested additional information within the time specified by the department is grounds for denial of certification." OAR 340-048-0020(3).

The applicant has failed to provide critical information necessary for the certification. Without this information, which is required by Oregon's regulations, DEQ must deny the certification request under OAR 340-048-0020.

A. The applicant does not provide "a description of the activity's location sufficient to locate and distinguish existing and proposed facilities and other features relevant to the water quality effects of the activity."[13]

1. Sources and Impacts of Hydrostatic Testing

The JPA does not provide specific information regarding the sources and disposal of water used for hydrostatic testing. For purposes of determining whether the proposed action complies with

[13] OAR 340-048-0020(2)(c)

State water quality standards, the applicants must provide essential details of proposed hydrostatic testing requested by DEQ, including a complete listing of all hydrostatic test discharge points with the name of the receiving stream and location on that stream and/or a complete listing of the infiltration areas, including the location where the water would drain if it were released. Therefore, the application fails to contain the mandatory minimum information required under OAR 340-048-0020(2)(c), (e) and (f) and must therefore be rejected as incomplete.

Since no pipe welding is without leaks, the applicant must describe where additional water would come from for further testing after fixing leaks found in the first test, and how much water would be required. The potential impacts of hydrostatic testing in each watershed are discussed in more detail in Section VII. Waterbody-Specific Comments.

2. Extent and Impact of Channel Deepening Projects

Dredging has the potential to change the hydrodynamics of Coos Bay in the long-term. The application fails to evaluate the project in conjunction with other proposed dredging in Coos Bay. For instance, the Corps is considering a massive channel-deepening project for Coos Bay, and the State of Oregon commented that some level of channel deepening will be required to accommodate LNG tankers, particularly if the LNG terminal is allowed to use larger tankers in the future.

3. Extent of Completed Work

The JPA does not provide information regarding the extent of work that has already been completed on the project. Specifically, the JPA fails to note the prior excavation and testing programs that have already been completed on the project site, including pile testing and ground disturbance evaluations that involved significant excavation and movement of material.

B. The applicant does not provide "a complete written description of the activity, including maps, diagrams, and other necessary information."[14]

1. Extent and Condition of Potential Contamination at Sites

Both the Ingram Yard property and the location of the proposed South Dunes site on the former Weyerhaeuser North Bend Containerboard Mill are listed in the DEQ's Environmental Cleanup Site Information (ECSI). The Ingram Yard property (ECSI 4704) was used for spreading of contaminated materials from the late 1970s to 1994 and contains "low levels of potentially bioaccumulating chemicals and must not be placed in waters of the state."[15] More recently, during construction of the Industrial Wastewater Pipeline by Jordan Cove, the contractor discovered black soils in March 2015 on the site. The results of the sampling confirmed that the

[14] OAR 340-048-0020(2)(e)

[15] Oregon Department of Environmental Quality. Weyerhaeuser – Ingram Yard. Environmental Cleanup Site Information Database. Available online < http://www.deq.state.or.us/Webdocs/Forms/Output/FPController.ashx?SourceId=4704&SourceIdType=11 >.

black soil contained contaminants, including but not limited to, mercury, arsenic, dioxins, and petroleum products.[16]

Photo 1. Black soils discovered during construction of the JCEP IWP Phase 1 Project.

IWP Phase 1A & 1B Construction, Black Soil Summary Report, Jordan Cove Energy Project. 15 April 2015. P. 1.

Additionally, the South Dunes site is also listed on the ECSI database (ECSI 1083). This site is also part of the former Weyerhaeuser North Bend Containerboard Mill. A 2007 Environmental Site Assessment commissioned by Jordan Cove found:

> "Contaminants were detected at several locations across the site. Samples collected within the black ashy mill waste typically had higher concentrations of contaminants than those taken in sand. VOCs and tributyltin were not detected. Detected levels of PAHs and TPH were below state and federal guidelines. Chromium was detected in one sample in test pit TP-7 above the SSL. Arsenic was detected in all samples analyzed. The level of arsenic is below the background levels with the exception of test pit TP-7. Dioxins and furans were detected throughout the site at levels below the PRG for individual congeners. The TEQ value for test pit TP-10 at a depth of 2 ft is above the equivalent PRG. PES also reported TEQ values above the equivalent PRG. Although the value is above federal guidelines for individual samples, the statistical level for the site is within state requirements."[17]

According to a 2004 Phase I Environmental Assessment of the site prepared for Weyerhaeuser, the report states that chemicals were used at the mill, including but not limited to biocides, resins, alum, mineral spirits, petroleum distillates, and other cleaning agents. Boiler blowdown containing chemicals may have been discharged into a septic drain field. Compressor condensate may also have been released at the site.[18]

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[16] IWP Phase 1A & 1B Construction, Black Soil Summary Report, Jordan Cove Energy Project. 15 April 2015. Available online < http://www.deq.state.or.us/Webdocs/Controls/Output/PdfHandler.ashx?p=0522588a-0b10-4e07-9705-599d39399d8dpdf&s=Black%20Soil%20Summary%20Report.pdf >. P. 2.

[17] Jordan Cove Task Order No. 8 Phase II Environmental Site Assessment Proposed Liquefied Natural Gas Terminal North Bend, Oregon. 16 January 2007. Available online < http://www.deq.state.or.us/Webdocs/Controls/Output/PdfHandler.ashx?p=001761ee-a0de-4084-a735-1098e00fc023.pdf&s=JCEPTaskOrder8GRIPhase2ESA(1-2007).pdf >. P. 6.

[18] LEVEL I ENVIRONMENTAL SITE ASSESSMENT WEYERHAEUSER COMPANY HORSEFALL BEACH ROAD NORTH BEND, OREGON DELTA PROJECT NO. E003-627-2. June 2004. Available online at <

The map below is based on aerial imagery from September 2006 and indicates the area of the site that was not included in DEQ's "no further action" determination.

Weyerhaeuser North Bend Containerboard Mill. ECSI 1083. Oregon Department of Environmental Quality.

Both the Ingram Yard and South Dunes sites (ECSI 4704 and 1083) are listed as "Partial No Further Action" as of 2006. The DEQ reports acknowledge that the recommendation for no further action is contingent upon there being no "new or previously undisclosed information" becoming available. Further, as demonstrated by the map above, there are also locations within the site that are not included within the "Partial No Further Action" finding that could be impacted by the applicant's proposed activities.

Additionally, on December 16, 2014, Barbara Gimlin, former Environmental Inspector at the Jordan Cove LNG terminal site and employee of SHN Consulting, submitted testimony to FERC regarding discovery of contaminants at the site during a March 2014 exploratory test program. Ms. Gimlin describes her knowledge of discovery of contaminated soils along the Jordan Cove shoreline during a September 2013 cultural resources survey by Southern Oregon University Laboratory of Anthropology. Ms. Gimlin then describes her personal observations of excavations at the site exposing potential contaminants including "black soils (north to south in Ingram Yard, including near the shoreline), bright yellow granulated/powder found in clumps of varying sizes, gray gummy material found in clumps (likely related to hydraulic drilling conducted by GRI), and the exposure of an underground concrete storage tank punched through by heavy equipment

http://www.deq.state.or.us/Webdocs/Controls/Output/PdfHandler.ashx?p=02f102a1-f089-494a-9ca9-dea5d52fdb7dpdf&s=DeltaLevel1ESA(6-2004).pdf >. P. 8.

with unknown liquid inside." These exposures occurred during the March 2014 Kiewit test program.[19]

The information provided by Gimlin, in combination with the documented discovery of "black soils" by Jordan Cove in 2015, should be considered "new or previously undisclosed information" "which warrants further investigation." Given that the project calls for excavating and moving large amounts of soils from one area to another, to be used as fill for the South Dunes site and other construction areas, the extent and condition of the contamination at these sites must be fully investigated, disclosed, and addressed to ensure contaminants do not reach waterways.

2. Hydraulic Alteration at Stream Crossings

The pipeline will cross tributaries and mainstream rivers within the Coos, Coquille, South Umpqua, Rogue and Klamath basins, most of which are impaired for several water quality parameters. The applicants have not provided analysis of potential risk for hydraulic and geomorphic alteration upstream and downstream from the impact areas. Without a risk assessment for stream crossings based on fluvial geomorphic analyses as recommended by the U.S. Fish and Wildlife Service for all proposed stream crossings, the application does not provide mandatory minimum information as required for DEQ to evaluate the project's ability to comply with water quality standards, such as biocriteria (OAR 340-041-0011).

3. Potential Interference with Subsurface Flow Regimes

The applicants have not provided adequate information demonstrating the potential effects of pipeline construction, including streambed and bank disturbance and placement of pipe and backfill, on the hyporheic regimes of affected waterbodies. As noted by DEQ, rerouting of subsurface water or prevention by barriers (such as buried pipes) of subsurface flows interacting with stream flows can increase temperature. These interactions have a greater impact at low flow periods, when baseflow impacts are critical. Hyporheic exchange often allows for cool water pockets, providing thermal refuge for migrating cold water fish like threatened Coho salmon. In addition, other water quality parameters including pH and dissolved oxygen can be impacted by disturbances to hyporheic exchanges.

4. Proposed Horizontal Directional Drilling of Coos Bay

The applicants propose to use Horizontal Directional Drilling (HDD) technology to cross the Coos Bay estuary twice between MPs 0.28 and 1.0 and between MPs 1.45 and 3.02. As stated by the applicants in Resource Report 2:

> PCGP is not proposing to cross any waterbodies using a wet open cut crossing method. While the Coos Bay Estuary was previously proposed as a wet open cut crossing in the

[19] Gimlin, Barbara. Public Comment on Jordan Cove Energy Project Draft EIS by Barbara Gimlin. 12 February 2015. FERC Docket No. CP13-483-000.

> FERC 2015 FEIS, the proposed crossing method now incorporates two trenchless HDDs to avoid in-water work and the associated impacts.[20]

The use of HDD represents a significant change from the previously proposed wet open crossing, as described in the 2015 FEIS. The applicants have not provided comprehensive information regarding why the HDD technology currently proposed is now feasible where previously it was determined not to be feasible and a wet open cut crossing was the preferred method. More information regarding the feasibility of the Coos Bay East HDD is needed. The HDD Feasibility Evaluation submitted by the applicants only explored to a depth of 50 feet, despite the proposed drill depth closer to 230 feet. The report states the following:

> Our feasibility evaluation of the proposed Coos Bay East HDD is based on limited subsurface data.[21]

Further, the applicants have not provided information regarding the impacts of a potential frac-out or increased suspended sediments as a result of the HDD crossing in the bay. Without this information, DEQ cannot provide the requested certification of compliance with water quality standards.

5. Expected Temperature Increases in Discharged LNG Vessel Cooling Water

Jordan Cove states that water will be discharged from engine cooling at 3 degrees C (5.4 degrees F) above ambient water temperatures. Modeling of mixing zones and dissipation of water temperature increases were likewise based on this assumed 3 degrees of increase. However, Jordan Cove did not provide any information regarding the source of this assumed temperature of cooling water. Nothing in the JPA or FERC filings appears to support the assertion that engine cooling water will be only 3 degrees Celsius higher than the average ambient Coos Bay water temperatures of 10 degrees Celsius. In fact, FERC's FEIS for the Bradwood LNG Project states that:

> Cooling water discharged from a 150,000 m3 steam powered LNG carrier could initially be 19.4^{o}F higher than ambient water temperatures" as compared to seasonally ranging ambient temperatures in the Columbia River of 42 to 68°F.[22]

Oregon LNG, also proposed for the Columbia River, estimated that "according to industry sources, the water taken for cooling the vessel's machinery is warmed by 6 to 9 degrees Celsius at the point of discharge" and that the average for diesel-powered LNG vessels would be 8.9^{o}C

[20] Pacific Connector Gas Pipeline Project. Resource Report 2: Water Use and Quality P. 21. Part 2 Attachment C in PCPG A-B Part 6. March 2018. P. 231.
[21] GeoEngineers, Inc. HDD Feasibility Evaluation Coos Bay East Crossing. Pacific Connector Gas Pipeline Project. Coos County, Oregon File No. 22708-001-01. 6 September 2017. Part 2 Attachment C. Resource Report 2 Appendix G.2. P. 1. PCP A-B part 6 March 2018. P. 30.
[22] Bradwood LNG Project FEIS at 4-85 (2008).

above ambient water temperatures.[23]And according to EPA, cooling water can reach high temperatures with the "thermal difference between seawater intake and discharge typically ranging from 5ºC to 25ºC, with maximum temperatures reaching 140ºC."[24] Given these widely varying ranges of cooling water discharge temperatures, DEQ should at the very least require Jordan Cove to provide a worst case analysis of temperature increases from diesel and steam powered vessels. DEQ should also require that the applicants provide an accurate number of shipments that would occur using 148,000 cubic meter ships (the maximum size that would be allowed to transit Coos Bay) to export the full proposed natural gas export amounts (0.9 Bcf/d according to FERC, 1.2 Bcf/d according to DOE, 1.55 Bcf/d according to NEB and DOE).

6. Inaccurate Data Included for HDD Crossings

DEQ should fully review the application for missing, inaccurate, and incomplete information. In the appendices for the Horizontal Directional Drilling Design for the Rogue River, the applicants included data and information for the Klamath crossing. Specifically, in Appendix B. HDD Design Drawing and Calculations, the HDD Design Summary, Minimum Radius Calculations, Operating Stress Summary, and Installation Load Calculations included are for the Klamath River rather than the Rogue River.[25] The JPA is therefore missing these documents and this analysis for the Rogue HDD crossing. Additionally, the Horizontal Directional Drilling Design report states that groundwater levels were not measured. Instead, the report states:

> We anticipate that groundwater levels will mimic the elevation of the Rogue River around 1,410 feet mean sea level (MSL). We anticipate that groundwater levels will fluctuate with precipitation, site utilization and other factors. During heavy prolonged precipitation, and probably during most of the winter months, we expect that groundwater will be near or at the surface of the site on the east side of the Rogue River.[26]

Without this information, it is difficult to determine potential impacts to groundwater, and therefore interactions with surface waters, in the event of a frac-out or other drill failure. Without this information, DEQ cannot provide the requested certification of compliance with water quality standards.

7. Post-construction Restoration at Streambed Crossings

Several stream crossing methods are proposed for different types of streams. One proposed method for the majority of identified waterbody crossings is an "open dry cut." In most cases the

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[23] Oregon LNG, CH2MHill Technical Memorandum, Appendix F Cooling Water Discharge Analysis, at 2 (Sept. 10, 2008).

[24] EPA, Final 2013 Vessel General Permit Fact Sheet at 133.

[25] Geotechnical Engineering Services and Horizontal Directional Drilling Design Rogue River HDD. Pacific Connector Gas Pipeline Project. Jackson County, Oregon. 1 September 2017. Part 2 Attachment C. P. 1. PCP A-B Part 7 P. 219 – 239.

[26] Geotechnical Engineering Services and Horizontal Directional Drilling Design Rogue River HDD. Pacific Connector Gas Pipeline Project. Jackson County, Oregon. 1 September 2017. Part 2 Attachment C. P. 6. PCP A-B Part 7 P. 163.

stream itself would not actually be dry and the process involves creating a temporary dam or flume, and pumping the water from that impoundment downstream of the work area. This process is anything but "dry" in reality if the stream contains any water at all. This type of crossing will have substantial turbidity impacts during the installation and removal of any temporary structures, also frequently discharging constant turbidity from muddy sump holes and from unavoidable seepage of surface or subsurface flow into the active work area and then downstream. Additionally, the methods do not explain how streambeds will be restored to avoid impacts to water quality following re-watering of the streams. Lastly, how the impacts from removal of all riparian vegetation on both banks for 75' (the ROW is stated to neck down from 95' at stream crossings) at crossing sites will be addressed is not described.

8. Stormwater Management Plan

The applicants submitted a NPDES 1200-C application in 2010. DEQ notified the applicants that critical details of long-term stormwater management are required. Specifically, DEQ requested information related to runoff from all impervious areas at terminal and pipeline facilities, docks, structures, pavements, roadways, and access and storage areas. DEQ asked that information related to the final pipeline and associated roadways be included in the detailed stormwater management plan. The applicants have not provided an adequately detailed stormwater management plan including specifications for proposed treatment facilities sized to handle runoff from all contributing impervious surfaces.

In addition, given the known and potential soil contamination at various locations that would be disturbed for site construction, a stormwater management plan must be individually developed for each construction location, accounting for contaminants at each site, and adopting measures to ensure that contaminants are not transported to the shoreline or released into the waters of Coos Bay and nearby wetlands. Finally, given the remarkable scope of this project and the imperfect nature of BMPs (including even straw bales) the applicants' negative response on the JPA application form to "Will any construction debris, runoff, etc., enter a wetland or waterway?" defies credibility and must be evaluated in more detail. The DEIS specifically states "Silt fences are 90 to 95 percent efficient at trapping sediment," which would appear to indicate there would be some discharges to waterways.

9. Extent of Road Construction

The JPA inadequately addresses the aquatic impacts from road use, road modifications (including but not limited to Key Watersheds), temporary extra work area (TEWA) construction, and temporary and permanent access roads. Roads contribute to the disruption of hydrologic function and increase sediment delivery to streams. Roads also provide access, and the activities that accompany access magnify their negative effects on aquatic habitats. Activities and impacts associated with roads include fire, target-practice, ORV use, fishing, recreation, timber harvest, livestock grazing, and agriculture. Roads also provide avenues for stocking non-native fishes. The JPA fails to provide complete and accurate maps of roads (existing, proposed, and expanded), specific characterizations of impacts to waterways that would be affected, details regarding types of roads and how they will be modified, or specific details on long-term maintenance proposed for roads in areas of steep terrain.

Road construction has the potential to produce myriad harmful impacts to waters of the U.S.:

- Soil erosion, compaction, loss of forest productivity;
- Pollution: sedimentation, thermal loading;
- Rapid water runoff: peak flows;
- Impaired floodplain function;
- Barrier to movement of wood and spawning gravel;
- Fragmentation: wildlife dispersal barrier;
- Human disturbance, weed vector, hunting pressure, loss of snags, litter, marbled murrelet nest predation, human fire ignition, etc.

Roads have a particularly negative influence on aquatic and riparian ecosystems and organisms. Roads interfere with movement of materials and organisms in three dimensions: upstream/downstream, channel/upland, and surface/subsurface.[27] Roads also act as conveyor belts for delivering chronic sediment to streams.[28]

Over the last few decades, studies in a variety of terrestrial and aquatic ecosystems have demonstrated that roads aggravate many of the most pervasive threats to biological diversity, including habitat destruction and fragmentation, edge effects, exotic species invasions, pollution, and overhunting. Roads have been implicated as mortality sinks for animals ranging from snakes to wolves; as displacement factors affecting animal distribution and movement patterns; as population fragmenting factors; as sources of sediments that clog streams and destroy fisheries; as sources of deleterious edge effects; and as access corridors that encourage development, logging and poaching of rare plants and animals. Road building in National Forests and other public lands threatens the existence of de facto wilderness and the species that depend on wilderness.[29]

From a review of the literature, we conclude that increases in sedimentation are unavoidable even using the most cautious methods. Roads combined with wildfires accentuate the risk from sedimentation. The amount of sediment or hydrologic alteration from roads that streams can tolerate before there is a negative response is not well known. It is not fully known which causes greater risk to aquatic systems: building roads to reduce fire risk or realizing the potential risk of fire. More research is needed in this area.

U.S. EPA describes the impacts of roads as follows:

> Stormwater discharges from logging roads, especially improperly constructed or maintained roads, may introduce significant amounts of sediment and other pollutants into surface waters and, consequently, cause a variety of water quality impacts. …

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[27] Jim Doyle, Where the Water Meets the Road. Available at http://web.archive.org/web/20070325061623/http://wwwfsl.orst.edu/geowater/RRR/jim/aquahab/index.html.

[28] Michael Derrig. Road Improvements for Watershed Restoration. Available at http://wwwfsl.orst.edu/geowater/PEP/calfed/derrig/indexhtml.

[29] Noss, Reed; The Ecological Effects of Roads. Available at http://www.wildlandscpr.org/ecological-effects-roads.

> [S]ilviculture sources contributed to impairment of 19,444 miles of rivers and streams [nationwide]. … forest roads can degrade aquatic ecosystems by increasing levels of fine sediment input to streams and by altering natural streamflow patterns. Forest road runoff from improperly designed or maintained forest roads can detrimentally affect stream health and aquatic habitat by increasing sediment delivery and stream turbidity. This can adversely affect the survival of dozens of sensitive aquatic biota (salmon, trout, other native fishes, amphibians and macroinvertebrates) where these species are located. Increased fine sediment deposition in streams and altered streamflows and channe morphology can result in increased adult and juvenile salmonid mortality where present (e.g., in the Northwest and parts of the East), a decrease in aquatic amphibian and invertebrate abundance or diversity, and decreased habitat complexity. The physical impacts of forest roads on streams, rivers, downstream water bodies and watershed integrity have been well documented but vary depending on site-specific factors. Improperly designed or maintained forest roads can affect watershed integrity through three primary mechanisms: they can intercept, concentrate, and divert water (Williams, 1999).[30]

The JPA fails to disclose the full extent of the road network for pipeline construction or explain how these impacts could be adequately mitigated.

Additionally, in order to use heavy equipment on these roads, significant road modifications will be necessary, including blading/grading, widening, drainage improvements, and the construction of turnouts and roadside TEWAs. The JPA does not include detailed descriptions of what activities will be occurring that could impact wetlands, streams, and other waters. Rather, the JPA relies on blanket statements about the application of best management practices to avoid impacts to streams. By not specifying the location and nature of construction activities associated with all access roads, the JPA provides an inadequate description of the project.

The current application lacks site-specific information on impacts to resources for both existing and new roads to be constructed, instead relying on broad statements regarding use of BMPs. It is impossible for the public to know which special aquatic sites will be impacted without a detailed and up-to-date description of road construction activities.

On steep slopes, particularly in rainy winter months, similar BMPs have failed in the past to prevent impacts to streams, creeks and ditches. Not only is road construction inadequately described, but also the measures to prevent significant sedimentation and turbidity in streams are neither site-specific nor reliable.

For example, during construction of the 12-inch MasTec Coos County pipeline in 2003, covering terrain similar to the proposed PCGP, erosion and sedimentation control measures repeatedly failed, leading to both massive erosion and landslides. The JPA gives little specific information to justify the assumption that, particularly in steep areas, BMPs will be adequate to prevent impacts to streams, and result in zero discharge as stated in the JPA.

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[30] EPA 2012. Notice of Intent To Revise Stormwater Regulations Federal Register. May 23, 2012.

Silt fence overtopped by eroding soil during construction of the Coos County pipeline in 2003 and discharged sediment into a tributary of the Coquille River.

Failure of a hay bale, used as an erosion control device, that became lodged in a culvert and resulted in the stream cutting through the road.

Pictured above, a silt fence during construction of the Coos County pipeline in 2003 is overtopped by eroding soil, which is then deposited directly into a small tributary stream of the Coquille River. The second photo shows a bale of hay – an erosion control device – that has become lodged in a culvert, resulting in the stream cutting through the road itself.

10. Impacts, Risks, and Contingencies for Horizontal Directional Drilling

HDD crossings, when successful, have impacts in areas adjacent to rivers where staging and construction areas occur. HDDs also require the disposal of materials extracted from the drill hole. HDD attempts frequently fail, causing drastic impacts to water quality and fish habitat. According to Williams' own experience, large-diameter HDDs frequently fail. In recent history, many HDD attempts along the 12-inch Coos County pipeline failed, resulting in "frac-outs," situations in which large amounts of sediment and bentonite clay (used as a drilling lubricant)

were released into streams. Bentonite clay and sediment released through frac-outs can disrupt fish spawning habitat, increase turbidity, and potentially introduce other contaminants to impacted waterways. The 2009 FEIS states at 2-97:

> "…there are two problems that may occur during the use of an HDD. First, there may be an unintentional release of drilling mud, forcing its way to the surface through underground fissures. This situation is termed a 'frac-out.' Second, the drill may be blocked by unexpected substrata soils or geological conditions (such as gravel or boulders)."

Frac-out that released bentonite clay into the Coquille River in 2003.

Frac-out that released bentonite clay into the Coquille River in 2003.

The photographs above document a frac-out that led to sedimentation and a huge release of bentonite clay into the Coquille River during construction of the 12-inch Coos County pipeline. A similar HDD failure on the Rogue and Coos Rivers would severely impact water quality and salmon habitat. Bentonite clay is highly detrimental to salmon spawning habitat.

ODFW described some of their concerns regarding frac-outs:

> Between August and October of 2003, MasTec North America Inc. was cited by DEQ for a series of water-quality violations which occurred between August and October of 2003. The violations were a result of frac-outs during the horizontal drilling work for the construction of a natural gas pipeline under the North Fork of the Coquille River in Coos County. If similar frac-out related turbidity discharge impacts were to occur at the proposed Rogue River crossing, they would likely impact last known significant spawning habitat for Spring-run Chinook salmon in the Rogue River Basin. This EIS should include analysis of the potential environmental impacts of a frac-out related turbidity discharge due to the proposed action and alternatives… [31]
>
> Pipeline crossings using HDD or other subsurface methodologies can be expected to cause frac-outs in Coos County geology and possibly throughout the project. The Applicant should be prepared for construction stoppages, cleanup, and remediation of damages caused by frac-outs. HDD and other subsurface boring or drilling crossing design locations should proactively address the risks associated with the potential for a "Frac out" or inadvertent loss of drilling fluid… [32]

The JPA fails to disclose and comprehensively analyze the likelihood and frequency of frac-out events. Without this information, DEQ cannot evaluate whether the project is likely to degrade water quality below state standards.

11. Projected Erosion and Effectiveness of Controls Along Pipeline Route

The JPA does not provide an analysis of how cleared areas are to be managed during the winter in order to prevent significant erosion and sedimentation events during that time, or into the future. Without site-specific analysis relevant to this construction period, and the long-term management of a cleared ROW, the Corps, DEQ, and the public cannot meaningfully evaluate the effectiveness of measures to control erosion and sedimentation of waterways during this period. DEQ must evaluate both the short and long term discharges of turbidity and sediments from what is essentially a proposed new 229-mile dirt road for the lifetime of the project. The 2003 MasTec pipeline provides a much smaller example of similar the water quality risks. The turbidity and sediment discharges from the cleared ROW and pipeline installation should be evaluated for cumulative discharges over long term, and should include an analysis of how this may contribute to mercury pollution from elemental mercury found in soils.

C. Applicant doesn't provide the names of affected waterways, lakes, or other water bodies.

1. Identification of Impacted Waterways

[31] State of Oregon 2008 DEIS comments at 24.

[32] State of Oregon 2015 DEIS comments at 102.

The application materials do not consistently specify the number of waterbodies that would be crossed. As noted by DEQ and the USACE, the pipeline will necessitate direct impacts to waters at 485 locations, including 326 perennial and/or intermittent waterways, seven lakes and/or ponds, two are estuarine waters, and 150 are wetlands.[33] However, in the JPA under Resource Report 2, the applicants state the following:

> The Pipeline will cross 326 waterbodies within these Fifth Field Watersheds; 61 of these are not crossed by the centerline (29 streams, 10 ponds, 21 ditches, and 1 estuarine feature) but are within the right-of-way or workspaces. Of the 326 waterbodies crossed, 66 are perennial, 148 are intermittent, 98 are ditches, 10 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).[34]

As evidenced by these two descriptions of the impact of the project, the applicants state that a different number of lakes and ponds, estuarine waters, and wetlands would be crossed.

In addition, the application does not identify the location of all wells, springs, and seeps within 150 feet of the construction right-of-way for the pipeline. Springs and seeps supplied by shallow groundwater could be affected by the pipeline project. In particular, if the pipeline is located up-gradient of a spring or seep location, it should be evaluated.[35] This is a significant and serious concern for impacted landowners along the pipeline route who rely on springs on their property for drinking water and domestic uses. The pipeline and its bedding material will substantially alter surface and subsurface flow patterns and will likely impact waters regulated by DEQ.

For example, landowner John Schofield submitted comments to FERC on February 13, 2015, stating that his home, located at pipeline milepost 60.11 to 60.26, is located within 500 feet of the proposed pipeline route on his property. Mr. Schofield's family relies on its spring for drinking water, and is concerned that the installation of the pipeline will alter the course of the spring water and negatively impact the source of the family's drinking water. These types of impacts must be disclosed by the applicant and evaluated by DEQ.

Unless and until the applicants provide a consistent and complete list of waterbodies that would be affected by the proposed action, and name each affected waterbody, the application fails to contain the mandatory minimum information required under OAR 340-048-0020(2)(c), (e) and (f) and must therefore be rejected as incomplete.

D. Lack of Endangered Species Act Consultation

As a related concern regarding the overall lack of mandatory minimum information provided by the applicants, DEQ must not approve the application without consulting with NOAA Fisheries.

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[33] Public Notice Application for Permit and to Alter Federally Authorized Projects. U.S. Army Corps of Engineers. P. 7

[34] Pacific Connector Gas Pipeline Project Resource Report 2 Water Use and Quality. P. 7. Part 2 Attachment C. PCP A-B Part 6 p. 217.

[35] DEIS at 4-355.

Additional analysis is necessary to provide the agency and the public with adequate information about the fish exclusion technology to be used, complete with an analysis of the effectiveness of the plan, and the stormwater testing to be employed. Without addressing these issues, and without the many other missing studies, plans, and analyses, the JPA is wholly inadequate and legally insufficient. DEQ cannot approve the application without consulting with NOAA Fisheries. Because a Draft EIS has not yet been released and there has been no formal consultation under the ESA and given the significant concerns the National Marine Fisheries Service ("NMFS"), now known as NOAA Fisheries, previously raised about inadequate information on the impacts of the current project configuration, the application should be denied as incomplete.

In their review of the Biological Assessment for the previous iteration of this project, multiple agencies expressed concern regarding the lack of information provided. For instance, NMFS requested further information and consultation for green sturgeon based on potential dredging impacts. NMFS informed FERC:

> Disturbance of substrate from project construction and biennial maintenance dredging, along with disposal at the Coos Bay ocean dredged material disposal site (Site F), will modify habitat and reduce safe passage by causing direct adverse physical effects due to physical entrainment in the discharge plume."[36]

Additionally, according to the 2015 DEIS from the last iteration, the project is likely to adversely affect the following species listed under the ESA:[37]

- Threatened Marbled murrelet;
- Threatened Northern spotted owl;
- Threatened Coho salmon ("SONCC");
- Threatened Coho salmon (Oregon Coast Evolutionarily Significant Unit "ESU");
- Threatened North American green sturgeon (Southern Distinct Population Segment "DPS");
- Endangered Lost River sucker;
- Endangered Shortnose sucker;
- Threatened Vernal pool fairy shrimp;
- Endangered Applegate's milk-vetch;
- Endangered Gentner's fritillary;
- Threatened Kincaid's lupine; and
- Endangered Rough Popcornflower.

Again, this list is not the result of a final Biological Assessment or any formal consultation and review by the wildlife agencies NMFS and USFWS.

The lack of consultation for the project is also problematic because key mitigation measures for ESA-listed species have not been determined or vetted by key agencies, such as NOAA

[36] NMFS Biological Assessment comments at 2.
[37] DEIS at 4-628.

Fisheries. Information included in the JPA fails to provide an adequate assessment of how the impacts of the project to key listed species will be avoided or minimized. Due to the complexity and scale of the project, as well as the number of listed species that could be impacted, consultation for the project is clearly warranted. Until official consultation is initiated, it is impossible for the public to know what mitigation measures will be proposed and whether they will be effective. The lack of information regarding impacts to listed species further emphasizes the lack of mandatory minimum information provided by the applicants throughout the application and, therefore, DEQ cannot certify.

E. Conclusion

In conclusion, the applicant has not provided critical information necessary for the certification under OAR 340-048-0020(2). Specifically, the applicant has failed to:

- Provide descriptions of the activity's location as required under OAR 340-048-0020(2)(c), specifically regarding the sources and impacts of hydrostatic testing, the extent and impact of channel deepening projects, and the extent of completed work;
- Provide a complete written description of the activity as required under OAR 340-048-0020(2)(e), specifically regarding the extent and condition of potential contamination at sites, hydraulic alteration at stream crossings, potential interference with subsurface flow regimes, proposed Horizontal Directional Drilling ("HDD")of Coos Bay, expected temperature increases in discharged LNG vessel cooling water, inaccurate data included for HDD crossings, post-construction restoration at streambed crossings, stormwater management plan, lack of Endangered Species Act consultation, extent of road construction, impacts and contingencies for HDD, and projected erosion and effectiveness controls along pipeline route; and
- Provide the names of affected waterways, lakes, or other waterbodies under OAR 340-048-0020(2)(f), specifically regarding identification of impacted waterways.

Without this information, as required by Oregon's regulations under OAR 340-048-0020, DEQ must deny the certification request.

III. DEQ Must Deny the Certification Because the Application Fails to Provide a Reasonable Assurance that the Project will Comply with Oregon's Antidegradation Implementation Policy

Any 401 Certification issued by DEQ must confirm that the project will comply with Oregon's antidegradation policy,[38] which ensures the full protection of all existing and beneficial uses by

[38] In 2013, the U.S. Environmental Protection Agency found that Oregon's implementation of its antidegradation policy was inconsistent with federal law (*See* The EPA's Review of Portions of Oregon's March 2001 Antidegradation Policy Implementation Internal Management Directive for NPDES Permits and Section 401 Water Quality Certifications (August 8, 2013) ("EPA Review"). In May 2018, DEQ released three new memorandums addressing several of the flaws in the IMD identified by EPA (*See* http://www.oregon.gov/deq/Pages/WQ-Standards-Antidegradation.aspx). However, the documents do not appear to apply to 401 Certifications. DEQ should clarify to the public and the applicants how it will implement its antidegradation policy in a manner consistent with federal law.

preventing unnecessary degradation of water quality from new sources of pollution and protecting, maintaining and enhancing existing surface water quality. For all waters, the "[e]xisting in stream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected."[39] This level of protection is the absolute floor of water quality.[40] Oregon's antidegradation policy mirrors the federal language, requiring the protection of "all existing beneficial uses" from "point and nonpoint sources of pollution."[41]

As a threshold matter, it is clear that the Jordan Cove project must comply with Oregon's antidegradation policy because none of the exemptions to the policy apply. Specifically, under OAR 340-041-0004(3), a discharge can be considered a "Nondegradation Discharge" and may not require antidegradation review if it is:

1) a discharge into an existing mixing zone;
2) a water conservation activity;
3) a discharge that would result in "insignificant temperature increases;[42] or
4) a discharge that results in up to a 0.1 mg/l decrease in dissolved oxygen is not considered a reduction in water quality if there are no adverse effects on threatened and endangered species.

Further, under OAR 340-041-0004(5), activities that cause a short-term water quality degradation may be exempt from the antidegradation policy, specifically riparian restoration activities and emergency situations. The project is not a water conservation activity, riparian restoration activity, discharging into an existing mixing zone, or related to emergency situations. Further, the project would likely increase water temperature above 0.3 degrees Celsius (0.5 degrees Fahrenheit). The FEIS for the Bradwood LNG project found that cooling water discharged from LNG tankers could be as much as 19.4 degrees Fahrenheit higher than ambient water temperatures of the Columbia River.[43] The proposed action involves dredging that will decrease dissolved oxygen in Coos Bay because dredging increases the oxygen demand by disturbing sediments and releasing oxygen-demanding materials (decomposing organic materials contained within the sediments). Construction dredging lowers dissolved oxygen levels in estuarine waters not only by re-suspending sediment, but by deepening an estuarine channel where hypoxic conditions can occur due to reduced circulation in deeper waters. Once the

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[39] 40 C.F.R. § 131.12(a)(1); 40 C.F.R. § 131.3(e) ("Existing uses are those uses actually attained in the water body on or after November 28, 1975, whether or not they are included in the water quality standards.").

[40] Questions and Answers on: Antidegradation, EPA Office of Water Regulations and Standards, August 1985, at 4.

[41] OAR 340-041-0004(1).

[42] OAR 340-041-004(3)(c) "Temperature. Insignificant temperature increases authorized under OAR 340-041-0028(11) and (12) are not considered a reduction in water quality." Effectively, waters may not be warmed by more than 0.3 degrees Celsius (0.5 degrees Fahrenheit) above the colder water ambient temperature.

[43] FERC's FEIS for the Bradwood LNG Project states that "cooling water discharged from a 150,000 m3 steam powered LNG carrier could initially be 19.4 oF higher than ambient water temperatures" as compared to seasonally ranging ambient temperatures in the Columbia River of 42 to 68 oF. Bradwood LNG Project FEIS at 4-85 (2008). Oregon LNG, also proposed for the Columbia River, estimates that "according to industry sources, the water taken for cooling the vessel's machinery is warmed by 6 to 9 degrees Celsius at the point of discharge" and that the average for diesel-powered LNG vessels would be 8.9 oC above ambient water temperatures. Oregon LNG, CH2MHill Technical Memorandum, Appendix F Cooling Water Discharge Analysis, at 2 (Sept. 10, 2008).

dredging is completed, there also is the potential for reduced circulation in the deeper portions of the approach channel. In combination with other factors, reduced circulation has the potential to result in lower dissolved oxygen levels in the deeper waters. Thus, it is clear that the project does not qualify for an exemption and must comply with the State's Antidegradation Policy.

Critically, DEQ has already expressed strong concerns that the proposed action would violate Oregon's antidegradation policy. In its 2008 DEIS comments on a previous iteration of the project, DEQ stated:

> The project proponent cannot be allowed to further degrade a water quality limited waterbody. According to Oregon Administrative Rule (OAR) 340-0410004(7) 'Water quality limited waters may not be further degraded except in accordance with section (9)(a)(B), (C) and (D) of this rule.' Section (9)(a)(B), (C) and (D) specify very limited circumstances where further degradation can be allowed. It is unknown whether this project could qualify for any exception…
>
> The project cannot cause or contribute to water quality standard violations nor discharge pollutants to a stream that already is in violation. If a TMDL has been issued, the project needs to comply with all requirements of the TMDL. If they cannot comply with a TMDL, no discharge is possible and the project probably cannot go forward.[44]

As discussed in detail below, the applicants have not provided information that will address DEQ's initial concerns. Consequently, DEQ must conclude that this project will undoubtedly have significant water impacts, and there is no justification for allowing this degradation to occur.

A. The Applicant Has Failed to Provide DEQ with the Information Necessary to Permit the Required Analysis

Jordan Cove fails to provide the necessary information to allow DEQ, and the public, to determine if the proposal will comply with the antidegradation requirements. First, the applicant has failed to provide DEQ with the information necessary to ensure the protection of all existing uses. As EPA noted in its 2013 analysis, "the federal antidegradation policy at 40 CFR 131.12(a)(1) requires protection of existing uses in all cases, even if a permit does not authorize a lowering of water quality.[45] DEQ, in fact, produced a memorandum in 2014 addressing this topic and updating the IMD.[46] DEQ must require that the applicant provide the information necessary to allow for this analysis.

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[44] State of Oregon 2008 DEIS comments at 48

[45] IEPA Review at 32.

[46] In May 2018, DEQ released three new memorandums addressing several of the flaws in the IMD identified by EPA. *See* https://www.oregon.gov/deq/wq/Pages/WQ-Standards-Antidegradation.aspx. However, by their terms none of those documents appear to apply to 401 Certifications. As a result, DEQ is still operating under a flawed IMD that fails to ensure compliance with the law. DEQ, Memo Re: Procedures for existing use review during anti degradation analysis (Nov. 3, 2014)

Second, Jordan Cove has failed to provide the information necessary for DEQ to determine if the proposed activities will impact water quality. DEQ's antidegradation analysis must ensure all of Oregon's waters will be protected. At the heart of any antidegradation analysis will be a determination of whether the receiving water is an Outstanding Resource Water, a High Quality Water or a Water Quality Limited Water. To set the stage properly for an antidegradation analysis, DEQ must identify each parameter that may be impacted by the action, for each receiving water, and assign the correct category. Based on this information, DEQ can then determine how to apply Oregon's antidegradation rule.

For example, when a waterbody is considered to be a High Quality Water, because it is not in violation of water quality criteria, "that water quality must be maintained and protected."[47] Therefore, absent grounds for allowing an exception to the rule, DEQ must ensure that the action will not lower the existing water quality. As DEQ has stated, "[a] reviewer from DEQ may conclude that if a pollutant is in the pollutant stream, then the discharger/applicant/source has the burden of proof to show that there is no consequent lowering of water quality."[48] For Water Quality Limited Waters, in turn, no additional pollutant loading can be allowed, except in very limited circumstances.[49] Thus, the antidegradation policy in this context should more appropriately be called a "non-degradation" policy, as it prohibits degradation.

To begin with, Jordan Cove fails to clearly explain what activities will take place on or near what waterbodies in manner that will allow for the meaningful review of the impacts to each waterbody. Specifically, Jordan Cove has failed to identify which waterbodies that will be affected by the project are Outstanding Resource Waters ("ORW"), High Quality Waters and Water Quality Limited Waters, thus allowing DEQ to apply the proper test for the potential impacts.

Moreover, the "adverse impact" standard Jordan Cove appears to apply here is inconsistent with the law. As the EPA explained in 2013, while federal antidegradation policy may allow for "insignificant or 'de minimis' lowering of water quality" in some instances, "any such application of de minimis needs to account for cumulative degradation from individual and multiple sources in the same water body and employ an appropriate cap on the cumulative amount of degradation that may be allowed."[50]

B. DEQ may Not Permit the Lowering of Water Quality as a Result of the Proposed Project

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[47] OAR 340-041-0004(6).

[48] Antidegradation IMD, at 16.

[49] OAR 340-041-0004(7) ("Water quality limited waters may not be further degraded except" in limited circumstances).

[50] EPA Review at 31. As discussed above, EPA found that DEQ does not "include such a cumulative cap on the extent to which degradation may be allowed without a Tier 2 review," and indeed, "Oregon's approach to determining if water quality would be lowered is itself a de facto de minimis provision without a cumulative cap." Because DEQ has not addressed this failure in a subsequent applicable policy statement or regulatory change, DEQ must first provide the applicant and the public clarity on what constitutes a lowering of water quality that will trigger the additional reviews called for in OAR 340-041-0004(6) and (7).

Under OAR 340-041-0004, the purpose of Oregon's antidegradation policy is to:

> Guide decisions that affect water quality to prevent unnecessary further degradation from new or increased point and nonpoint sources of pollution, and to protect, maintain, and enhance existing surface water quality to ensure the full protection of all existing beneficial uses.[51]

The project would likely result in a lowering of water quality for at least the following parameters: Narrative Criteria, Biocriteria; Dissolved Oxygen; Temperature; Toxic Substances; and Turbidity. This lowering of water quality, together with loss of habitat and food sources, will adversely impact the existing designated beneficial uses of: Anadromous Fish Passage; Salmonid Fish Rearing; Salmonid Fish Spawning; Resident and Aquatic Life; Wildlife and Hunting; Fishing; and Aesthetic Quality in the various waterbodies impacted by the project. For example, the LNG terminal and pipeline fail to protect the designated use of aquatic life, including threatened salmonids, eulachon, and green sturgeon. The expansive acreage of dredging and filling in critical salmon habitat fails to protect salmon. The construction and operation of the terminal and pipeline, including removing riparian vegetation, tanker traffic, wastewater discharge, ballast water intake, pipeline stream crossings, and the risk of catastrophic damage due to a gas fire combine to create unacceptable harm to aquatic life. The fact that some of the aquatic wildlife species are on the brink of extinction makes the project even less acceptable.

DEQ has found very similar proposals for pipeline and gas export terminal infrastructure construction and operation would violate Oregon's antidegradation policies and denied 401 certification for Bradwood Landing.[52]

1. High Quality Waters Policy OAR 340-041-0004(6)

For these high quality waters, namely, waterbodies that are currently attaining water quality standards, the lowering of water quality is allowed only if:

> (a) No other reasonable alternatives exist except to lower water quality; and
> (b) The action is necessary and benefits of the lowered water quality outweigh the environmental costs of the reduced water quality [];
> (c) All water quality standards will be met and beneficial uses protected; and
> (d) Federal threatened and endangered aquatic species will not be adversely affected.[53]

The applicant has failed to demonstrate that it satisfies any of these requirements.

First, the applicants have not demonstrated that no other reasonable alternatives exist except to lower water quality. Adequate information has not been provided to enable the most meaningful comment on project design criteria, and comment on other aspects of the project (e.g.

[51] OAR 340-041-0004.
[52] DEQ letter dated March 10, 2011 to James Holm and Kimberly D. Bose from Sally Puent.
[53] OAR 340-041-0004(6)(a)-(d).

alternatives) is hindered by the fact that project design criteria are not discussed here. We are concerned that the project design criteria will be dictated by the applicant so as to artificially eliminate consideration of practicable alternatives. The underlying purpose of this project could be met at other terminal locations, and these alternatives should be considered by DEQ. Existing terminals on the Gulf Coast provide access to export gas to Asia via the Panama Canal. Under Resource Report 10, the applicants assert that East Coast and Gulf Coast LNG export facilities are "far removed" from the pipeline intersection and that those ports cannot meet the need to get Rocky Mountain and western Canada gas to Asian markets.[54] The applicant has not met their burden to show less damaging alternatives are not practicable. We urge DEQ to conduct its own analysis of these alternatives. It is imperative that analysis be done of pipeline routing that avoids any unwilling landowners, so as to avoid eminent domain. The applicant has not met their burden to show less damaging alternatives are not practicable. Again, we strongly urge DEQ to undertake independent analysis, rather than rely on biased proponent reports.

Second, Jordan Cove has not demonstrated that the project is necessary or that the benefits of the impacts to water quality outweigh the environmental costs.

Third, the project will likely violate water quality standards for at least the following parameters: Narrative Criteria, Biocriteria, Dissolved Oxygen, Temperature, Toxic Substances, and Turbidity as described in detail in Sections V and VI.

Finally, threatened and endangered species listed under the ESA, including but not limited to salmonids, eulachon, and green sturgeon would be adversely affected by the lowering of water quality (e.g. increased temperature, decreased dissolved oxygen) as a result of this project. Therefore, DEQ should deny the 401 certification for the project.

2. Water Quality Limited Waters OAR 340-041-0004(7)

With respect to waterbodies that are water quality limited, the antidegradation policy states that the "waters may not be further degraded except" in limited circumstances. In other words, DEQ may not certify a project that would result in a lowering of water quality in a waterbody that is already impaired for one or more parameters. Where the project would result in a lowering of water quality on water quality limited waters, DEQ must determine that 1) "[t]he action is necessary and benefits of the lowered water quality outweigh the environmental costs of the reduced water quality", 2) [t]he new or increased discharged load will not unacceptably threaten or impair any recognized beneficial uses or adversely affect threatened or endangered species, and 3) that the discharge will not exacerbate the existing problems or that there is there is a TMDL in place that demonstrates sufficient reserve capacity to assimilate the parameter impacted by the project.

The project will degrade water quality in many areas where water quality is already impaired, as well as in high quality waters that are meeting water quality standards. The 2009 FEIS for a previous iteration of the project stated:

[54] JCEP, RR10 at 4.

> Clearing and grading of streambanks, removal of riparian vegetation, instream trenching, trench dewatering, and backfilling could result in streambank modification; increased sedimentation; turbidity; increase in temperature, decreased dissolved oxygen concentrations; releases of chemical and nutrient pollutants from sediments; and introduction of chemical contaminants, such as fuel and lubricants. An increase in soil compaction and vegetation clearing could potentially increase runoff and subsequent streamflow or peak flows. Surface waters could be impacted due to alteration of groundwater flow where the pipeline intersects waterbodies.[55]

Before DEQ could certify this project as complying with the state's antidegradation policy, it must evaluate the environmental and economic effects of the project for water quality limited waters under OAR 340-041-0004(9)(c). Under the environmental and economic effects criteria, the applicant must demonstrate that there are no alternatives to lowering water quality in the water quality limited waters, and that the economic benefits of lowering water quality are greater than other uses of the assimilative capacity of that waterway.[56] This analysis requires the consideration of reasonable alternatives and a technical analysis of socioeconomic benefits versus environmental costs.

The application fails to meet these criteria. First, Jordan Cove has not demonstrated a need for this project in Southern Oregon. Second, and related, the project seriously conflicts with the ecologic and economic health of the Coos Bay estuary, areas impacted by the pipeline, alternative locations, and economic viability of the larger United States. Third, as detailed below, the detrimental effects on protected aquatic resources, including threatened and endangered species, the economy, and public safety are significant and permanent.

C. The Project Fails to Meet the Environmental and Economic Effects Criteria for Water Quality Limited Waters

The project will degrade water quality in many areas where water quality is already impaired. The applicants have failed to demonstrate that the project meets the environmental and economic effects criteria for water quality limited waters under OAR 340-041-0004(9)(c). Therefore, DEQ must not certify the project.

1. Reasonable Alternatives that Better Protect Water Quality Exist

The purpose of the terminal is primarily to provide natural gas to Asian markets. A myriad of alternatives exist that would accomplish this purpose. The primary flaw with the applicant's alternatives arguments is the contention that the projects must be located in Southern Oregon to meet the project's needs. Not only is the project not a demonstrated necessity for Oregon, but the JPA's approach to the siting of the project unduly ruled out other gas supply alternatives by defining the purpose so narrowly as to prevent alternatives from meeting that purpose. As a result, other possible alternative locations have not been adequately analyzed to demonstrate that the proposed project location will have the least adverse impact on the aquatic ecosystem.

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[55] 2009 FEIS at 4.3-31.

[56] See DEQ Antidegradation Internal Management Directive at 28.

An applicant may not define a project in order to preclude the existence of any alternative sites.[57] Here, the applicants have unreasonably narrowed the purpose and need analysis of the project in order to foreclose other alternatives. The project's failure to both identify a permissible purpose for the project and to adequately weigh alternatives does not comply with Section 401 requirements that the applicants demonstrate that no alternatives exist to the proposed project and its impacts.

The applicant's alternatives analysis fails to address many alternatives, and some alternatives are given such cursory consideration that it is impossible for DEQ, based on the information that the applicant has provided, to realistically conclude they are not practicable. This includes changes to terminal design, turning basin size and design, alternative LNG sites, and both major and minor route variations on the pipeline route.

2. The Project's Economic Benefits Do Not Outweigh the Environmental Costs

The applicant has not demonstrated that the benefits of lowered water quality outweigh the costs of water quality impairment. Specifically, the proposal will increase domestic natural gas and electricity prices, which is not in the public interest.

The potential risk of increased domestic natural gas prices weighs strongly against the need for the project as higher gas prices will hurt public and private need for the project. First, larger export levels lead to larger domestic price increases, while rapid increases in export levels lead to large initial price increases that moderate somewhat in time. Even slower increases in export levels lead to price increases, just at a slower scale of price hikes. Second, natural gas markets in the U.S. will increase production to satisfy an estimated 60-70% of the increase in natural gas exports, with three-quarters of this increased production expected from shale resources. Third, the remaining deficit in energy supply correlated to price increases will likely be met by the electric sector, which the EIA anticipates coal-fired generation to primarily produce. Fourth and last, consumers will consume less but still see an increase in their natural gas and electricity costs if export is allowed under any scenario.[58]

Increases in domestic natural gas prices, in shale gas production, and in coal-fired electricity production possess serious economic and environmental consequences for the greater public and as well as the West Coast's environmental economies that cast significant doubt on the benefits or need for Jordan Cove's export proposal. In addition to price and production impacts, a public interest analysis should examine the nexus between increased natural gas export, decrease in consumption in electric power sector, and an increase in other power generation for electricity

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[57] *Sylvester v. U.S. Army Corps of Engineers*, 882 F.2d 407, 409 (9th Cir. 1989).

[58] EIA, Effect of Increased Natural Gas Exports on Domestic Energy Markets 6, 10 (2012), available at http://www.eia.gov/analysis/requests/fe/pdf/fe_lng.pdf ("EIA Export Study"); see also, e.g., Deloitte MarketPoint, Analysis of Economic Impact of LNG Exports from the United States 16, available at http://wwwfossil.energy.gov/programs/gasregulation/authorizations/2013_applications/sc_exhibts_13_116_118/Ex._08_-_Deloitte_Analysis_for_Excelerat.pdf ("Deloitte Study").

needs. The applicants have failed to demonstrate a need for this project in Southern Oregon and the project seriously conflicts with the ecologic and economic health of the Coos Bay estuary, areas impacted by the pipeline, alternative locations, and economic viability of the larger United States.

Further, in many areas along the pipeline route, significant resources, both private and public, have been invested in the restoration and recovery of water quality and aquatic habitat. DEQ should require the applicants to provide current ambient water quality data for all impacted watersheds. This information is important to fully analyze current conditions of the waterways in each basin as part of the antidegradation analysis. The following examples from each of the impacted waterways demonstrate the significant investments in restoration activities that has occurred:

- **Coos (HUC 17100304):** The State of Oregon has invested significant funds in restoration activities designed to benefit water quality and salmon species within the Coos subbasin. The Oregon Watershed Enhancement Board (OWEB) has distributed restoration funds to a number of organizations. As of this writing OWEB has invested $16.8 million dollars in activities including assessment work, watershed council support, education, technical assistance, monitoring and the hard costs of restoration work to restore the Coos subbasin.

- **Coquille (HUC 17100305):** The State of Oregon has invested significant funds in restoration activities designed to benefit water quality and salmon species within the Coquille subbasin. As of this writing, OWEB has invested $18.2 million dollars in activities including assessment work, watershed council support, education, technical assistance, monitoring and the hard costs of restoration work to restore this subbasin. Additionally, DEQ must consider that any impacts in the Coquille subbasin would affect Coos Bay and the success of other restoration work downstream.

- **South Umpqua (HUC 17100302):** The State of Oregon has invested significant funds in restoration activities designed to benefit water quality and salmon species within the South Umpqua subbasin. As of this writing OWEB has invested $11 million dollars in activities including assessment work, watershed council support, education, technical assistance, monitoring and the hard costs of restoration work to restore this subbasin. Additionally, DEQ must consider that any impacts in the South Umpqua subbasin would affect the Umpqua River and the success of other restoration work downstream.

- **Upper Rogue (HUC 17100307):** The State of Oregon has invested significant funds in restoration activities designed to benefit water quality and salmon species within the Upper Rogue subbasin. As of this writing, $11.2 million dollars has been granted by OWEB for activities including assessment work, watershed council support, education, technical assistance, monitoring and the hard costs of restoration work to restore this subbasin. Additionally, DEQ should consider that any impacts in the Upper Rogue subbasin would affect the Rogue River and the success of other restoration work throughout the whole Rogue Basin. The Rogue River Watershed Council is in the process

of removing seven fish passage barriers in Salt Creek downstream from the proposed pipeline crossing of the Rogue. According to the Rogue River Watershed Council:

> Construction activities during pipeline placement and raw, exposed soil for several years after pipeline installation is likely to contribute sediment to Salt Creek. Such increased sediment load works directly against our proposed restoration work, which will allow summer and winter steelhead and threatened Coho Salmon to reach more spawning habitat in Salt Creek. Sedimentation will contribute injury to the redds (nests) of these fishes. Moreover, the right of way at the pipeline location will be exposed due to vegetation management, leading to increased water temperatures in Salt Creek. One of the reasons Salt Creek is a target for restoration for us is the cool stream temperatures all summer long.[59]

Further, the Upper Rogue Coho Salmon Strategic Action Planning group is focusing on West Fork Trail, Elk, parts of Big Butte, and parts of Little Butte Creeks. Careful review of the pipeline route show that impacts from erosion and sedimentation, streamside vegetation removal, and other associated impacts could work against restoration activities to be done in the future to enhance and protect Coho salmon habitat in these streams.

- **Upper Klamath (HUC 18010206):** The State of Oregon has invested significant funds in restoration activities designed to benefit water quality and salmon species within the Upper Klamath subbasin. Funds have been distributed to a number of organizations through OWEB. As of this writing, OWEB has invested $5.4 million dollars in activities including assessment work, watershed council support, education, technical assistance, monitoring and the hard costs of restoration work to restore this subbasin. Additionally, DEQ should consider that any impacts in the Upper Klamath subbasin would affect the Klamath River and the success of other restoration work downstream. Impacts to the Klamath River may also impact waterways in the State of California and the beneficial uses and restoration activities found downstream. Oregon should consult with the California State Water Resources Control Board regarding potential impacts to California waters.

Overall, it is likely that the proposed impacts from the pipeline undermine the Oregon Plan for Salmon and Watersheds that the State uses to restore wild salmon.

E. Conclusion

In conclusion, any 401 Certification issued by DEQ must confirm that the project will comply with Oregon's antidegradation policy. Under 40 CFR 131.12(a)(1), for all waters, the "[e]xisting in stream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected."[60] None of the exemptions under OAR 340-041-0004(3) apply to this project and, therefore, Oregon's antidegradation policy must be applied to this project.

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[59] Barr, Brian. Rogue River Watershed Council. Email communication. 29 June 2018.

[60] 40 C.F.R. § 131.12(a)(1); 40 C.F.R. § 131.3(e) ("Existing uses are those uses actually attained in the water body on or after November 28, 1975, whether or not they are included in the water quality standards.").

First, the applicant has failed to provide DEQ with the information necessary to ensure the protection of all existing uses. [61] DEQ must require that the applicant provide the information necessary to allow for this analysis. Second, the applicant has failed to demonstrate that the project is consistent with Oregon's High Quality Waters policy under OAR 340-041-0004(6) and Water Quality Limited Waters policy under OAR 340-041-0004(7). The project will degrade water quality in many areas where water quality is already impaired, as well as in high quality waters that are meeting water quality standards.

There can be no question that the activities proposed here will result in a combination of point and nonpoint source pollution under state law. These discharges will likely result in a reduction in water quality as compared to water not affected by anthropogenic sources, affecting turbidity, temperature, and habitat conditions for salmonids among other issues. As a result, DEQ should deny certification because the applicant has failed to provide reasonable assurance that its project will comply with Oregon's Antidegradation Policy.

IV. DEQ Must Deny the Certification Because there is No Reasonable Assurance that Designated Uses Will be Protected

Because the applicants have not provided reasonable assurances that designated beneficial uses will not be impaired, DEQ should deny certification of their project.

Section 303 of the Clean Water Act requires states to establish water quality standards that consist of designated beneficial uses of waterbodies, criteria to protect designated uses, and antidegradation requirements to protect existing uses and high quality waters. As defined in the U.S. EPA's Water Quality Standards Handbook, a water quality standard:

> "…defines the water quality goals of a water body or portion thereof, in part, by designating the use or uses to be made of the water. States adopt water quality standards to protect public health or welfare, enhance the quality of water, and serve the purposes of the Clean Water Act. "Serve the purposes of the Act" (as defined in sections 101(a)(2), and 303(c) of the Act) means that water quality standards should:
>
> - provide, wherever attainable, water quality for the protection and propagation of fish, shellfish, and wildlife, and recreation in and on the water ("fishable/swimmable"), and

[61] In addition, Before DEQ can process this request, it must first describe how it will implement its antidegradation policy consistent with federal law, in light of the 2013 finding by the U.S. EPA that Oregon's implementation of its antidegradation policy is <u>not</u> consistent with federal law. [#] *See* The EPA's Review of Portions of Oregon's March 2001 Antidegradation Policy Implementation Internal Management Directive for NPDES Permits and Section 401 Water Quality Certifications (August 8, 2013) ("EPA Review"). at 32.

- consider the use and value of State waters for public water supplies, propagation of fish and wildlife, recreation, agriculture and industrial purposes, and navigation."[62]

The U.S. EPA's implementing regulations for Water Quality Standards under the Clean Water Act under 40 CFR 131 describe the requirements and procedures for establishing, reviewing, and approving water quality standards by the states, as authorized under Clean Water Act Section 303(c). Specifically, under 40 CFR 131.10, states are required to specify designated beneficial uses that are "appropriate water uses to be achieved and protected" that "must take into consideration the use and value of water for public supplies, protection and propagation of fish, shellfish, and wildlife, recreation in and on the water, agricultural, industrial, and other purposes including navigation."[63] Beneficial designated uses are defined under Oregon's regulations for the impacted watersheds and are summarized in the table below.

Under 40 CFR 131.12, for all waters, the "[e]xisting in stream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected."[64] As discussed previously, Oregon's antidegradation policy requires the protection of "all existing beneficial uses" from "point and nonpoint sources of pollution."[65] DEQ should deny certification because the project would likely lower water quality and result in impairment of beneficial designated uses in violation of the Clean Water Act, and the applicants have not provided reasonable assurances that designated beneficial uses will not be impaired.

Table 1. Basin-Specific Criteria Designated Beneficial Uses

Basin-Specific Criteria	Beneficial Uses
South Coast Watershed **OAR 340-041-0300**	*Estuaries and Adjacent Marine Waters:* Industrial water supply Fish and aquatic life Wildlife and hunting Fishing Boating Water contact recreation Aesthetic quality Commercial navigation and transportation *All streams and tributaries thereto:* Public domestic water supply Private domestic water supply Industrial water supply Irrigation Livestock watering Fish and aquatic life Wildlife and hunting

[62] Water Quality Standards Handbook CHAPTER 2: DESIGNATION OF USES. U.S. Environmental Protection Agency. 2012. Available online < https://www.epa.gov/sites/production/files/2014-10/documents/handbook-chapter2.pdf >.
[63] 40 CFR 131.10.
[64] 40 C.F.R. § 131.12(a)(1); 40 C.F.R. § 131.3(e) ("Existing uses are those uses actually attained in the water body on or after November 28, 1975, whether or not they are included in the water quality standards.").
[65] OAR 340-041-0004(1).

	Fishing Boating Water contact recreation Aesthetic quality Hydropower
Umpqua Watershed **OAR 340-041-0320**	*Umpqua R. Main from Head of Tidewater to Confluence of N. & S. Umpqua Rivers* *North Umpqua River Main Stem* *South Umpqua River Main Stem* *All Other Tributaries to Umpqua, North & South Umpqua Rivers* Public domestic water supply Private domestic water supply Industrial water supply Irrigation Livestock watering Fish and aquatic life Wildlife and hunting Fishing Boating Water contact recreation Aesthetic quality Hydropower (*does not apply for Umpqua R. Main from Head of Tidewater to Confluence of N. & S. Umpqua Rivers)*
Rogue Watershed **OAR 340-041-0271**	*Rogue River main stem from estuary to Lost Creek dam* Public domestic water supply Private domestic water supply Industrial water supply Irrigation Livestock watering Fish and aquatic life Wildlife and hunting Fishing Boating Water contact recreation Aesthetic quality Hydropower Commercial navigation and transportation
Klamath Watershed **OAR 340-41-0180**	*Klamath River from Klamath Lake to Keno Dam (RM 255 to 232.5)* Public domestic water supply Private domestic water supply Industrial water supply Irrigation Livestock watering Fish and aquatic life Wildlife and hunting Fishing Boating Water contact recreation Aesthetic quality Hydropower (RM 255-232.5) Commercial navigation and transportation (RM 255-232.5)

Beneficial designated uses by watershed are discussed in Section VII below.

A. Use and Value of Water for Public Supplies Will Not Be Protected

Under 40 CFR 131.10, states are required to specify designated beneficial uses that consider use and value of water for public supplies. All of the impacted watersheds include public domestic water supply and private domestic water supply as a beneficial designated use. DEQ should require the applicants to identify and analyze all direct, indirect, and cumulative impacts to drinking water sources from the construction, operation, and maintenance of the pipeline. The project will likely impair public and private domestic water supply by contaminating sources through a frac-out as a result of Horizontal Directional Drilling proposed for rivers such as the Rogue that are a source of public drinking water, increasing sedimentation through the construction of stream crossings, and increasing temperature by removing riparian vegetation. Withdrawing large volumes of freshwater for activities such as hydrostatic testing will also impair water quality and quantity, thus impacting public and private domestic water supply. The applicants do not provide specificity regarding when, where, how much, or how often water would be withdrawn for hydrostatic testing.

According to Resource Report 2 for the Pacific Connector Pipeline, the applicants state that the pipeline will cross 12 Public Drinking Water Surface Water Source Areas (DWSAs).[66] At a minimum, this would impact approximately 116,000 people. Further, the report identifies multiple sites where a potable water intake is located less than three miles downstream from the proposed pipeline crossings. There are also a number of private potable water intakes less than three miles downstream from proposed pipeline crossings.[67]

DEQ should require additional information from the applicants to fully analyze the potential impacts to drinking water sources, and therefore the likely violation of protecting this designated beneficial use, from the proposed LNG terminal and related facilities. According to the Coos Bay North Bend Water Board (CBNBWB), the residents of Coos Bay and North Bend rely primarily on the Upper Pony Creek and Merritt Reservoirs, as well as the Joe Ney Reservoir, to supply municipal drinking water. CBNBWB also relies on groundwater from 19 wells in the Dunes National Recreation Area that can supplement industrial needs and municipal use.[68] Resource Report 2 for the LNG terminal does not provide substantive detail regarding impacts to municipal sources. In fact, the report states that "water supply in the JCEP Project Area is provided through municipal sources," but provides no further detail.[69] As demonstrated by this example, DEQ should require additional information from the applicants to fully assess potential impacts to the drinking water protection area from construction, operations, and maintenance of the LNG terminal and related facilities.

1. Medford Water Commission

[66] See Table 2.2-6. Pacific Connector Pipeline Resource Report 2 Water Use and Quality. P. 12. PCP A-B Part 6. P. 223.

[67] Pacific Connector Pipeline Resource Report 2 Water Use and Quality. P. 12. PCP A-B Part 6. P. 223.

[68] 2016 Consumer Confidence Report. Coos Bay-North Bend Water Board. http://cbnbh2o.com/assets/Reports/2016_ccr.pdf.

[69] Jordan Cove Energy Project Resource Report 2 Water Use and Quality. P. 3. JCEP E-N Part 3 p. 334.

As one example of the importance of assessing impacts to public supplies, the Medford Water Commission is identified by the applicants as one of the Drinking Water Source Areas that would be impacted by the project. The Medford Water Commission provides drinking water to approximately 91,100 people in the City of Medford, as well as the cities of Eagle Point, Central Point, Jacksonville, Phoenix, Talent, and Lake Creek Learning Center. Big Butte Springs, which is part of the Rogue watershed, is the source of the Medford Water Commission's drinking water supply.[70]

Not only do the applicants propose to cross at least 88 waterways within the Rogue watershed, including the Rogue River, but they propose to bore underneath the Medford Aqueduct. The 31-inch Medford Aqueduct pipeline was constructed in 1927 and carries approximately 40 cubic feet per second of drinking water from Big Butte Springs to the City of Medford and communities within the Bear Creek watershed.[71] The applicants provide very minimal information regarding construction of this crossing. The plan and profile for the Medford Aqueduct state that the depth of the aqueduct is unknown.[72] DEQ should require more information regarding the depth of the bore and site-specific details to evaluate the potential direct, indirect, and cumulative impacts of the proposed pipeline crossing the main source of the City of Medford's drinking water.

2. Impacts to Groundwater

Additionally, impacts to groundwater resources can impact surface waters, and therefore have the potential to impair designated beneficial uses for public and private drinking water. The U.S. Geological Survey ("USGS") estimates that nearly half of the state of Oregon's population depends on groundwater for daily use and 88 percent of Oregon's public drinking water systems depend, at least in part, on groundwater as a source of drinking water.[73] Even the applicants note the importance of impacts to groundwater resources:

> Groundwater is a substantial source of drinking water in the areas traversed by the Pipeline. More than 70 percent of Oregon residents get their drinking water from groundwater, and over 90 percent of the state's public water systems get their drinking water from groundwater (DEQ 2017b).[74]

Dennis Nelson with the Oregon Department of Human Services Drinking Water Program writes:

> Few resources are more valuable to a community than its drinking water supply. And yet

[70] Medford Water Commission. http://www.medfordwater.org/SectionIndex.asp?SectionID=5.
[71] "Big Butte Creek." Eagle Point Irrigation District. https://www.eaglepointirrigation.com/big-butte-creek.html.
[72] Pacific Connector Gas Pipeline Project. Plan and Profile – Medford Aqueduct. PCP A-B Part 7. 6 February 2018. P. 1.
[73] Oregon's Drinking Water Protection Program. Oregon Health Authority. Available online < http://www.oregon.gov/oha/PH/HEALTHYENVIRONMENTS/DRINKINGWATER/SOURCEWATER/Pages/whppsum.aspx >.
[74] Pacific Connector Pipeline Resource Report 2 Water Use and Quality. P. 82. PCP A-B Part 6. P. 293.

> for those communities that depend on groundwater, i.e., wells and/or springs, local officials often find themselves having to make important decisions about land use that may potentially conflict with safe drinking water without having sufficient information or established procedures to adequately do so. Many land use decisions would be better served if local planning authorities had more information regarding the nature of the groundwater system that serves as the community's and/or rural resident's drinking water source.[75]

Due to the potential interactions between groundwater and surface water systems that provide public and private domestic drinking water supplies, DEQ should require identification of public groundwater supply wells that are within 400 feet of the construction right-of-way and associated construction facilities and assess impacts to additional groundwater wells that may be directly or indirectly impacted. Additionally, DEQ should identify wellhead protection areas (WHPAs) as defined under the Safe Drinking Water Act (SDWA). The applicants note that the proposed pipeline would cross six WHPAs.[76] DEQ should evaluate the potential for contamination of groundwater resources from pipeline construction, operation, and maintenance. Between the Resource Report 2 submitted in October and the Resource Report 2 submitted in February, the applicants estimate that 46 miles (20%) of the proposed pipeline would cross shallow groundwater areas or that 26 miles (13%) of the proposed pipeline would cross shallow groundwater areas, where the water table ranges from zero to six feet below the surface.[77]

DEQ should not only identify these discrepancies, which make it difficult to analyze potential impacts, but also comprehensively review how the proposed activities will impact shallow groundwater areas and thus potentially degrade designated beneficial uses for private and public drinking water supply. DEQ should also require the applicants to identify the presence of drain tiles or other factors that may increase the potential for contamination of groundwater resources.

In conclusion, DEQ cannot certify the project because the applicants have failed to demonstrate that designated beneficial uses for public supplies will not be impaired. DEQ should require the applicants to identify and analyze all direct, indirect, and cumulative impacts to drinking water sources from the construction, operation, and maintenance of the pipeline.

B. Protection and Propagation of Fish, Shellfish, and Wildlife Uses Will Not Be Protected

Under 40 CFR 131.10, states are required to specify designated beneficial uses that consider protection and propagation of fish, shellfish, and wildlife uses. Beneficial designated uses by watershed are discussed below in Section VII. All of the impacted watersheds include fish and aquatic life, wildlife and hunting, and fishing as designated beneficial uses. The proposed

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[75] Nelson, Dennis. 2002. Source Water Assessments and Land Use Planning. http://www.oregon.gov/oha/PH/HEALTHYENVIRONMENTS/DRINKINGWATER/SOURCEWATER/Documents/swp/swaplup.pdf at 2.

[76] Pacific Connector Pipeline Resource Report 2 Water Use and Quality. P. 83. PCP A-B Part 6. P. 294.

[77] See 23 October 2017 Pacific Connector Pipeline Resource Report 2 at P. 78 versus 6 February 2018 Pacific Connector Pipeline Resource Report 2 at P. 85.

activities for the project will likely impair these designated uses by degrading aquatic habitat for fish and shellfish.

1. LNG Terminal

Construction of the LNG terminal and related construction and maintenance activities will significantly impair habitat for fish and shellfish, thus harming designated beneficial uses protected under the Clean Water Act. Construction of the terminal itself would cover 538 acres of land, including 5.2 acres of open water and 169 acres of wetlands.[78] Additionally, the applicants propose construction of a 38-acre marine slip from uplands and a 22-acre access channel (2,200 feet wide at its intersection with the Coos Bay Channel). A 3-acre marine offloading facility would also be constructed. Construction of the slip and access channel would require dredging 5.7 million cubic yards of material and would result in the permanent loss of 14.5 acres of shallow subtidal and intertidal habitat, 0.06- acre of estuarine saltmarsh habitat, and 1.9-acres of submerged aquatic vegetation habitat (eelgrass). Dredged material would be transported to the LNG terminal, South Dunes site, Roseburg Forest Products site, or the Kentuck mitigation site. Construction of the temporary berth would require dredging 45,000 cubic yards of material. Dredging of the existing navigation channel would remove 700,000 cubic yards of material and would construct a temporary pipeline on the bottom of the channel over 8.3 miles to remove the dredged material. Widening of the Transpacific Parkway/Highway 101 intersection would require permanently filling in 0.51 acres of intertidal habitat. Future maintenance dredging at the slip, access channel, and navigation channel (NRI areas) would require dredging of between 34,600 – 37,700 cubic yards of material annually and additional dredging of the navigation channel of between 27,900 – 49,800 cubic yards of material every three years.[79]

Specific impacts to fish, shellfish, and wildlife will be discussed in more detail in Sections V and VI. In summary, the proposed activities at the LNG terminal will impact aquatic resources and therefore harm designated beneficial uses by:

- Permanently destroying at least 1.9-acres of eelgrass beds that provide habitat and food base for fish and invertebrate species including juvenile crab, juvenile lingcod, salmonids, starry flounder, and English sole;
- Impairing water quality by decreasing dissolved oxygen, changing salinity levels, increasing temperature, and increasing sedimentation as a result of dredging and other related activities;
- Activities related to the marine terminal and north spit facilities, including discharge of maintenance dredging spoils causing turbidity plumes, LNG vessel wake strandings, engine cooling water intake entrainment, dredging of the access channel and construction of the pipeline across Coos Bay could all jeopardize the survival of aquatic species;

[78] U.S. Army Corps of Engineers. Public Notice Application for Permit and to Alter Federally Authorized Projects. 60-day notice. NWP-2017-41. 22 May 2018. P. 2.
[79] U.S. Army Corps of Engineers. Public Notice Application for Permit and to Alter Federally Authorized Projects. 60-day notice. NWP-2017-41. 22 May 2018. P. 3-6.

- Dredging would directly remove benthic organisms, such as worms, clams, starfish, and vegetation from the bottom of the bay. Crabs, shrimp, clams, oysters, and fish could become entrained in the operation of the dredging equipment;[80] and
- Degrade habitat and aquatic resources used by threatened and endangered species such as Coho salmon (*Oncorhynchus kisutch*), green sturgeon (*Acipenser medirostris*) and eulachon (*Thaleichthys pacificus*) by permanently converting 6.8 acres of highly productive intertidal habitat to low productive deep-water habitat; by failing to adequately mitigate for the permanent loss of freshwater and estuarine wetlands including eelgrass beds, and by permanently removing coastal riparian vegetation that is an essential component of the food chain for fish and aquatic life, among other impacts.

In summary, DEQ cannot certify that the project will not impair designated beneficial uses for fish and aquatic life, wildlife and hunting, and fishing because the proposed activities at the terminal and in Coos Bay will permanently destroy habitat and degrade water quality for fish and shellfish.

2. Pacific Connector Pipeline

In addition to the proposed activities for the LNG terminal, the project would also involve construction of the 229-mile Pacific Connector Pipeline. The pipeline will dam, divert, trench, or use Horizontal Directional Drilling technology to cross approximately 485 waterways. Construction of the pipeline will affect at least 30,778-feet (5.83 miles) of wetlands and 3,028-feet of waterways. Approximately 48,675 cubic yards of material will be discharged into wetlands and 9,519 cubic yards of material will be discharged into waterways to construct the pipeline. Additionally, a 75-foot clearcut buffer around waterways crossings would be constructed. [81] As stated by the applicants, impacts from stream crossings include:

> Clearing and grading of streambanks, removal of riparian vegetation, instream trenching, trench dewatering, and backfilling could result in modification of aquatic habitat; increased sedimentation; turbidity; increase in temperature, decreased dissolved oxygen concentrations; releases of chemical and nutrient pollutants from sediments; and introduction of chemical contaminants, such as fuel and lubricants. An increase in soil compaction and vegetation clearing could potentially increase runoff and subsequent stream flow or peak flows.[82]

Specific impacts from stream crossings will be described in further detail in additional sections. In summary, construction and operation of the proposed Pacific Connector Pipeline will impact aquatic resources and therefore harm designated beneficial uses for fish and aquatic life, wildlife and hunting, and fishing by:

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[80] DEIS 2014 at 4-569 to 4-570.

[81] U.S. Army Corps of Engineers. Public Notice Application for Permit and to Alter Federally Authorized Projects. 60-day notice. NWP-2017-41. 22 May 2018. P. 8.

[82] Pacific Connector Pipeline Resource Report 2 Water Use and Quality. P. 35. PCP Part 6 P. 245.

- Permanent loss of vegetative shading at corridors for pipeline stream crossings construction and operation;
- Permanent loss of base flows from pipeline;
- Stream width increases from sedimentation related to pipeline construction and operation;
- Soil, vegetation, bank destabilization and increased sedimentation from pipeline construction and implementation;
- Permanent degradation of riparian areas in pipeline corridors at stream crossings;
- Permanent loss of Large Wooded Debris areas from degradation of riparian areas and increased sediment transport in stream and river channels;
- Deforestation in pipeline corridors combined with wetlands damage and long-term soil compaction and new road creation and use, plus decreases in hydrologic connectivity due to all of the above; and
- Increased, prolonged sedimentation of waterways.

DEQ cannot certify that the project because the applicants have failed to demonstrate that the proposed activities related to construction and operation of the pipeline will not impair designated beneficial uses for fish and aquatic life, wildlife and hunting, and fishing.

C. Recreation In and On the Water Will Not Be Protected

Under 40 CFR 131.10, states are required to specify designated beneficial uses that consider recreation in and on the water. All of the impacted watersheds include fishing, boating, water contact recreation, and aesthetic quality as designated beneficial uses. The proposed activities for the project will likely impair these designated uses by harming habitat and water quality for fish, impacting recreational access, and altering the aesthetic values of Coos Bay and the other waterways crossed by the pipeline. The project harms these beneficial designated uses by damming, trenching, blasting, and diverting waterways to build pipeline stream crossings; cutting down 75-foot buffers around stream crossings; dredging sections of Coos Bay; filling in wetlands; and permanently destroying habitat, such as eelgrass beds.

In 2005, recreational boaters took 30,996 boat trips in Coos Bay and engaged in 36,547 use-days of boating activity. Approximately 88% of these use days were related to fishing. The FEIS from the previous iteration of the project states that impacts to recreational users could occur when:

> "During operation of the Jordan Cove LNG terminal, when an LNG carrier is transiting in the waterway to the terminal, other boats in or near the channel would be required to move away and those seeking to approach the channel would have to delay doing so until the LNG carrier had passed.[83]

Further, the FEIS also states "In the event of an LNG spill from an LNG carrier in transit to the Jordan Cove terminal, and a related pool fire if there was ignition, there could be impacts on commercial ships or fishing boats."[84] And again: "Recreational boaters, fishermen, crabbers and clammers could be affected in the unlikely event of an incident resulting in an LNG spill from a

[83] FEIS at 4.8-7.
[84] FEIS at 4.8-8.

carrier in transit in the waterway, and an associated pool fire if there was ignition of released LNG vapors."[85]

Construction and operation of the LNG terminal and Pacific Connector Pipeline will impact aquatic resources and therefore harm designated beneficial uses for fishing, boating, water contract recreation, and aesthetic quality by:

- Impacting or limiting public access for recreational boaters as a result of LNG tankers transiting in the waterways to the terminal;
- Increasing risk to recreational boaters, fishermen, crabbers, and clammers in the event of an LNG spill;
- Increasing sediment pollution at stream crossings, which impairs habitat for fish; and
- Altering aesthetic values of Coos Bay and the 485 waterways crossed by the pipeline as a result of the 75-foot clearcut buffer around each stream crossing, dredging of Coos Bay, and construction of the terminal and related facilities.

Because of the potential impacts to beneficial designated uses for fishing, boating, water contact recreation, and aesthetic quality from the project, DEQ cannot approve 401 certification.

D. Navigation Will Not Be Protected

Under 40 CFR 131.10, states are required to specify designated beneficial uses that consider navigation. In Oregon, navigation is identified as a designated beneficial use for all of the impacted watersheds except the Umpqua Basin. Both construction and operation of the terminal would interfere with access to and use of navigable waters. During construction, dredging in the NRIs would impact access to waters in the vicinity of dredging operations for recreational boaters and anglers. Most of the recreational salmon fishing in Coos Bay occurs in late summer and fall, which is the same time as the in water work window for the dredging activities. Boat angling for Chinook and coho salmon in the fall is concentrated around the railroad bridge and downstream, which is also the same areas where dredging will occur.[86] Not only is navigation a designated beneficial use, but it is also a recognized public trust right in Oregon.[87] According to State data, nearly "90 percent of the boat use-days [in Coos Bay] involved fishing (including angling, crabbing, and clamming)…."[88] The project will interfere with these public trust rights and access to public trust resources including navigation.

Potential adverse impacts to navigation include:

- **Waterway Conditions** adjacent to the facility, and along the shipping route, makes the introduction of LNG tankers there hazardous. *See* JCEP 2007 WSA; USCG 2018 LORA. The bay is subject to currents, tides and winds under normal conditions. Water depth is

[85] FEIS at 4.7-5.
[86] *See* 2015 FEIS at 4-738.
[87] *Morse v. Division of State Lands*, 34 Or App 853, 859 (1978), *aff'd*, 285 Or 197 (1979).
[88] *Id*. at 4-737.

low through most of the estuary, and for large tankers the navigation channel is very narrow.

- **Timing Restriction.** The bar channel is such a significant hazard that the applicants propose only to cross it, and the LOR only applies when it is crossed, only at slack high tides during daylight. This limitation, combined with security measures (like the 500-yard exclusion zone, *see* USCG July 1, 2008 WSR) particular to tankers along with ordinary navigation rules, raises a particular harm to navigation. With 120 vessel calls per year, that means Jordan Cove is relying on using 240 out of the 365 available daylight high tides in the year. Having claimed the safest crossing times for themselves, all remaining vessels will have to use the remaining 115 available daylight slack high tides. If there are fifty other vessels, such as tank barges or export ships, using the port in a year, then for all practical purposes mariners will no longer be able to use the safest bar crossing time at all. Outgoing vessels would have to hold up just inside the bar while the LNG ship passes, or leave earlier under time pressure, both of which are situations that increase safety risks to vessels and directly impair navigation. This situation greatly increases the chances of LNG ships having to hold up offshore.
- **Fishing Vessels,** both commercial and recreational, use the estuary itself and offshore areas in abundance. Under ordinary rules of navigation, a fishing vessel having deployed gear has the right-of-way, but the overriding security and safety concerns related to tankers gives them an exception.
- **Shipwrecks**. The applicants should fully identify shipwrecks and possible human remains in and near the navigation channel.
- **Ship Size**. There are numerous navigation-related concerns related to the size of LNG tankers that would call on this port. Tall vessels are an important limiting factor for the airport hazard. In light of this obvious limitation, there are future plans from the applicant and Port to dredge the channel deeper, enabling even larger ships. Vessel draft is a key limiting factor, which impairs navigation in several ways. It greatly increases the likelihood of groundings. Groundings further limit access to other port facilities. Draft restrictions are navigation limit on access to this gas by the global LNG fleet. New LNG ships being built have deep draft requirements, which means Coos Bay will likely end up with the smaller, older LNG vessels.
- **Vessel Routing** from the open ocean over the bar, up the estuary to the marine slip is a hazardous route that impairs navigation for all other users under the best circumstances. The entrance and first river bend, as well as the entrance to the marine slip, are both precise maneuvers.
- **The 2008 Waterway Suitability Report**, issued July 1, 2008 by the Coast Guard, contains numerous risk mitigation measures that are required, as well as numerous resource gaps. These restrictions, particularly those related to navigation, should be carefully weighed by the Corps in evaluating impacts to navigation. Especially impactful on navigation are the safety/security zones, and the vessel traffic management measures. It is very notable that ordinary operations of this facility require such intensive expert attention (e.g. meetings of port, FBI, coast guard and escort tugs in advance of every vessel arrival; VTIS installation; tractor tugs; navigational aids; and training; USCG facilities; fire-fighting; notification; gas detection) that have yet to be developed. Regarding emergency response, the Coast Guard frankly states that “response planning is limited” in the region, and will need to be developed and augmented.

- **Redacted security material**. The proposed facility, including tankers, the LNG facility, and the pipeline, are all security risks that adversely impact on public safety as well as on navigation. Without being privy to the confidential and redacted security-sensitive material related to navigation, it can safely be said to be voluminous, and therefore of concern to the public interest. In general, tight security at ports impairs navigation, not only for the LNG tankers but also for all other users of the port.

The applicants have not provided reasonable assurances that designated beneficial uses, including but not limited to navigation will be protected. The applicants must also address potential impacts to designated beneficial uses including industrial uses and agricultural uses. Without these reasonable assurances, DEQ must deny the 401 certification.

E. Conclusion

In conclusion, under 40 CFR 131.10, states are required to specify designated beneficial uses that are "appropriate water uses to be achieved and protected" that "must take into consideration the use and value of water for public supplies, protection and propagation of fish, shellfish, and wildlife, recreation in and on the water, agricultural, industrial, and other purposes including navigation."[89] The applicants have not provided reasonable assurances that designated beneficial uses will not be impaired.

<u>Specifically, the applicant has failed to demonstrate that:</u>

- **Use and value of water for public supplies will be protected:** The project will likely impair public and private domestic water supply by contaminating sources through a frac-out as a result of Horizontal Directional Drilling proposed for rivers such as the Rogue that are a source of public drinking water, increasing sedimentation through the construction of stream crossings, and increasing temperature by removing riparian vegetation. Withdrawing large volumes of freshwater for activities such as hydrostatic testing will also impair water quality and quantity, thus impacting public and private domestic water supply.
- **Fish, shellfish, and wildlife will be protected:** The proposed activities for the terminal will likely impair these designated uses by degrading aquatic habitat for fish and shellfish through permanently destroying at least 1.9-acres of eelgrass beds; impairing water quality by decreasing dissolved oxygen, changing salinity levels, increasing temperature, and increasing sedimentation; causing turbidity plumes, wake strandings, engine cooling water intake entrainment; permanently removing coastal riparian vegetation; and removing benthic organisms through dredging. The proposed activities for the pipeline will likely impair these designated uses by permanently removing riparian vegetation at stream crossings; permanent loss of base flows; impaired water quality by increasing temperature and sedimentation; and permanent loss of Large Woody Debris.
- **Recreation in and on the water will be protected:** All of the impacted watersheds include fishing, boating, water contact recreation, and aesthetic quality as designated beneficial uses. The proposed activities for the project will likely impair these designated

[89] 40 CFR 131.10.

uses by harming habitat and water quality for fish, impacting recreational access, and altering the aesthetic values of Coos Bay and the other waterways crossed by the pipeline.

- **Agricultural, industrial, and other purposes including navigation will be protected:** Both construction and operation of the terminal would interfere with access to and use of navigable waters. Dredging operation would impact recreational boaters and anglers in Coos Bay. The applicants have also failed to adequately address impacts to agricultural, industrial, or other designated beneficial uses.

The applicants have not provided reasonable assurances that designated beneficial uses will not be impaired and, therefore, DEQ must deny certification.

V. DEQ Must Deny the Certification Because the Application Fails to Provide Reasonable Assurances that Numeric Criteria Will Not be Violated

As discussed more fully below, the State of Oregon cannot certify that the project will comply with Section 303 of the Clean Water Act, which encompasses water quality standards adopted by the State. The proposed project would likely violate Oregon's antidegradation policy by causing significant temperature increases in numerous stream segments, by causing significant decreases in dissolved oxygen levels in Coos Bay, and further degrading stream segments that are already water quality impaired for temperature, dissolved oxygen, pH, turbidity, mercury, and sedimentation. The proposed project would likely violate Oregon's water quality standard for turbidity by causing a more than 10% increase in natural turbidity levels in Coos Bay and stream segments impacted by pipeline installations. Construction of the pipeline and dredging of Coos Bay would violate Oregon’s numeric criteria for dissolved oxygen. The proposed project would likely violate Oregon’s toxics standard by disturbing and re-suspending contaminated material in and around waters of the state. Specific waterbody impacts related to violations of numeric criteria will be discussed in more detail in Section VII below. In sum, the proposed project would do immense damage to water quality in Oregon, and the applicants have failed to demonstrate that the proposed activities would not result in violations of water quality standards.

A. Temperature - OAR 340-041-0028(4)

The applicants have failed to demonstrate that the proposed project would not violate Oregon’s water quality standard for temperature. Removing riparian vegetation will increase water temperature by decreasing shade in numerous streams identified as having salmon and steelhead spawning use, having core cold water habitat use, having salmon and trout rearing and migration use, or having migration corridor use. Additionally, the discharge of cooling water from LNG carriers has the potential to discharge water that is as much as 19.4 degrees Fahrenheit warmer than ambient water temperatures.[90] Under OAR 340-041-0028(3), the purpose of Oregon’s statewide numeric criteria for temperature is to “protect designated temperature-sensitive, beneficial uses, including specific salmonid life cycle stages in waters of the State.”

[90] Bradwood LNG Project. 2008 FEIS at 4-85.

OAR 340-041-0028(4) establishes the state's numeric criteria for temperature:

> (4) Biologically Based Numeric Criteria. Unless superseded by the natural conditions criteria described in section (8) of this rule, or by subsequently adopted site-specific criteria approved by EPA, the temperature criteria for State waters supporting salmonid fishes are as follows:
>
> > (a) The seven-day-average maximum temperature of a stream identified as having salmon and steelhead spawning use on subbasin maps and tables set out in OAR 340-041-0101 to 340-041-0340: Tables 101B, and 121B, and Figures 130B, 151B, 160B, 170B, 220B, 230B, 271B, 286B, 300B, 310B, 320B, and 340B, may not exceed 13.0 degrees Celsius (55.4 degrees Fahrenheit) at the times indicated on these maps and tables;
> >
> > (b) The seven-day-average maximum temperature of a stream identified as having core cold water habitat use on subbasin maps set out in OAR 340-041-101 to 340-041-340: Figures 130A, 151A, 160A, 170A, 180A, 201A, 220A, 230A, 271A, 286A, 300A, 310A, 320A, and 340A, may not exceed 16.0 degrees Celsius (60.8 degrees Fahrenheit);
> >
> > (c) The seven-day-average maximum temperature of a stream identified as having salmon and trout rearing and migration use on subbasin maps set out at OAR 340-041-0101 to 340-041-0340: Figures 130A, 151A, 160A, 170A, 220A, 230A, 271A, 286A, 300A, 310A, 320A, and 340A, may not exceed 18.0 degrees Celsius (64.4 degrees Fahrenheit);
> >
> > (d) The seven-day-average maximum temperature of a stream identified as having a migration corridor use on subbasin maps and tables OAR 340-041-0101 to 340-0410340: Tables 101B, and 121B, and Figures 151A, 170A, 300A, and 340A, may not exceed 20.0 degrees Celsius (68.0 degrees Fahrenheit). In addition, these water bodies must have coldwater refugia that are sufficiently distributed so as to allow salmon and steelhead migration without significant adverse effects from higher water temperatures elsewhere in the water body. Finally, the seasonal thermal pattern in Columbia and Snake Rivers must reflect the natural seasonal thermal pattern;

Further, under OAR 340-041-0028(7) Oceans and Bays:

> (7) Oceans and Bays. Except for the Columbia River above river mile 7, ocean and bay waters may not be warmed by more than 0.3 degrees Celsius (0.5 degrees Fahrenheit) above the natural condition unless a greater increase would not reasonably be expected to adversely affect fish or other aquatic life. Absent a discharge or human modification that would reasonably be expected to increase temperature, DEQ will presume that the ambient temperature of the ocean or bay is the same as its natural thermal condition.

Additionally, under OAR 340-041-0028(11) Protecting Cold Water:

> (a) Except as described in subsection (c) of this rule, waters of the State that have summer seven-day-average maximum ambient temperatures that are colder than the biologically based criteria in section (4) of this rule, may not be warmed by more than 0.3 degrees Celsius (0.5 degrees Fahrenheit) above the colder water ambient temperature. This provision applies to all sources taken together at the point of maximum impact where salmon, steelhead or bull trout are present.
>
> (b) A point source that discharges into or above salmon & steelhead spawning waters that are colder than the spawning criterion, may not cause the water temperature in the spawning reach where the physical habitat for spawning exists during the time spawning through emergence use occurs, to increase more than the following amounts after complete mixing of the effluent with the river:
>
> > (A) If the rolling 60 day average maximum ambient water temperature, between the dates of spawning use as designated under subsection (4)(a) of this rule, is 10 to 12.8 degrees Celsius, the allowable increase is 0.5 Celsius above the 60 day average; or
> > (B) If the rolling 60 day average maximum ambient water temperature, between the dates of spawning use as designated under subsection (4)(a) of this rule, is less than 10 degrees Celsius, the allowable increase is 1.0 Celsius above the 60 day average, unless the source provides analysis showing that a greater increase will not significantly impact the survival of salmon or steelhead eggs or the timing of salmon or steelhead fry emergence from the gravels in downstream spawning reach.
>
> (c) The cold water protection narrative criteria in subsection (a) do not apply if:
>
> > (A) There are no threatened or endangered salmonids currently inhabiting the water body;
> > (B) The water body has not been designated as critical habitat; and
> > (C) The colder water is not necessary to ensure that downstream temperatures achieve and maintain compliance with the applicable temperature criteria.

The proposed action would impact:

> 1) Streams identified as having salmon and steelhead spawning use (South Coast, Umpqua, and Rogue):
> 2) Streams identified as having core cold water habitat use (South Coast, Umpqua, and Rogue);
> 3) Streams identified as having salmon and trout rearing and migration use (South Coast and Umpqua); and
> 4) Streams identified as having migration corridor use (South Coast).

Specific waterbody impacts related to violations of numeric criteria for temperature will be discussed in more detail in subsequent sections.

Table 2. Fish Use Designations for Impacted Watersheds

Watershed	Salmon and steelhead spawning	Core coldwater habitat	Salmon and trout rearing and migration use	Migration corridor use	Redband or Lahontan cutthroat trout
South Coast[91,92]	X	X	X	X	
Umpqua[93,94]	X	X	X		
Rogue[95,96]	X	X			
Klamath[97]					X

Additionally, numerous stream segments that would be impacted by the proposed action already suffer high temperatures that violate State water quality standards. Many of these streams are on the State's list of water quality limited waters under Section 303(d) of the Clean Water Act. Therefore, any temperature increases in these streams attributable to the proposed action would result in exacerbations of existing violations of state water quality standards. The Ninth Circuit Court of Appeals made clear that new dischargers may not add a pollutant into a water body that is water quality limited.[98] The DEIS for the previous iteration of the project states, "removal of vegetation that once shaded the stream may cause local and temporary (daily) increases in temperature during the hot summer months. This may or may not exceed the TMDL on temperature-impaired streams…"[99] Even where waterways are not already impaired for

[91] See Subbasin maps and tables set out in OAR 340-041-0101 to 340-041-0340: Figure 300A: Fish Use Designations, South Coast Basin. https://www.oregon.gov/deq/Rulemaking%20Docs/figure300a.pdf

[92] See Subbasin maps and tables set out in OAR 340-041-0101 to 340-041-0340: Figure 300B Salmon and Steelhead Spawning Use Designations, South Coast Basin. https://www.oregon.gov/deq/Rulemaking%20Docs/figure300b.pdf.

[93] See Subbasin maps and tables set out in OAR 340-041-0101 to 340-041-0340: Figure 320A Fish Use Designations, Umpqua Basin. https://www.oregon.gov/deq/Rulemaking%20Docs/figure320a.pdf.

[94] See Subbasin maps and tables set out in OAR 340-041-0101 to 340-041-0340: Figure 320B Salmon and Steelhead Spawning Use Designations, Umpqua Basin. https://www.oregon.gov/deq/Rulemaking%20Docs/figure320b.pdf

[95] See Subbasin maps and tables set out in OAR 340-041-0101 to 340-041-0340: Figure 271A, Rogue Basin. https://www.oregon.gov/deq/Rulemaking%20Docs/figure271a.pdf.

[96] See Subbasin maps and tables set out in OAR 340-041-0101 to 340-041-0340: Figure 271B Salmon and Steelhead Spawning Use Designations, Rogue Basin. https://www.oregon.gov/deq/Rulemaking%20Docs/figure271b.pdf.

[97] See Subbasin maps and tables set out in OAR 340-041-0101 to 340-041-0340: Figure 180A, Klamath Basin. https://www.oregon.gov/deq/Rulemaking%20Docs/figure180a.pdf.

[98] See Friends of Pinto Creek v. United States Environmental Protection Agency, No. 05-70785 (9th Cir. Oct. 4, 2007).

[99] DEIS at 4-372.

temperature, stream temperature increases cause acute stress that has an immediate impact on salmon and other temperature-dependent fish. The applicants have failed to provide reasonable assurances that the proposed activities will not violate Oregon's numeric criteria for temperature, and therefore DEQ should deny certification.

B. Turbidity: OAR 340-041-0036

The applicants have failed to demonstrate that the proposed project would not violate Oregon's water quality standard for turbidity by causing a more than 10% increase in natural turbidity levels in Coos Bay and stream segments as a result of proposed stream crossings, increased soil erosion and landslide risk, dredging proposed for Coos Bay, and construction and use of roads.

Under OAR 340-041-0036 (Turbidity):

> No more than a ten percent cumulative increase in natural stream turbidities may be allowed, as measured relative to a control point immediately upstream of the turbidity causing activity. However, limited duration activities necessary to address an emergency or to accommodate essential dredging, construction or other legitimate activities and which cause the standard to be exceeded may be authorized provided all practicable turbidity control techniques have been applied and one of the following has been granted:
>
> > (1) Emergency activities: Approval coordinated by the Department with the Oregon Department of Fish and Wildlife under conditions they may prescribe to accommodate response to emergencies or to protect public health and welfare;
> >
> > (2) Dredging, Construction or other Legitimate Activities: Permit or certification authorized under terms of section 401 or 404 (Permits and Licenses, Federal Water Pollution Control Act) or OAR 14l-085-0100 et seq. (Removal and Fill Permits, Division of State Lands), with limitations and conditions governing the activity set forth in the permit or certificate.

Put more simply, a violation of Oregon's water quality standard for turbidity occurs when an activity causes a more than 10% increase in natural turbidity levels, unless the activity is necessary to accommodate essential dredging, construction or other legitimate activities AND all practicable turbidity control techniques have been applied. The activities proposed by the applicants are likely to result in a more than 10% increase in natural turbidity levels from pipeline stream crossings, potential HDD failure and frac-out, removal of riparian vegetation around stream crossings, increased landslide risk as a result of pipeline construction, dredging of Coos Bay, and construction and operation of roads, as discussed in subsections 1 - 6 below.

Further, the applicants have not demonstrated that "all practicable turbidity control techniques have been applied."[100]

1. Stream Crossing Impacts

[100] OAR 340-041-0036(2)

The applicants acknowledge the potential for violations of the turbidity standard associated with stream crossings. In addition, the analyses included in the Joint Permit Application materials are outdated and incomplete. As a result, it will be nearly impossible for DEQ to accurately determine the potential for turbidity violations, and therefore the applicant has provided no reasonable assurances that the standard will be met.

The applicants acknowledge in Pacific Connector Pipeline Resource Report 2: Water Use and Quality that "some turbidity will result during instream activities and when the water is diverted to the backfilled areas."[101] Further, the applicants state that under a 2017 report from GeoEngineers evaluating turbidity risk that:

> Turbidity generated during construction may exceed the Oregon water quality standard for short distances and short durations downstream from each crossing, either coinciding with construction across perennial waterbodies or in intermittent streams coincidental with autumn precipitation. Such exceedances are allowed as part of the narrative turbidity standard if recognized in a 401 Certification as long as every practicable means to control turbidity has been used.[102]

The applicants propose dry open-cut methods, including both flume and dam and pump methods, for the stream crossings where HDD or Direct Pipe technology is not proposed. HDD is proposed for Coos Bay, the Coos River, the Rogue River, and the Klamath River and Direct Pipe technology is proposed for the South Umpqua. In the Stream Crossing Risk Analysis 2017 report, GeoEngineers reviewed 173 crossings that will be trenched out of 330 total crossings.[103] However, as the latest materials from May 8, 2018 submitted to DEQ reveal and as identified in the public notice submitted by the Corps and DEQ, the applicants estimate that 485 waterways would be crossed. This indicates that additional stream crossings have been added and have not been evaluated for turbidity risk. Similarly, the Channel Migration and Scour Analysis 2017 report identified 10 Level 2 crossings that have a high potential for migration, avulsion, and/or scour and 44 Level 1 crossings with a moderate potential for migration, avulsion, and/or scour.[104] Channel migration and streambed scour not only increases sediment pollution and potential violations of the turbidity standard, but increases the potential for complete or partial exposure of the pipeline within the channel or floodplain.

Because the applicant has provided no reasonable assurances that the turbidity standard will be met, DEQ cannot certify that its stream crossing activities will comply with the state numerical standard for turbidity.

2. Horizontal Directional Drilling ("HDD") Crossing Impacts

[101] Pacific Connector Pipeline Resource Report 2: Water Use and Quality. P. 22. PCP A-B part 6 p. 233.
[102] Pacific Connector Pipeline Resource Report 2: Water Use and Quality. P. 22. PCP A-B part 6 p. 233.
[103] Stream Crossing Risk Analysis. 29 August 2017. Resource Report 2 Appendix O.2. P. 3. PCP A-B P. 505.
[104] Channel Migration and Scour Analysis. 29 August 2017. Resource Report 2. Appendix T.2. PCP A-B P. 253.

Specific to crossings where HDD technology is proposed, there is also an increased risk of frac-out where a large release of sediment, bentonite clay, and drilling chemicals may occur. Due to the potential risk of frac-out, DEQ cannot certify that the project will not violate the numeric criteria for turbidity.

HDD technology is proposed for Coos Bay, the Coos River, the Rogue River, and the Klamath River. Bentonite clay is highly detrimental to salmon spawning habitat. In addition, the prior DEIS states that drilling mud "can include additional additives specific to each drilling operation" and "Pacific Connector would approve any additive compounds" but does not disclose what these additives might include.[105] The State of Oregon has specifically requested a list of the additives used in drilling fluids and their potential effects on the aquatic environment.[106]

ODFW has described some of their concerns regarding frac-outs several times, first in 2008:

> Between August and October of 2003, MasTec North America Inc. was cited by DEQ for a series of water-quality violations which occurred between August and October of 2003. The violations were a result of frac-outs during the horizontal drilling work for the construction of a natural gas pipeline under the North Fork of the Coquille River in Coos County. If similar frac-out related turbidity discharge impacts were to occur at the proposed Rogue River crossing, they would likely impact last known significant spawning habitat for Spring-run Chinook salmon in the Rogue River Basin. This EIS should include analysis of the potential environmental impacts of a frac-out related turbidity discharge due to the proposed action and alternatives.[107]

And again in 2015:

> Pipeline crossings using HDD or other subsurface methodologies can be expected to cause frac-outs in Coos County geology and possibly throughout the project. The Applicant should be prepared for construction stoppages, cleanup, and remediation of damages caused by frac-outs.
>
> HDD and other subsurface boring or drilling crossing design locations should proactively address the risks associated with the potential for a "Frac out" or inadvertent loss of drilling fluid…[108]

The state re-iterated these comments yet again in its 2017 scoping comments to FERC.[109]

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[105] 2014 DEIS at 4-387.

[106] 2017 State of Oregon Scoping comments at 18.

[107] State of Oregon 2008 DEIS comments at 24.

[108] State of Oregon 2015 DEIS comments at 102.

[109] State of Oregon 2017 Scoping comments at 18.

In 2015, DEQ noted that the DEIS failed to disclose and analyze the likelihood and frequency of frac-out events.[110] The State re-iterated these concerns in its 2017 scoping comments.[111] Without this information in the current application, DEQ cannot evaluate whether the project is likely to degrade water quality below state standards.

In the JPA, the applicants explicitly state in the Drilling Fluid Contingency Plan for Horizontal Directional Drilling Operations September 2017 that:

> If corrective measures can be feasibly implemented, an assessment will be made to determine the most appropriate containment structure to be erected to minimize the volume of drilling fluid released into the waterbody. However, it will likely be impractical to erect effective containment structures to extract drilling fluid from rivers.[112]

In the region, many HDD attempts along the 12-inch Coos County pipeline failed, resulting in frac-outs and release of sediment and bentonite clay into the Coquille River.

Frac-out from HDD operation into the Coquille River.

More recently, the Rover LNG Pipeline in Ohio released 50,000 gallons of drilling fluid from HDD operation into a wetland in Richland County, Ohio in April 2017. A second spill as a result of HDD operation for the Rover Pipeline released an estimated 2 million gallons of drilling fluid into the Tuscarawas River. [113]

[110] State of Oregon 2015 DEIS comments at 43 & 102.
[111] Stat of Oregon 2017 Scoping comments at 15.
[112] Drilling Fluid Contingency Plan for Horizontal Directional Drilling Operations. Pacific Connector Pipeline. September 2017. P. 5. PCP A-B Part 7 P. 365.
[113] Notice of Violation Rover Pipeline, LLC. Ohio EPA. 17 April 2017. https://www.scribd.com/document/345647356/Notice-of-Violation-Rover-Pipeline-LLC.


Clean up efforts on the Rover Pipeline. Ohio EPA.

Specific concerns regarding HDD technology and contingency plans are discussed further in waterbody-specific comments in Section VII below. Due to the likely increase in turbidity as a result of all stream crossing methods, as well as the potential risk of frac-out, DEQ cannot certify that the project will not violate the numeric criteria for turbidity. The applicants have failed to provide reasonable assurances that the proposed activities will not violate the numeric turbidity standard.

3. Removing Streamside Vegetation

Pipeline clearing and severe soil disturbance from excavation result in impacts akin to road construction. Roads undergo elevated erosion for decades, even after obliteration. The soil compaction from pipeline construction activities is likely to persist for decades, and even longer in soil with high clay content. Soil compaction contributes to elevated surface erosion potential by degrading surface and subsurface hydrology in several ways: the ability of soils to absorb, store, and slowly release water and increases in surface runoff increases erosion and sediment delivery. The removal of ecologically important vegetation for pipeline construction and operation will also accelerate bank erosion and reduce bank stability at stream crossings, because trees and deep-rooted vegetation are critically important to bank stability. Decreased bank stability contributes to both stream sedimentation and channel widening.

Sediment generated from forest clearing (i.e. logging) for the pipeline on steep topography is well documented even with the sediment control measures. The 2014 DEIS 4-74 cites Robichaud et al. (2000) to assert that silt fences are 90-95 percent efficient in trapping sediment. Even if this trapping efficiency is true for post-construction during intense rainfall, this means that up to 10% of the sediment generated during intense rainfall will reach streams. Ten percent delivery of sediment from a large disturbance area is likely to be significant for spawning coho salmon in very small streams.

4. Landslides

There are many areas along the pipeline route that include steep terrain and unstable land. The risk of landslides in these areas is high, particularly when disturbed by construction and other activities related to the project. A single landslide event could result in significant deposits of sediment into stream reaches, impacting fish habitat and water quality. Response and control of continued sediment deposition could be difficult and time consuming in remote areas of the pipeline route. These risks are exacerbated by wildfires, which leave soils exposed and without the complex structure necessary to withstand landslide events. DEQ must consider the risk of landslides, based on current conditions and including wildfire events, as part of the activities of the project and their impacts on water quality. In order to assess potential landslide impacts as a result of the proposed activities, DEQ should require additional information from the applicants regarding current conditions and future conditions, particularly in light of wildfire events.

5. Dredging of Coos Bay

The resubmitted JPA includes the 2017 turbidity analysis, updated from the prior 2006 assessment. The analysis reports that turbidity plumes from dredging operations within NRIs will extend between 2,000 and 4,600 feet upstream and downstream beyond the dredging footprint,[114] with the largest plumes expected at NRI Dredge Area #4. Dredging at the south end of the Access Channel is likewise expected to generate a large plume "due to changes in hydrodynamic conditions."[115]

The JPA does not provide an adequate analysis of dredging method alternatives and a clear indication of why the proposed methods will minimize impacts. The JPA indicates that both mechanical and hydraulic dredging may be used. Hydraulic pipeline dredging has the potential to impact aquatic species through entrainment and impingement. Other dredge methods will result in significant turbidity in Coos Bay. Although some specially designed hydraulic cutterhead dredges may reach 0.5 percent spillage, the JPA fails to disclose what kind of cutterhead dredge will be used for dredging. This is vitally important information for the public and the agencies to assess the veracity of the applicant's statements, because without knowing what type of cutterhead dredge will be used, the public cannot begin to evaluate what kind of sedimentation dredging activities will cause. Furthermore, any modeling conducted on behalf of the Project is suspect until a spillage rate can be determined. All cutterhead dredges are not the same. Studies indicate that conventional cutterhead dredging "can liberate considerable amounts of turbidity and associated contaminants to overlying water."[116]

Selection of the proper cutterhead for the type of sediment, in addition to correct rotational speed and hydraulic suction, to obtain reduced suspension rates of sediments is rarely achieved.[117] Therefore, knowing not just the type of dredge used but also the anticipated methods of using the dredging equipment are important factors that must be disclosed for the public and agencies to properly analyze the effects of dredging at the proposed project. ODEQ must make specific findings on the types of dredging equipment. The JPA should present an analysis of alternative

[114] 2017 Turbidity Analysis at 18 (Table 5-1).
[115] Id.
[116] Cooke, 2005.
[117] Herbich, 2000.

methods in order for ODEQ to fully analyze the impacts dredging will have on turbidity and overall pollution.

6. Roads

The pipeline will also elevate sediment delivery to streams via the increased use of unpaved roads associated with the construction and operation of the pipeline. Studies have consistently documented that elevated use of unpaved roads vastly elevates sediment delivery from roads to streams, particularly near and at stream crossings, where it is impossible to eliminate the delivery of sediment from road runoff. Therefore, this pipeline impact will also elevate sediment delivery to streams.

The JPA relies on outdated information regarding temporary and permanent roads to be created or improved during construction of the pipeline. Pacific Connector has not provided the public with the most recent road information either in the JPA or by uploading it to the FERC website and noticing all parties, information that significantly changes the location and impacts of the project. The application is incomplete and in violation of the Guidelines without complete and accurate maps of roads that will be constructed or improved for the project. Road construction is likely to impact wetlands, streams, and rivers throughout the 229-mile path of the PCGP, significantly increasing the number of impacted waterbodies beyond the 485 listed in the May 22, 2018 USACE and DEQ public notice.

The JPA inadequately addresses the aquatic impacts from road use, road modifications (including but not limited to Key Watersheds), temporary extra work area (TEWA) construction and temporary and permanent access roads. In order to use heavy equipment on these roads, significant road modifications will be necessary, including blading/grading, widening, drainage improvements, and the construction of turnouts and roadside TEWAs. The JPA does not include detailed descriptions of what activities will be occurring that could impact wetlands, streams, and other waters. Rather, the JPA relies on blanket statements about the application of best management practices to avoid impacts to streams. By not specifying the location and nature of construction activities associated with all access roads, the JPA provides an inadequate description of the project. On steep slopes, particularly in rainy winter months, similar BMPs have failed in the past to prevent impacts to streams, creeks and ditches. Not only is road construction inadequately described, but the measures to prevent significant sedimentation and turbidity in streams are neither site-specific nor reliable.

The activities proposed by the applicants are likely to result in a more than 10% increase in natural turbidity levels from pipeline stream crossings, potential HDD failure and frac-out, removal of riparian vegetation around stream crossings, increased landslide risk as a result of pipeline construction, dredging of Coos Bay, and construction and operation of roads, in violation of Oregon’s water quality standard for turbidity.

7. Inadequate Modeling of Sediment Impacts

An analysis of modeling used by the applicants, specifically regarding the proposed activities within Coos Bay, is provided in Appendix 1. In summary, a review of the hydrodynamic and sediment modeling studies reveals that:

> All but one of the studies conducted by Moffat & Nichol rely on the results of two-dimensional model simulations that are inherently incapable of representing the dynamics required to assess impacts on water quality in Coos Bay… All studies were critically limited in temporal scope representing a small subset of the conditions exhibited in the system.[118]

Specifically regarding the potential for increased turbidity and sediment impacts from proposed activities related to construction and operation of the terminal (JCEP), the Turbidity Analysis Memo (M&N 2017c) uses a two-dimensional model with significant limitations. For example, the study conditions were not described, the applicants did not provide the number of sediment size classes, and initial or boundary conditions for the system were not reported. Additionally, model calibration and validation were also not included. DEQ should require the applicants to use best practices for the models upon which the assessment of impacts to water quality, including but not limited to turbidity, are based. DEQ should not rely upon inaccurate and narrow two-dimensional modeling provided by the applicant. Further details regarding the limitations and flaws of modeling provided by the applicant, specifically regarding the JCEP and impacts to Coos Bay, are provided in Appendix 1.

In conclusion, the applicants have failed to provide reasonable assurances that the project will not violate the numeric water quality standard for turbidity under OAR 340-041-0036. DEQ should fully evaluate the potential for violations of the turbidity standard, particularly regarding proposed stream crossings, increased soil erosion and landslide risk, dredging proposed for Coos Bay, and construction and use of roads.

C. Toxics: OAR 340-041-0033(2)

By disturbing and re-suspending contaminated material in and around waters of the state, the proposed activities will likely result in violations of Oregon's water quality standards for toxics. Toxic substances may not be introduced above natural background levels in concentrations that may be harmful to aquatic life.[119] Additionally, numeric criteria for toxics are established under OAR 340-041-0033(2):

> 2) Aquatic Life Numeric Criteria. Levels of toxic substances in waters of the state may not exceed the applicable aquatic life criteria as defined in Table 30 under OAR 340-041-8033.

As described in previous sections, there is known contamination at the terminal site. Both the Ingram Yard property and the location of the proposed South Dunes site on the former

[118] Lopez, Jesse. Assessment of hydrodynamic studies by Moffat & Nichol for the Jordan Cove Liquefied Natural Gas Terminal Project. 1 July 2018.
[119] OAR 340-041-0033(1)

Weyerhaeuser North Bend Containerboard Mill are listed in the DEQ's Environmental Cleanup Site Information (ECSI). During construction of the Industrial Wastewater Pipeline by Jordan Cove, the contractor discovered black soils in March 2015 on the site. The results of the sampling confirmed that the black soil contained contaminants, including but not limited to, mercury, arsenic, dioxins, and petroleum products.[120]

Additionally, there is a significant potential for toxic contaminant disturbance and release at the Klamath River crossing site. The proposed pipeline would cross the Klamath River, Hwy 97 and Southern Pacific Railroad, just after wrapping around a 660-acre industrial facility with known contamination. A frac-out during the HDD under the Klamath River would impact the riverbed immediately adjacent to the contaminated facility, exposing riverine sediment that could contain high levels of arsenic, chromium, copper, mercury, polycyclic aromatic hydrocarbons and/or petroleum from the Weyerhaeuser site or from other industrial facilities upstream. The 2014 DEIS and JPA do not include studies or test cores of potential contaminants at this HDD crossing. Further, the 2014 DEIS includes no discussion of what efforts, if any, would be made to analyze toxicity or properly dispose of fill removed through the HDD. The applicants have not provided reasonable assurances that the toxics standard will be met, particularly in areas of known contamination such as the terminal site and the Klamath River crossing.

D. Dissolved Oxygen: OAR 340-041-0016

OAR 340-041-0016 sets out the State's water quality standard for Dissolved Oxygen (DO). Dissolved oxygen is essential for maintaining aquatic life. Depletion of DO in waterways is a significant pollution problem, affecting fish and aquatic species in a variety of ways at different life stages and life processes. DO levels can be influenced by several factors including pH changes, temperature increases, groundwater inflow and hyporheic exchange, decaying material or algae blooms, and sedimentation.

The proposed action involves dredging that will decrease dissolved oxygen in Coos Bay because dredging increases the oxygen demand by disturbing sediments and releasing oxygen-demanding materials (decomposing organic materials contained within the sediments). As explained in the DEIS, "[r]esuspension of sediments during dredging operations can be a significant source of turbidity."[121]Although the 2014 DEIS apparently concludes that turbidity increases will not be significant, it admits that "the hydraulic cutterhead dredge to be used by Jordan Cove would generate TSS levels up to a maximum of 500 mg/l in the vicinity of the dredge" and "maintenance dredging may result in a turbidity plume for up to 1.9 miles from the dredging location at highest ebb or flood currents."[122]

Oregon DEQ previously expressed strong concerns about lowered dissolved oxygen levels that the proposed action would cause. In its 2008 DEIS comments, DEQ stated:

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[120] IWP Phase 1A & 1B Construction, Black Soil Summary Report, Jordan Cove Energy Project. 15 April 2015. Available online < http://www.deq.state.or.us/Webdocs/Controls/Output/PdfHandler.ashx?p=0522588a-0b10-4e07-9705-599d39399d8dpdf&s=Black%20Soil%20Summary%20Report.pdf >. P. 2.

[121] DEIS at 4-360.

[122] DEIS at 4-361.

> Total organic carbon, acid volatile sulfides, and nutrient sampling should be conducted to quantify the potential for adverse impact to oxygen levels caused by resuspension of sediments during dredging activities. Impacts should then be evaluated utilizing hydro dynamic modeling which can capture real time tidal conditions and simulate real time tidal exchanges during the period of the project.[123]

The current JPA fails to incorporate or analyze the sampling that was recommended by DEQ. The applicant's hydrodynamic modeling memo concludes that the project will cause changes in currents, but does not evaluate the impacts to oxygen levels caused by dredging or real time tidal exchanges during the project period.[124] As noted in its comments on the 2014 DEIS, "these data should be utilized to quantify the potential for adverse impact to oxygen levels caused by re-suspension of sediments during dredging activities."[125]

The Coalition urges DEQ to perform an independent sediment transport analysis consistent with actual conditions in the Coos Bay estuary. In particular, DEQ should consider that construction dredging lowers dissolved oxygen levels in estuarine waters not only by re-suspending sediment, but by deepening an estuarine channel where hypoxic conditions can occur due to reduced circulation in deeper waters. Once the dredging is completed, there also is the potential for reduced circulation in the deeper portions of the approach channel. In combination with other factors, reduced circulation has the potential to result in lower dissolved oxygen levels in the deeper waters. The applicants must prove that actual hydrodynamic conditions in Coos Bay would not result in a 0.1 mg/L decrease in dissolved oxygen levels caused by reduced circulation in the deeper channel.

Further, as discussed in more detail in the Assessment of hydrodynamic studies by Moffat & Nichol for the Jordan Cove Liquefied Natural Gas Terminal Project (*See* Appendix 1), the applicants rely on two-dimensional models that "are inherently incapable of representing the dynamics required to assess impacts on water quality in Coos Bay."[126] The applicants utilized a salinity study as a proxy for water quality variables including dissolved oxygen, pH, temperature, and turbidity. However, as described in Appendix 1, salinity is inherently different from these other variables. As stated by Jesse Lopez, doctoral student of Dr. Antonio Baptista with the Center for Coastal Margin Observation & Prediction in Appendix 1:

> Salinity varies primarily due to the mixing of dense ocean and fresh water in Coos Bay. In contrast, the other water quality variables vary not only due to mixing, but also due to other variable specific factors including biological processes, chemical reactions, solar conditions, and winds. As such, salinity is not an adequate proxy for water quality or

[123] State of Oregon 2008 DEIS comments at 63.

[124] Hydrodynamic Modeling Memorandum at 29.

[125] State of Oregon 2015 DEIS comments at 42.

[126] Lopez, Jesse. Assessment of hydrodynamic studies by Moffat & Nichol for the Jordan Cove Liquefied Natural Gas Terminal Project. 1 July 2018. P. 1.

> constituent attributes. A model study investigating these properties should explicitly include them.[127]

DEQ should require the applicants to utilize a more robust, three-dimensional model that adheres to best practices. In deciding whether to certify the proposed action as complying with Oregon's water quality standards, DEQ must consider that the applicant has failed to incorporate or analyze the sampling that was recommended by DEQ and that its modeling has been questioned by an outside expert. Because DEQ's 2008 strong concerns have not been addressed, the applicant has not provided DEQ with reasonable assurances that State dissolved oxygen standards will not be violated by the project.

E. Conclusion

In summary, the applicants have not provided reasonable assurances that the proposed activities would not violate Oregon's numeric water quality standards. Specifically, it is likely that the project will violate the water quality standard for turbidity by causing a more than 10% increase in natural turbidity levels in Coos Bay and stream segments impacted by pipeline installations. Construction of the pipeline and dredging of Coos Bay would likely violate Oregon's numeric criteria for dissolved oxygen. The proposed project would likely violate Oregon's toxics standard by disturbing and re-suspending contaminated material in and around waters of the state. As discussed in more detail in Appendix 1, the applicants also rely on narrow and inaccurate two-dimensional models to assess potential impacts, use salinity as a proxy for other water quality parameters (such as temperature) that are inherently different, and do not adhere to scientific best practices. Jordan Cove has failed to demonstrate that numeric water quality standards would not be violated and, therefore, the state of Oregon cannot authorize 401 certification for the project.

VI. DEQ Must Deny the Certification Because there is No Reasonable Assurance that Narrative Criteria Will Not be Violated

The proposed project would do significant damage to water quality in Oregon. Through construction, operation, and maintenance of the terminal, pipeline, and related facilities, the project would likely increase water temperatures in Coos Bay and numerous stream segments; decrease dissolved oxygen levels in Coos Bay; disturb and re-suspend contaminated sediments; and further degrade stream segments that are already water quality impaired for temperature, dissolved oxygen, pH, turbidity, mercury, and sedimentation. Because of these potential impacts and the failure of the applicants to demonstrate that the project will not result in violations of statewide narrative criteria, DEQ cannot certify that the project will comply with state water quality standards.

OAR 340-041-0007 establishes Oregon's statewide narrative criteria. The applicants have failed to demonstrate that the proposed activities will not result in violations of Oregon's narrative water quality criteria. As a result, DEQ cannot certify that these projects will comply with Oregon's narrative criteria. Specifically, the project is likely to result in violations of OAR 340-

[127] Lopez, Jesse. Assessment of hydrodynamic studies by Moffat & Nichol for the Jordan Cove Liquefied Natural Gas Terminal Project. 1 July 2018. P. 9.

041-0007(1), 340-041-0007(7), 340-041-0007(10), 340-041-0007(13), and 340-041-0011 as described in the following paragraphs.

A. OAR 340-041-0007(1) Highest and best practicable treatment and/or control of wastes, activities, and flows.

OAR 340-041-0007(1) requires that "the highest and best practicable treatment and/or control of wastes, activities, and flows must in every case be provided so as to maintain dissolved oxygen and overall water quality at the highest possible levels and water temperatures, coliform bacteria concentrations, dissolved chemical substances, toxic materials, radioactivity, turbidities, color, odor, and other deleterious factors at the lowest possible levels."

Before DEQ can certify that the proposal complies with the state's narrative criteria, it must first ensure that the applicant is using the "the highest and best practicable treatment and/or control" to meet this standard. It is wholly unclear from the application materials that Jordan Cove is complying with this standard.

Indeed, Jordan Cove's application leaves DEQ to guess what treatment and control technologies it proposes to employ to meet this standard. Instead of specifying which treatment and control technologies it would use, and how it determined that those were the highest and best, while being practicable, Jordan Cove only states that it "does not anticipate adverse impacts to water quality in general, or the water quality parameters . . ." and that "BMPs and conservation measures will be implemented throughout the Project to prevent impacts to water quality as a result of Project activities to the maximum extent practicable, and the best practicable treatment will be employed when discharging to jurisdictional waters."[128] Here, Jordan Cove has fallen well short of making the required showing.

First, Jordan Cove misses the mark by claiming this criteria will be satisfied because it "does not anticipate adverse impacts to water quality in general, or the water quality parameters . . .."[129] Whether or not there will be impacts to water quality, adverse or otherwise, is not the question posed by this criterion. Rather, to satisfy this criterion, as long as the discharge will have any impact to the waters of the state, the proponent must demonstrate that it would use the appropriate level of treatment and control to reduce that impact; and under this rule, it must use the "highest and best practicable treatment and/or control of wastes, activities, and flows." Jordan Cove impermissibly conflates compliance with other criteria, both narrative and numeric, with compliance with the requirements of OAR 340-041-0007(1). The requirement to use the highest and best practicable treatment and/or control technology is a separate standard. It must be given independent utility and the applicant must demonstrate compliance before the state may issue a 401 Certification.

Second, Jordan Cove has failed to demonstrate that it is in fact complying with this requirement. Jordan Cove first claims that "BMPs and conservation measures will be implemented throughout the Project to prevent impacts to water quality as a result of Project activities to the maximum

[128] JCEP 401 Water Quality Memo, at 14.
[129] Id.

extent practicable." This is not the standard. While there may be some overlap in some instances, it is not axiomatic that BMPs and conservation measures are treatment and control technologies. Moreover, there is a difference between implementing the highest and best practicable treatment and control technology and preventing impacts "to the maximum extent practicable." These distinctions are not inconsequential. In addition, Jordan Cove admits that it will not implement an important component of the requirement by failing to address the use of control technology, stating only that "the best practicable *treatment* will be employed *when discharging to jurisdictional waters*."[130] DEQ must ensure the applicant will comply with the criterion contained in OAR 340-041-0007(1), not a different, more lenient standard proposed by Jordan Cove.

Finally, as discussed above, it is the applicant's duty to provide the information necessary to allow DEQ (and the public) to determine whether the proposal will comply with water quality standards. Here, Jordan Cove must identify the potential discharges, catalogue the potential impacts waters of the state, identify the highest and best treatment and/or control of wastes, activities, and flows for each potential discharge, identify the factors it may use in determining whether the identified treatment or control technology is practicable, analyze the practicality of implementing those measures, under those factors for each discharge, and explain why any lesser measures are being implemented as a result of that analysis. Only with this information provided by the application can DEQ meet its legal obligation of reviewing and analyzing whether the applicant will comply with this criterion.

B. OAR 340-041-0007(7) Road construction and maintenance

DEQ must determine whether the construction of a road over several waterbodies will comply with the criteria that "[r]oad building and maintenance activities must be conducted in a manner so as to keep waste materials out of public waters and minimize erosion of cut banks, fills, and road surfaces."[131] As discussed previously in Section II, roads can disrupt hydrologic function and increase sediment delivery to streams. The applicants failed to provide complete and accurate maps of roads (existing, proposed, and expanded), specific characterizations of impacts to waterways that would be affected, details regarding types of roads and how they will be modified, or specific details on long-term maintenance proposed for roads in areas of steep terrain or wildfire risk. The JPA relies on generalized statements regarding the application of best management practices to avoid impacts to streams. DEQ should require the applicants provide site-specific details regarding construction and maintenance of roads to be able to determine whether the applicants are in compliance with this narrative standard. Without this information, the applicants have failed to provide reasonable assurances that this standard would not be violated, and therefore DEQ must not certify the application.

C. OAR 340-041-0007(10) Conditions deleterious to aquatic life

[130] Id. (emphasis added)
[131] OAR 340-041-0007(7).

In addition to the statewide narrative criteria under OAR 340-041-0007 discussed above, the proposed action would likely create many conditions that are deleterious to fish and/or other aquatic life, which is prohibited under OAR 340-041-0007(10). The construction and operation of the terminal and pipeline will cause immediate, severe, deleterious impacts to salmon, critical habitat, and essential fish habitat. The applicants have failed to provide reasonable assurances that the project will not result in conditions deleterious to aquatic life.

The aquatic life threatened by these deleterious conditions include, but are not limited to, Coho salmon (*Oncorhynchus kisutch*), green sturgeon (*Acipenser medirostris*) and eulachon (*Thaleichthys pacificus*). Dredging millions of cubic yards of material from the Coos Bay estuary in salmon habitat and expansive wetland fill creates a condition deleterious to fish due to permanent loss of habitat. In addition, NMFS and DEQ raised as a major concern that LNG tankers will impinge and entrain juvenile salmon and other fish when the tankers take on cooling water. Additional deleterious conditions include modification of river flow and hydrology of Coos Bay; wake stranding of juvenile fish, discharge of warm engine cooling water and ballast water; and long-term piling driving and dredging, and destruction of riparian and upland habitat along entire pipeline.

1. Threatened and Endangered Fish and Aquatic Species

The proposed action would likely jeopardize the continued existence of species listed as endangered or threatened under the Endangered Species Act("ESA"), or result in the likelihood of the destruction or adverse modification of critical habitat under the ESA. These impacts to threatened and endangered species include impacts to Coho salmon, green sturgeon and eulachon. Impacts to threatened and endangered species are described in further detail in the Coalition's Section 404 comments to the U.S. Army Corps of Engineers (*See* Appendix 3).

The proposed dredging is antithetical to salmon recovery and restoring estuarine habitats, as described in every local, state, and federal management plan. Quite simply, we cannot recover threatened salmon while simultaneously permitting this massive dredging project. A project of this size and scope are unacceptable in a location containing so much critical salmon habitat.

In summary, the proposed activities are likely to create conditions deleterious to the following threatened and endangered species:

a. Coho salmon – Southern Oregon/Northern California Coast ESU

The project area includes two major river systems known to support Southern Oregon/Northern California Coast ESU (SONCC) Coho: the Rogue River and the Klamath River. The 2014 DEIS acknowledged that the project is likely to adversely affect SONCC Coho due to numerous impacts to feeding, juvenile exposure to elevated turbidity levels, potential swim bladder rupture due to blasting activities, injury and mortality during fish salvage, and long term habitat deterioration due to reductions in large woody debris. Stream crossing construction and removal of riparian vegetation are the two primary contributors to these impacts. The 2014 DEIS also found that the project is likely to adversely impact critical habitat for SONCC Coho. The acknowledged impacts include loss of hatching and rearing habitat from substrate removal and

turbidity at stream crossings, degraded water quality as a result of turbidity caused by stream crossing construction, reduction in food sources, barriers to migration during stream crossing construction, and long term loss of native riparian vegetation.

The pipeline construction would disrupt fish passage by damming the streams during the trenching and pipeline placement. It is unclear how long fish passage would be interrupted. The mitigation of capturing and removing fish behind the dams is historically ineffective, and will likely result in the take of threatened salmonids. Additionally, for rivers where HDD is proposed, the potential sediment pollution and release of drilling fluid from a frac-out poses additional threats to threatened SONCC.

The pipeline crossings would also threaten SONCC recovery in the Klamath Basin. While the Upper Klamath Basin is currently unavailable to anadromous fish, resource agencies face a court mandate to restore fish passage to this area, whether or not PacifiCorps' mainstem dams on the Klamath are removed. Manual reintroduction of imperiled spring Chinook, and natural recolonization of imperiled steelhead and ESA threatened SONCC coho will occur in the Klamath Basin at an unknown time within the next ten years. DEQ should address the need to coordinate construction through the Upper Basin with habitat used by returning anadromous fish as described in Oregon Department of Fish and Wildlife's ("ODFW") Plan for the Reintroduction of Anadromous Fish in the Upper Klamath Basin (ODFW 2008) approved by the Oregon Fish and Wildlife Commission in July of 2008.

b. Coho salmon – Oregon Coast ESU

The project area includes designated critical habitat for the Federally Threatened Oregon Coast Coho: the South Umpqua Subbasin, Coquille Subbasin, and the Coos Subbasin (which includes the Coos Bay estuary). The 2014 DEIS acknowledged that the project is likely to adversely affect Oregon Coast Coho and its critical habitat.[132] Oregon Coast coho will be most impacted by the LNG terminal and associated facilities. Activities related to the marine terminal and north spit facilities, including discharge of maintenance dredging spoils causing turbidity plumes, LNG vessel wake strandings, engine cooling water intake entrainment, dredging of the access channel and construction of the pipeline across Coos Bay could all jeopardize the survival of this species. Moreover, cooling water intake is likely to entrain and impinge many food sources for Coho, such as juvenile stages of crab and shrimp, other zooplankton and eggs and fish larvae. Pipeline-related activities including stream crossing construction or failures of those operations, blasting, mortality during fish salvage operations, increased stream temperature as a result of riparian vegetation removal, and loss of large woody debris for habitat also have the potential to cause jeopardy to the Oregon Coast Coho and adversely affect its designated critical habitat.[133]

As noted by the Coos Watershed Association in 2008:

> This route crosses two significant streams (Kentuck Slough and Willanch Slough), both of which have high value for coho salmon. The area downstream from the proposed for

[132] DEIS at 4-644, 4645.
[133] DEIS at 4645.

> the crossing at Willanch Slough is presently being considered for a Wetland Mitigation Bank, while the area upstream has had significant and successful riparian restoration projects. The route down Lilienthal Creek (T.25S.;R.12W., Sections 20 and 30) will cross the entirety of the Brunschmid Wetland Reserve Project (WRP) that has a perpetual easement held by the U.S.D.A. Farm Services Agency. This site has had significant restoration work during 2008 and will be completed in the winter of 2009.[134]

Direct mortality from dredging in Coos Bay, fish entrainment from dredging, harm or take of listed salmonids, impact of cooling water on food sources, and cumulative impacts on aquatic life from dredging, terminal construction and operation, pipeline construction and operation, as well as the impact of the channel deepening dredging and maintenance dredging are all potential impacts to Oregon Coast Coho.

c. Green sturgeon

Both Northern and Southern population segments of the North American green sturgeon are known to occur within Coos Bay for feeding, growth, and thermal refuge. The DEIS admits that the project is likely to adversely affect green sturgeon as a result of bottom disturbance and reduction of benthic food supply from construction and maintenance dredging as well as dredged spoils disposal, and the potential for dredged spoils disposal to bury sub-adult green sturgeon.[135] Likewise, the project is likely to adversely affect critical habitat for the species. DEQ must look at the effect dredging and dredged spoils disposal would have on food sources for the threatened green sturgeon.

d. Eulachon

Pacific Eulachon (also known as candlefish) utilize Coos Bay for habitat, and may be present in the estuary during construction and operation of the project. Eulachon typically spend three to five years in saltwater before returning to freshwater to spawn in late winter through mid-spring. Eulachon are a small fish, rich in calories and important to marine and freshwater food webs, as well as commercial and recreational fisheries and indigenous people from Northern California to Alaska. DEQ should assess potential impacts to this species as a result of the dredge and fill operations proposed in ocean waters, Coos Bay, and coastal tributaries.

e. Lost River Sucker

The Lost River sucker is a federally listed endangered species that spawns in freshwater streams. The Pacific Connector Pipeline would cross the Lost River upstream of known spawning areas. The pipeline would also cross the Klamath River, another basin where Lost River suckers occur. The 2014 DEIS acknowledged that the project is likely to adversely affect Lost River sucker and

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[134] Coos Watershed Association comments for Jordan Cove FERC/EIS under Docket #CP07-441-000, available at, http://elibraryferc.gov/idmws/file list.asp?accession num=20081204-5103.
[135] DEIS at 4-647.

its designated critical habitat due to injury or death during fish salvage or release of drilling muds from frac-out during HDD of the Klamath River.[136]

f. Shortnose Sucker

The Shortnose sucker is another endangered fish species whose populations have been severely impacted by dam construction, water diversions, overfishing, water quality problems, loss of riparian vegetation, and agricultural practices. Shortnose sucker critical habitat includes the Klamath River within the project area. The 2014 DEIS stated that the project is likely to adversely affect shortnose suckers for the same reasons that the Lost River sucker is likely to be adversely affected.[137]

g. Spencer Creek Redband Trout

Upper Klamath Basin redband trout are considered by the state of Oregon to be a "vulnerable" species, and are currently classified as "at risk" by the Oregon Department of Fish and Wildlife. Due to extensive dam building and habitat modification Spencer Creek is now the only known spawning area and source of juvenile recruitment in the upper Klamath River basin upstream of J.C. Boyle dam and is a highly productive spawning ground for the Lower Klamath population of redband trout who migrate to the Keno Reach of the Klamath River. Migratory and resident redband trout are known to use the mainstem of Spencer Creek and are also thought to use smaller tributaries including ephemeral streams (USFS 1995). Redband spawning in Spencer Creek is thought to occur from February through June and biologists have recorded counting in excess of 300 redds in Spencer Creek (Jacobs and Stacevich 2007). Given that Spencer Creek's dominant land uses to date (grazing and logging) have degraded the watershed so heavily that it is listed for sediment and temperature pollution, additional industrial degradation plus undetermined long-term impacts to water quality and hydrology will only bring more harm to Spencer Creek's spawning and juvenile redband trout who require cold, clear streams for successful recruitment and maturation.

2. High Quality Benthic Communities

Benthic organisms that are vital to the aquatic ecology of Coos Bay reside in high-quality, intertidal land that would be permanently altered by the proposed action. According to the DEIS:

> Prey species that are important for local EFH fish species rely on many of the same habitat conditions as the EFH fish species. The food web components including phytoplankton, zooplankton, detritus, epiphyton, and SAV (e.g., eelgrass, macrophytic algae) are all important in supplying the habitat and food base for EFH species within Coos Bay. For example, submerged grasses or SAV are important habitat for small prey species of adult lingcod (in Appendix B-2 of PFMC 2008). Forage items that are habitat

[136] DEIS at 4-650.
[137] DEIS at 4-652.

> components for the managed species do depend to some extent on estuarine systems. Many species of groundfish and salmonids occupy inshore areas of the lower bay during juvenile stages (e.g., Chinook salmon, coho salmon, English sole) where they feed on estuarine-dependent prey, including shrimp, small fishes, and crabs. As they mature and move offshore, their diets in many cases change to include fish, although estuarine dependent species (e.g., shrimp, crabs) can still constitute an important dietary component.…
>
> The proposed dredging would also directly remove benthic organisms (e.g., worms, clams, starfish, and vegetation) from the dredged area. Mobile organisms such as crabs, many shrimp, and fish could move away from the region during the process, although some could be entrained during dredging so that direct mortally or injury could occur. Based on 1978 maps of shellfish (Gaumer et al. 1978), shrimp, softshell clams, bentnose clams, and cockles are located within the intertidal areas near the slip and within proposed dredge areas (west of the Roseburg Forest Products Company site). ODFW captured Dungeness crab and red rock crab in this area during 2005 seining efforts. These species could be injured or killed during dredging operations.[138]

Dredging in Coos Bay would also degrade the habitat of the native mud shrimp. The shrimp are especially sensitive to the kind of disturbance caused by installing the pipeline through the bay. Mud shrimp are already impacted by an introduced parasitic isopod called *Orthione griffenis*.[139] Mud shrimp are filter feeders and filter as much as 80 percent of bay water every day.[140] As a result, degrading habitat for mud shrimp could further trigger reduced water quality in Coos Bay.

3. Marine Mammals and Sea Turtles

The LNG terminal and the tankers would harm marine mammals due to habitat destruction and vessel strikes. Far more actual strikes occur than are reported. DEQ must assess the impact of these strikes to individuals and populations. DEQ must fully understand the tanker route to Jordan Cove and the tanker routes in the Exclusive Economic Zone.

4. Invasive Species

Jordan Cove would introduce or allow the proliferation of invasive species to Coos Bay, the terminal site, and along the pipeline route. First, ships from foreign ports transport exotic species on multiple surfaces and in water releases from ballast or engine cooling water. These species may harm the aquatic ecosystem. Second, the removal of vegetation, and long-term disturbances at the site would allow the introduction and proliferation of exotic species, which would harm native ecosystems and may require herbicides and pesticides to manage. Third, a large swath of

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[138] DEIS at 4.5-57 – 4.5-64.

[139] Jolene Guzman, Invader kills off mud shrimp (February, 2009), available at http://theworldlink.com/news/local/invader-kills-off-mud-shrimp/article_fa08c2d9-47e95cb6-83d36bad07ec3bdf.html. (Guzman, 2009).

[140] Eric Wagner, Mud Shrimp Meets Invasive Parasite, High Drama for Northwest Estuaries (2006), available at http://depts.washington.edu/nwst/issues/index.php?issueID=winter_2006&storyID=782. (Wagner, 2006).

clearing and ground disturbance across Oregon for the pipeline would create an ideal site for exotic species to thrive and harm native ecosystems, forestland, and farmland. These impacts would significantly affect fish, wildlife, and special aquatic sites. DEQ should fully analyze the direct, indirect, and cumulative impacts of exotic and invasive species from the construction and operation of the LNG terminal and related facilities and resulting conditions that are deleterious to aquatic life.

The proposed action would likely create many conditions that are deleterious to fish and/or other aquatic life, which is prohibited by OAR 340-041-0007(10). The applicants have failed to demonstrate that the proposed activities, the construction and operation of the terminal and pipeline, will not violate this narrative standard.

D. OAR 340-041-0007(13) Aesthetic conditions

Proposed activities, including but not limited to the removal of riparian vegetation that shades streams and construction of HDD crossings that may result in potential releases of drilling fluids through a frac-out will likely not comply with narrative criteria for aesthetic conditions. Under OAR 340-041-0007(13), "aesthetic conditions offensive to the human senses of sight, taste, smell, or touch may not be allowed." The applicants have failed to demonstrate that the proposed activities will not result in a violation of the aesthetic conditions narrative standard.

E. OAR 340-041-0011 Biocriteria Standard

OAR 340-041-0011 provides that "Waters of the State shall be of sufficient quality to support aquatic species without detrimental changes in the resident biological communities." DEQ's regulations define "without changes in the resident biological community" to mean "no loss of ecological integrity when compared to natural conditions at an appropriate reference site or region."[141] "Ecological integrity" means "the summation of chemical, physical and biological integrity capable of supporting and maintaining a balanced, integrated, adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of the natural habitat for the region."[142]

The Biocriteria standard is intended to assess total impact to a biological community, including multiple stressors and cumulative effects. In this way, the Biocriteria standards complement the other parameter-specific water quality standards. DEQ noted that the 2014 DEIS does not address whether the pipeline construction and operation activities will achieve compliance with the biocriteria standard.[143] As noted by ODFW, "despite modest changes to the project configuration . . . ODFW expects the impacts to fish and wildlife resources to remain largely the same."[144]

[141] OAR 340-041-0002.
[142] OAR 340-041-0002.
[143] State of Oregon 2015 DEIS comments at 60.
[144] State of Oregon Scoping comments at 11.

While the applicant suggests that all impacts would be temporary and localized, the significant re-shaping of Coos Bay and at least 485 waterway crossings from the pipeline, together with ongoing operations and related discharges, would result in permanent and/or chronic detrimental changes in the resident biological communities. The proposed activities would likely cause the following impacts that do not comply with the Biocriteria standard, including but not limited to:

- Permanent loss of vegetative shading at corridors for pipeline stream crossings construction and operation;
- Permanent loss of base flows from pipeline;
- Stream width increases from sedimentation related to pipeline construction and operation
- Soil, vegetation, bank destabilization and increased sedimentation from pipeline construction and implementation;
- Permanent degradation of riparian areas in pipeline corridors at stream crossings;
- Permanent loss of Large Wooded Debris areas from degradation of riparian areas and increased sediment transport in stream and river channels;
- Deforestation in pipeline corridors combined with wetlands damage and long term soil compaction and new road creation and use, plus decreases in hydrologic connectivity due to all of the above; and
- Increased, prolonged sedimentation of waterways.

The applicants have not demonstrated that the proposed activities will not violate the Biocriteria standard, and therefore DEQ must deny the 401 certification.

F. Conclusion

In conclusion, the applicants have not demonstrated that the proposed activities will not result in violations of Oregon's narrative water quality criteria. As a result, DEQ cannot certify that these projects will comply with Oregon's narrative criteria. Specifically, the applicants have failed to demonstrate that the project will not violate:

- OAR 340-041-0007(1) Highest and best practicable treatment and/or control of wastes, activities, and flows;
- OAR 340-041-0007(7) Road construction and maintenance;
- OAR 340-041-0007(10) Conditions deleterious to aquatic life;
- OAR 340-041-0007(13) Aesthetic conditions; and
- OAR 340-041-0011 Biocriteria Standard.

Without reasonable assurances that these narrative standards will not be violated, DEQ must deny the 401 certification.

VII. Waterbody-Specific Comments

A. Coos Bay

Coos Bay is the extensive estuary of the Coos River. Occupying approximately 20 square miles, the bay is the second largest drowned river valley on the Oregon Coast. Tidelands cover

approximately 4,569 acres including 2,738 acres of tidal marsh and 1,400 acres of eelgrass beds. Its primary features include the main, expansive bay, an extensive arch of water around a peninsula, and major arms—South Slough, near the entrance of the bay, Jordan Cove, at the heart of the bay, and Haynes Inlet, which extends northeasterly from the main body of the bay.

The natural environment of the Coos estuary supports a diversity of plants and animals. The extensive shallow tidal flats provide habitat for shellfish as well as feeding and spawning habitat for many native fish. The Coos Bay supports a variety of beneficial uses as designated in the South Coast Basin as a whole.[145] These include fish and aquatic life, wildlife & hunting, fishing, boating, water contact recreation, aesthetic quality, and commercial navigation & transportation. Coos Bay is central to Oregon's commercial fishing industry, whose economic contribution is equivalent to about 10,000 jobs. Economic contributions from commercial fishing go beyond harvesting and seafood-processing, and include visitors and tourism, boat building and gear manufacturing, safety, research and education.[146] Recreational fisheries, including shellfish harvest and crabbing, are also important resources in Coos Bay. Several of the most important shellfish beds are located in close proximity to the LNG transit route along the edge of the North Spit (western side of lower Coos Bay).

Both Coos Bay and the Coos River are water quality impaired for different pollutants, including but not limited to temperature, sedimentation, and toxics such as lead.

Table 3. 303(d) Listings for Streams Crossed by Pacific Connector Pipeline in the South Coast Basin – Coos Subbasin[147]

Waterbody Crossed by Pipeline	Dissolved Oxygen	Habitat Modification	Temperature	Biological Criteria	Sedimentation	Toxics (e.g. lead, nickel, tributylin)
Coos Bay					X	X
Coos River			X		X	

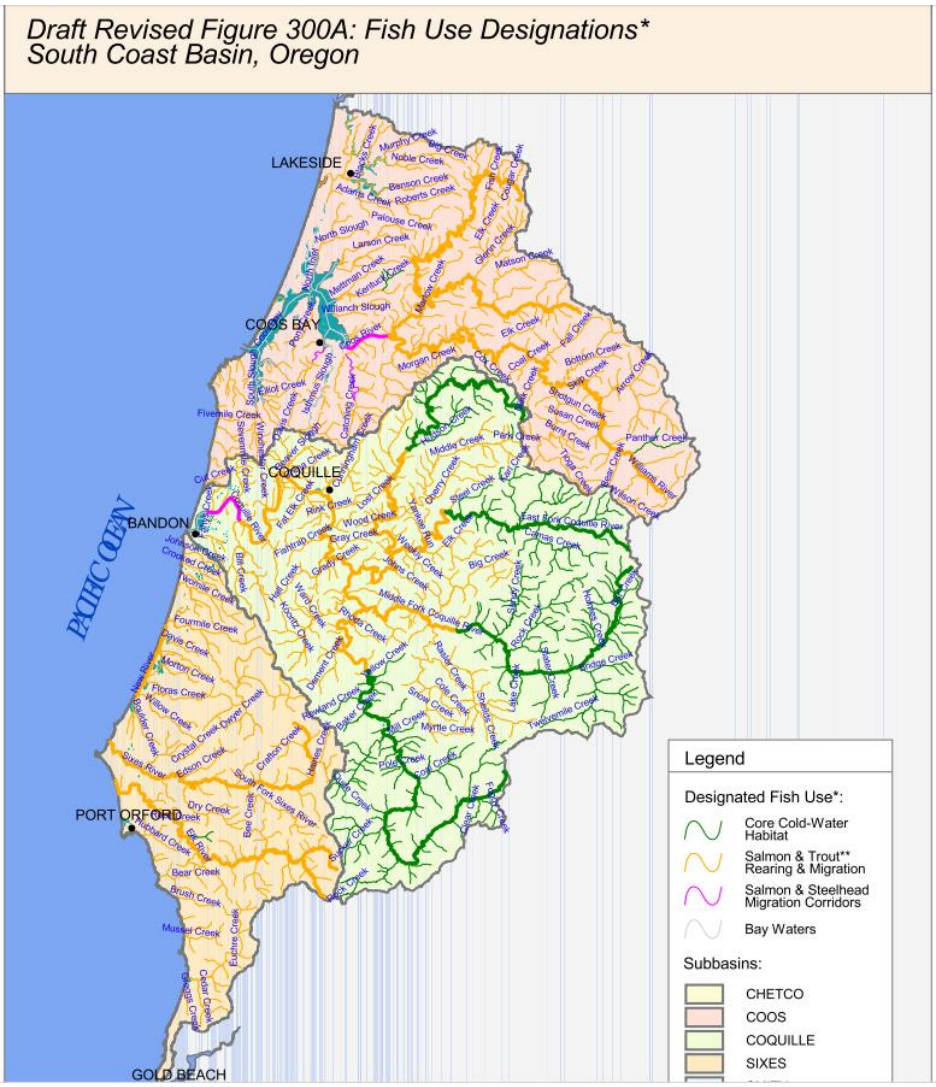
Coos Bay and the Coos River support salmonid species, including Oregon Coast coho (*Oncorhynchus kisutch*), winter steelhead (*Oncorhynchus mykiss irideus*), fall Chinook salmon (*Oncorhynchus tshawytscha*), and coastal cutthroat trout (*Oncorhynchus clarki clarki*).[148] Coos Bay and the Coos River support ESA-listed species, including but not limited to Oregon Coast coho and green sturgeon.

[145] *See* Table 300A (OAR 340-041-0300).

[146] *See* Oregon Commercial Fishing Industry Year 2016 Economic Activity Summary at 5 (April 2017).

[147] Oregon's 2012 Integrated Report Assessment Database and 303(d) list. Oregon DEQ. https://www.deq.state.or.us/wq/assessment/rpt2012/search.asp.

[148] Salmonids in the Lower Coos Watershed. Partnership for Coastal Watersheds. http://www.partnershipforcoastalwatersheds.org/salmonids-in-the-lower-coos-watershed/.



OAR 340-041-0101 to 340-041-0340: Figure 300A Fish Use Designations, South Coast Basin.

The applicant suggests that any reduction in water quality would be outweighed by the necessity of the proposed action pursuant to OAR 340-041-0004(9)(a)(B). To the contrary, the Department should conclude that the project would violate Oregon's Antidegradation Policy because the project would further degrade water quality in Coos Bay and the exceptions to the policy have not been met.

The purpose of the terminal is to provide natural gas to Asian markets.[149] A myriad of alternatives are available to accomplish this purpose. The primary flaw with the applicant's alternatives arguments is Jordan Cove/Pacific Connector's contention that the projects must be located in Southern Oregon to meet the project's needs. According to Oregon's Department of State Lands ("DSL"), the project has failed to demonstrate that the proposed terminal and pipeline are necessary in Oregon:

[149] Note that the applicant no longer suggests that any U.S. markets are intended to receive its products. *See* RR1 at 2.

> Per OAR 141-085-0029(3), "the Department must determine that the proposed removal fill activity will not be inconsistent with the protection, conservation and best use of the water resources of this state, and would not reasonably interfere with the paramount public policy of this state to preserve the use of its waters for navigation, fish and public recreation." If Oregon were not a target market, why would it need to come through this state and impact its waters, forests and agricultural lands?[150]

This comment is even more telling now that the project has been converted to an export facility, with no demonstrated intention of serving Oregon markets. Not only is the project not a demonstrated necessity for Oregon, but the JPA's approach to the siting of the Jordan Cove/Pacific Connector project unduly ruled out other gas supply alternatives by defining the purpose so narrowly as to prevent alternatives from meeting that purpose. *See* section 1.1 *supra*. As a result, other possible alternative locations have not been adequately analyzed to demonstrate that the proposed project location will have the least adverse impact on the aquatic ecosystem. The applicant has not met their burden to show less damaging alternatives are not practicable.

The purpose of the project does not serve Oregon's interest, and the environmental costs far outweigh the speculative benefits of the project. For example, the project will negatively impact Coos Bay's commercial and recreational fisheries. Important shellfish beds and crabbing areas will be impacted not only by proposed dredging, but also by operation of the LNG vessels and their "safety zones" that will require other vessels including those engaged in crabbing activities to vacate the waterway during transit times.

As discussed in Sections II-VI, the applicants have failed to demonstrate that the project will not violate state water quality standards. The proposed activities related to identified stream crossings in the Coos watershed will likely:

- Violate Oregon's anti-degradation policy by causing significant temperature increases in numerous stream segments, by causing significant decreases in dissolved oxygen levels, and by further degrading stream segments that are already water quality impaired for temperature, dissolved oxygen, pH, turbidity, and sedimentation;
- Violate Oregon's statewide narrative criteria by creating conditions deleterious to aquatic species, including but not limited to threatened and endangered species (e.g. Oregon Coast coho, green sturgeon);
- Violate Oregon's water quality standard for temperature by removing riparian vegetation that shades streams, causing stream heating along a minimum 75-foot wide construction easement;
- Violate Oregon's water quality standard for turbidity by causing a more than 10% increase in natural turbidity levels in stream segments impacted by pipeline installations;

[150] State of Oregon 2009 FEIS comments at 15, DSL section, May 29, 2009.

- Violate Oregon's toxics standard by disturbing and re-suspending contaminated material in and around waters of the state; and
- Impair beneficial uses to be protected in the South Coast Basin.

The applicants have failed to provide reasonable assurances that water quality standards will not be violated, and therefore DEQ must deny certification.

1. Pipeline Construction

a. Stream Crossings

All of the stream crossings proposed for the Coos Subbasin would use a dry open-cut method, except for the two HDD crossings proposed for Coos Bay and the HDD crossing proposed for the Coos River. In order for DEQ to effectively determine the direct, indirect, and cumulative impacts of these crossings, the applicants should provide a comprehensive environmental review for each stream crossing, particularly for those crossings identified as moderate or high risk. However, the JPA does not include such site-specific analysis. DEQ should consider the assessment of the New York Department of Environmental Conservation ("NYSDEC"), which denied 401 certification due to a LNG pipeline applicant's failure to provide site-specific analysis of each stream crossing.[151] In NYSDEC's assessment, the agency denied 401 certification for the Constitution Pipeline in part because:

> Without a site-specific analysis of the potential for vertical movement of each steam crossing to justify a burial depth, NYSDEC is unable to determine whether the depth of pipe is protective of State water quality standards and applicable State statutes and standards. In addition to impacts to water quality described above and without proper site-specific evaluations, future high flow events could expose the pipeline, resulting in risks to the health, safety, and welfare of the people of New York State. Pipe exposure would require more extensive stabilization measures and in stream disturbances resulting in addition degradation to environmental quality. We note that flooding conditions from extreme precipitation events are projected to increase on the operational span of the pipeline due to climate change.[152]

Without comprehensive environmental reviews of and detailed plans for stream crossings, particularly those identified as at a high or moderate risk of scour, channel migration, and/or avulsion, DEQ cannot certify that the project will comply with state water quality standards.

In addition to the potential for increased erosion, channel migration, avulsion, and/or scour as a result of pipeline crossings, many of the proposed crossings cut through waterbodies that are

[151] Joint Application: DEC Permit# 0-9999-00181/00024 Water Quality Certification/Notice of Denial. New York State Department of Environmental Conservation. 22 April 2016. P. 13. http://www.dec.ny.gov/docs/administration_pdf/constitutionwc42016.pdf.

[152] Joint Application: DEC Permit# 0-9999-00181/00024 Water Quality Certification/Notice of Denial. New York State Department of Environmental Conservation. 22 April 2016. P. 13. http://www.dec.ny.gov/docs/administration_pdf/constitutionwc42016.pdf.

already impaired for sedimentation. Channel modifications that increase sedimentation can decrease the depth and frequency of pools, which decreases the assimilative capacity for thermal loading of a stream.[153] Proposed activities to conduct dry open cut technology have the potential to increase sedimentation, modify habitat, decrease dissolved oxygen, and impair the aquatic habitat. As a result, DEQ cannot certify that the proposed activities will not result in violations of water quality standards.

b. Coos Bay HDD Crossings

The applicants propose to install the 36-inch pipeline across Coos Bay using two horizontal directional drills (HDD) of 5,200 and 9,000 feet each. This is a significant change from the prior proposal, in both alignment and construction method. The prior proposed route would have crossed through Haynes Inlet at the north of Coos Bay and away from the navigation channel, constructed using an open wet cut method, after rejecting the use of HDD for the Coos Bay crossing.

In evaluating geotechnical feasibility of using HDD for the Coos Bay crossing in 2006, the applicant's engineer described challenges for the crossing: "The length, diameter, and geometry of the crossing approach the limits of successfully completed HDD crossings…In our opinion, the geometric and mechanical requirements for this crossing reduce the potential for successfully completing the crossing." The applicant's engineer concluded, "[a] crossing of this magnitude would not be considered routine and the potential for failure would be substantial."[154] The HDD crossing of Haynes Inlet was determined "non-feasible" due to cumulative effects of the geotechnical conditions, construction capabilities, and workspace constraints.[155] *See* Appendix 2.

As part of that geotechnical evaluation, the engineers completed six borings to depths of up to 110 feet below existing ground surface elevation to review subsurface soil and groundwater conditions. One of those test bores, HIB-2, was described as follows:

> The soils encountered in boring HIB-2 consisted of approximately 28 feet of very loose to medium dense sand overlying dense to very dense sand to the bottom of the boring at 90 feet. After leaving the boring overnight, the drillers discovered the borehole collapsed with approximately 80 feet of drill rod in the hole. The drill rod had to be abandoned in-place. ***This suggests a potential unstable sand condition in the area of the design profile***."[156]

According to the attached figure in Appendix 2, the location of HIB-2 is similar to the current proposed HDD alignment at the Jordan Cove/South Dunes location.

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[153] "Chapter 2: Temperature." Rogue River Basin TMDL. Oregon DEQ. December 2008. P. 2-20.

[154] Geoengineers Memorandum to Lori Dalton, Williams Northwest Pipeline (Nov. 15, 2006).

[155] PCGP ltr (June 1, 2010).

[156] Geoengineers Memo at 1 (2006) (emphasis added).

The currently proposed pipeline alignment would require not one but two HDD crossings of Coos Bay, for a total of over 14,000 feet. The consultants who performed the HDD Feasibility Analysis provided with the JPA (Part 2, Section 17, p. 87) did not perform any new borings, but instead relied existing subsurface and site survey information.[157] The 2017 GeoEngineers Memo describes the prior boring efforts, but entirely omits the discussion of the collapsed hole, abandoned drill rod, and potentially unstable condition. Omitting all this, and without any new data, the GeoEngineers now conclude HDD is feasible.[158] The analysis contains numerous assumptions that are unsupported by data. These include potential scour and other impacts in the vicinity of the rail bridge footings and crossings under the active navigation channel.

HDD crossings, even when successful, have impacts in areas adjacent to waters where staging and construction areas occur. HDDs also require the disposal of materials extracted from the drill hole. HDD attempts frequently fail, causing drastic impacts to water quality and fish habitat. In recent history, many HDD attempts along the 12-inch Coos County pipeline failed, resulting in "frac-outs," situations in which large amounts of sediment and bentonite clay (used as a drilling lubricant) were released into streams. Bentonite clay and sediment released through frac-outs can disrupt fish spawning habitat, increase turbidity, and potentially introduce other contaminants to impacted waterways. In addition, the prior DEIS states that drilling mud "can include additional additives specific to each drilling operation" and "Pacific Connector would approve any additive compounds" but does not disclose what these additives might include.[159] The State of Oregon has specifically requested a list of the additives used in drilling fluids and their potential effects on the aquatic environment.[160] The state re-iterated these comments yet again in its 2017 scoping comments to FERC.[161]

In 2015, DEQ noted that the DEIS fails to disclose and analyze the likelihood and frequency of frac-out events.[162] The State re-iterated these concerns in its 2017 scoping comments.[163] Without this information, DEQ cannot evaluate whether the project is likely to degrade water quality below state standards.

In the 2014 DEIS, FERC noted the high liquefaction and/or lateral spreading potential at Coos Bay:

> Pacific Connector would conduct numerical modeling for these sites prior to construction to estimate the magnitude of liquefaction-induced settlement and lateral spreading that would be expected during the design earthquake event. If the numerical modeling indicates that liquefaction settlement and/or lateral spreading would result in excessive pipe stress conditions, as analyzed by Pacific Connector, further mitigation design would be needed. Mitigation options may

[157] GeoEngineers Memorandum, Coos Bay West HDD Crossing (Sept. 14, 2017) at 2.
[158] *Id.* at
[159] 2014 DEIS at 4-387.
[160] 2017 State of Oregon Scoping comments at 18.
[161] State of Oregon 2017 Scoping comments at 18.
[162] State of Oregon 2015 DEIS comments at 43 & 102.
[163] State of Oregon 2017 Scoping comments at 15.

> include deeper burial below the liquefiable soils, thicker pipe and/or weighting the pipe with a concrete coating, if necessary. The primary mitigation measure being considered to address liquefaction risks is ground improvement. Potential ground improvement measures include vibroflotation, stone columns, compaction grouting, and deep dynamic compaction. Primary geotechnical factors involved in selecting the type of mitigation include: the depth of liquefiable soils, fines content, the potential for obstructions (i.e., buried logs), and the density of overburden soils over the liquefiable soils.
>
> Because the crossing of Coos Bay (Hayes Inlet) would have the greatest potential along the proposed route for liquefaction and lateral spreading in the event of an earthquake, Pacific Connector had a geotechnical consultant perform a site-specific analysis (GeoEngineers 2007a).
>
> Pacific Connector also identified other measures that would reduce potential impacts on its pipeline in Haynes Inlet from liquefaction and lateral spreading. The route within the bay would keep the pipeline away from the navigation channel slope. In addition, Pacific Connector would bury the pipeline 5 feet below the estuary bottom within Haynes Inlet and use thicker wall pipe and concrete coating.[164]

The prior route is noted as reducing risk because "The route within the bay would keep the pipeline away from the navigation channel slope." As noted above, the current route proposal would cross the navigation channel in not one but two places.

In its 2017 scoping comments, DOGAMI noted that "geologic hazard evaluations and proper mitigation of hazards are needed."[165] The State requested "a thorough geologic characterization of the project area and surrounding area and a comprehensive site-specific geologic hazard and geotechnical assessment . . . at the proposed facility and along the pipeline with supporting evidence to explain that the facility can be appropriately constructed and operated throughout its existence."[166] Without this information, DEQ cannot evaluate the impacts of the proposed project on water quality and special aquatic sites, and the applicant has not demonstrated that the project will comply with water quality standards.

i. Erosion and Scour

The applicant continues to rely on the geomorphic and scour report produced in 2007 (see data request response filed in the FERC docket on June 5, 2018 "Response to Staff Environmental Information Request Dated May 16, 2018." That report was based on an entirely different pipeline alignment proposed at that time. According to the report, the areas where the pipeline is now proposed are subject to risk of scour:

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[164] 2014 *DEIS at 4-264 to 4-265*.

[165] State of Oregon 2017 Scoping comments at 8.

[166] Id.

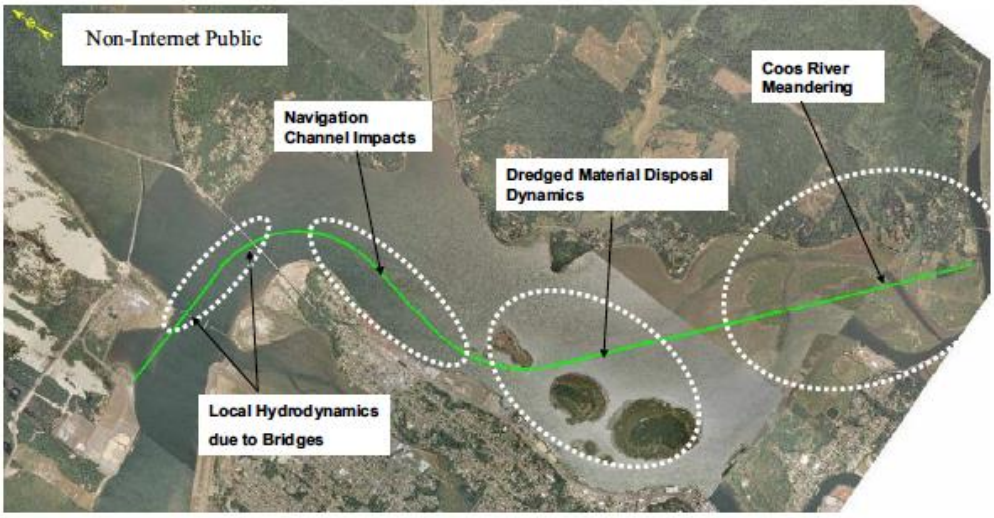

Figure 3-1. Areas in Upper Coos Bay Area with Potential for Morphological Changes and that Could Result in Bottom Scour

Excerpted from *Technical Report: Pacific Connector Gas Pipeline Project – Coos Bay Crossing Scour Evaluation*, 30 (Aug. 24, 2007).

The current proposed pipeline route would cross under the railroad bridge, navigation channel, and Coos River meandering areas of potential scour. The applicant fails to address these challenges or explain how the project will avoid adverse impacts from erosion and scour and the associated degradation of water quality.

c. Coos River HDD Crossing

In addition to the two HDD crossings proposed for Coos Bay, the applicants propose to use HDD technology to cross the Coos River at MP 11.13R. Due to the soft silts and clays located at the exit and entry points proposed for the Coos River crossing, the 2017 GeoEngineers report states:

> The hydraulic fracture and drilling fluid surface release model indicates the risk of drilling fluid surface release is high along the first approximately 250 feet of the drill path. The risk becomes low from the northern edge of the Coos River Highway and across Coos River to approximate station 17+00. The risk becomes high within approximately 150 feet of the exit point.[167]

Further, the 2017 GeoEngineers report in Table 4 establishes relative risk in terms of factor of safety from less than 1 (Very High Risk) to greater than 2 (Low Risk). The report cautions that the factors of safety "drop significantly," in other words demonstrate an increased risk, when the HDD passes through certain soil types:

[167] Coos River HDD Pacific Connector Gas Pipeline Project. GeoEngineers. 1 September 2017. P. ES-1. PCP Part 2 Appendix B. P. 1471.

> The factors of safety, however, drop significantly when the HDD passes through the fat clay, organic silt and clay, and shallow sandy silt units as shown in Figure 6 between Stations 4+00 (Entry) and 7+00 and 17+00 and 20+00 (Exit). Figure 6 also shows the factors of safety against hydraulic fracture generally decrease as the HDD progresses towards the exit point as the required drilling fluid pressure increases with length.[168]

The 2017 GeoEngineers report describes how HDD alignment through fat clay soils is "typically more challenging than in other non-cohesive soils" and the potential for hydraulic fracture and drilling fluid surface release increases dramatically.[169] The report further concludes that:

> It is our opinion that there is a relatively high risk of hydraulic fracture and drilling fluid surface releases along the first 500 feet and last 300 feet of the HDD, respectively.[170]

Additionally, the applicants do not provide adequate information regarding impacts to groundwater as a result of HDD. The September 2017 GeoEngineers report states:

> During our borings, we were not able to measure groundwater levels due to the presence of drilling fluid. However, based on the observed relative moisture content of the samples, and the locations and elevations of the borings relative to the Coos River, we estimate that groundwater was at or near the ground surface at the time of drilling. We anticipate that groundwater levels will fluctuate with precipitation, site utilization and other factors. During heavy prolonged precipitation, and probably during most of the winter months, we expect that groundwater will be near or at the surface of the site.[171]

The applicants provide very limited details regarding how potential sediment pollution as a result of developing the temporary work areas and other construction activities associated with the HDD crossing will be minimized:

> To reduce the potential for migration of sediment off site and into adjacent receiving waters during HDD operations, we recommend that state and local regulations be followed during and after construction operations. Proper BMP should be implemented in accordance with the PCGP Project's Erosion Control and Revegetation Plan (ECRP).[172]

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[168] Coos River HDD Pacific Connector Gas Pipeline Project. GeoEngineers. 1 September 2017. P. 9. PCP Part 2 Appendix B. P. 1480.
[169] Coos River HDD Pacific Connector Gas Pipeline Project. GeoEngineers. 1 September 2017. P. 13. PCP Part 2 Appendix B. P. 1484.
[170] Coos River HDD Pacific Connector Gas Pipeline Project. GeoEngineers. 1 September 2017. P. 13. PCP Part 2 Appendix B. P. 1484.
[171] Coos River HDD Pacific Connector Gas Pipeline Project. GeoEngineers. 1 September 2017. P. 5. PCP Part 2 Appendix B. P. 1476.
[172] Coos River HDD Pacific Connector Gas Pipeline Project. GeoEngineers. 1 September 2017. P. 18. PCP Part 2 Appendix B. P. 1489.

DEQ should require additional information regarding the potential for a frac-out and BMPs to address sediment pollution from the applicants. Without this information, DEQ cannot certify that the proposed activities will not violate state water quality standards.

d. Removal of Riparian Vegetation

Construction of the pipeline would require removal of riparian vegetation across a wide construction easement, which would increase stream temperatures. Removal of riparian vegetation increases stream temperature by decreasing shade, which is particularly problematic for numerous streams within the Coos Subbasin that have salmon and steelhead spawning use, core cold water habitat use, salmon and trout rearing and migration use, or migration corridor use. Without specific information about baseline temperatures in streams where riparian vegetation would be removed, it is impossible to review potential violations of numerical temperature limits specified in OAR 340-041-0028(4).

Removing riparian vegetation, as proposed by the applicants, will likely impair water quality in violation of the Clean Water Act. Specifically, removal of riparian vegetation will both reduce shade and increase sedimentation. Increased sedimentation can impact interactions between surface water and groundwater by decreasing porosity in the hyporheic zone, resulting in reduced cool water inputs to streams. [173] Further, as stream temperature increases, dissolved oxygen levels decrease. Removing riparian vegetation also decreases Large Woody Debris that is an important component of stream morphology and habitat for aquatic species. Both the Coos River and Coos Bay are already impaired for temperature, sedimentation, and dissolved oxygen.

The Coos Subbasin supports habitat for threatened and endangered species listed under the ESA that are sensitive to temperature, sedimentation, and dissolved oxygen levels.

Based on the existing water quality impairments for temperature, sedimentation, and dissolved oxygen in the Coos Subbasin and the presence of ESA-listed species specifically threatened by increased temperature, decreased dissolved oxygen, and increased sedimentation as a result of removing riparian vegetation, DEQ cannot certify that the proposed activities will not violate water quality standards.

e. Roads

The applicants propose construction of temporary access roads (TARs) at 10 locations impacting 3.8 acres and construction of 15 permanent access roads (PARs) impacting 2.16 acres.[174] As the project continues to change throughout the public process, impacts to streams may be significantly altered as well. The applicants do not provide site-specific details to minimize impacts of temporary or permanent road construction to waterways beyond general descriptions of BMPs. Not only is road construction inadequately described, but the measures to prevent significant sedimentation and turbidity in streams are neither site-specific nor reliable. DEQ

[173] "Chapter 2: Temperature." Rogue River Basin TMDL. Oregon DEQ. December 2008. P. 2-20.

[174] Pacific Connector Pipeline Resource Report 1 General Project Description. p. 31, PCP Part 2 Appendix B 8 May 2018. p. 329.

cannot rely upon future analysis to determine now how construction of permanent or temporary roads will impact wetlands, streams, and rivers.

f. Hydrostatic Testing

The applicants propose to use the Coos Bay-North Bend Water Board as the source of hydrostatic testing water within the Coos Subbasin.[175] Water withdrawals from the Coos Subbasin for hydrostatic testing and other related uses should be carefully reviewed by DEQ to evaluate the direct, indirect, and cumulative impacts on water quality. The applicants provide minimal information regarding the source and discharge of hydrostatic testing water. Not only would these water withdrawal impact existing water rights, but reducing flows can also impair water quality, in violation of water quality standards.[176]

2. Terminal Construction

The construction of the terminal would degrade water quality in Coos Bay. The proposed project would violate Oregon's antidegradation policy by causing significant decreases in dissolved oxygen levels in Coos Bay. The proposed project would violate Oregon's statewide narrative criteria by creating conditions deleterious to aquatic species, including Coho salmon (*Oncorhynchus kisutch*), green sturgeon (*Acipenser medirostris*) and eulachon (*Thaleichthys pacificus*); by permanently converting 6.8 acres of highly productive intertidal habitat to low productivity deep-water habitat; by failing to adequately mitigate for the permanent loss of freshwater and estuarine wetlands including eelgrass beds, and by permanently removing coastal riparian vegetation along Henderson Marsh and Coos Bay that is an essential component of the food chain for fish and aquatic life, among other impacts.

The proposed project would also violate Oregon's water quality standard for temperature by removing riparian vegetation that shades streams, causing stream heating along a minimum 95-foot wide construction easement. The proposed project would violate Oregon's water quality standard for turbidity by causing a more than 10% increase in natural turbidity levels in Coos Bay and stream segments impacted by pipeline installations.

a. Extent and Impact of Channel Deepening Projects

Dredging has the potential to change the hydrodynamics of Coos Bay in the long-term. The application fails to evaluate the project in conjunction with other proposed dredging in Coos Bay. For instance, the Corps is considering a massive channel-deepening project for Coos Bay, and the State of Oregon commented that some level of channel deepening will be required to accommodate LNG tankers, particularly if the LNG terminal is allowed to use larger tankers in the future. The State of Oregon commented on the DEIS to FERC in 2008:

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[175] Pacific Connector Pipeline Resource Report 1 General Project Description. 8 May 2018. P. 58. PCP Part 2 Appendix B from DEQ 8 May 2018. P. 352.

[176] PUD No. 1 of Jefferson Cty v. Washington Dept. of Ecology. 511 U.S. 700 (1994). https://www.law.cornell.edu/supct/html/92-1911.ZO.html.

> Deepening of the existing federal navigation channel will be required to accommodate the vessels with capacities proposed to be received at the terminal. The significant volumes of material to be removed, the geomorphic adjustments to the bay and its tributaries precipitated by deepening the channel, and all the potential impacts to water quality and beneficial uses must be included in the analysis of dredging for this proposal, particularly with regard to projected ongoing maintenance dredging.[177]

Similarly, Oregon Department of Fish and Wildlife ("ODFW") noted that these issues were not adequately resolved in the 2009 FEIS:

> In the FEIS, [Jordan Cove is] only considering the dredging at the slip and access channel into the slip as part of this project. ODFW continues to have concern over the potential ecological effects of future dredging (down to -51 feet mean lower low water and channel widening from 300 to 600 feet, plus widening the jetty opening) that is proposed to occur to further use the Port's facility ("Oregon Gateway Terminal"), even though the JCEP tenancy is not portrayed as associated with that level of dredging. Changes to salinity, ocean water exchange, water temperatures, flood/ebb rates, etc. may be expected to occur with additional deepening of the channel. Predictive modeling should be conducted to ascertain the potential impacts to the estuarine ecology from the anticipated >10 feet of additional depth from the current situation.[178]

In its 2017 scoping comments, the State again raised concerns about the impacts of the channel modification, stating "ODFW believes the Pilots' Channel Modification Project is a connected action to the JCEP/PCGP project."[179]

The current JPA again fails to address issues related to channel deepening in Coos Bay. Without remedying addressing these deficiencies in the JPA, the 401 certification cannot be issued. DEQ must evaluate related and reasonably foreseeable channel deepening projects that might contribute to the impacts of the Jordan Cove project.

<u>i. Dredging Impacts in Coos Bay – Turbidity (OAR 340-041-0036)</u>

The resubmitted JPA includes the 2017 turbidity analysis, updated from the prior 2006 assessment. The analysis reports that turbidity plumes from dredging operations within NRIs will extend between 2,000 and 4,600 feet upstream and downstream beyond the dredging footprint,[180] with the largest plumes expected at NRI Dredge Area #4. Dredging at the south end of the Access Channel is likewise expected to generate a large plume "due to changes in hydrodynamic conditions."[181]

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[177] State of Oregon DEIS comments at 50, Dec. 4, 2008.
[178] State of Oregon FEIS comments at 37, ODFW section, May 29, 2009.
[179] State of Oregon 2017 scoping comments at 15.
[180] 2017 Turbidity Analysis at 18 (Table 5-1).
[181] Id.

The JPA does not provide an adequate analysis of dredging method alternatives and a clear indication of why the proposed methods will minimize impacts. The JPA indicates that both mechanical and hydraulic dredging may be used. Hydraulic pipeline dredging has the potential to impact aquatic species through entrainment and impingement. Other dredge methods will result in significant turbidity in Coos Bay. Although some specially designed hydraulic cutterhead dredges may reach 0.5 percent spillage, the JPA fails to disclose what kind of cutterhead dredge will be used for dredging. This is vitally important information for the public and the agencies to assess the veracity of the applicant's statements, because without knowing what type of cutterhead dredge will be used, the public cannot begin to evaluate what kind of sedimentation dredging activities will cause. Furthermore, any modeling conducted on behalf of the Project is suspect until a spillage rate can be determined. All cutterhead dredges are not the same. Studies indicate that conventional cutterhead dredging "can liberate considerable amounts of turbidity and associated contaminants to overlying water."[182]

ii. Dredging Impacts in Coos Bay – Dissolved Oxygen (OAR 340-041-0016)

OAR 340-041-0016 sets out the State's water quality standard for Dissolved Oxygen (DO). Dissolved oxygen is essential for maintaining aquatic life. Depletion of DO in waterways is a significant pollution problem, affecting fish and aquatic species in a variety of ways at different life stages and life processes. DO levels can be influenced by several factors including pH changes, temperature increases, groundwater inflow and hyporheic exchange, decaying material or algae blooms, and sedimentation.

The proposed action involves dredging that will decrease dissolved oxygen in Coos Bay because dredging increases the oxygen demand by disturbing sediments and releasing oxygen-demanding materials (decomposing organic materials contained within the sediments). As explained in the 2014 DEIS, "[r]esuspension of sediments during dredging operations can be a significant source of turbidity."[183] The applicant previously admitted that "the hydraulic cutterhead dredge to be used by Jordan Cove would generate TSS levels up to a maximum of 500 mg/l in the vicinity of the dredge" and "maintenance dredging may result in a turbidity plume for up to 1.9 miles from the dredging location at highest ebb or flood currents."[184] The applicants must prove that actual hydrodynamic conditions in Coos Bay would not result in a 0.1 mg/L decrease in dissolved oxygen levels caused by reduced circulation in the deeper channel.

b. Rock Dredging and Blasting Impacts in Coos Bay

The applicant proposes to modify the navigation channel through a series of "navigation reliability improvements" (NRIs) that include widening and deepening the channel at four points. According to the JPA, the total volume of material to be hydraulically dredged from these areas

[182] Cooke, 2005.
[183] 2014 DEIS at 4-360.
[184] 2014 DEIS at 4-361.

will be approximately 590,000 cy, and will be disposed of in upland confined sites at APCO Site 1 and APCO Site 2. The applicant proposes no mitigation at all for this dredging activity.[185] The JPA documents indicate the presence of rock at Dredge Areas #1 and #2. Table 3-2 of the Dredged Material Management Plan ("DMMP") filed with the JPA states that in these two areas an estimated total volume of more than 505,000 cy of rock will be removed:

Table 3-2: Summary of Navigation Reliability Improvements Material Characterization (GRI 2011, 2016)

Dredging Location	Sand Volume (CY)	Rock Volume (CY)	Total Volume (CY)	Notes	Properties
1	4,300	345,900	350,200	Sand overlying soft sandstone within one to three feet of the upper sand layer at the mudline. Dredging of up to twenty feet of sandstone will be required.	Rock 633 to 1,200 psi UCS
2	24,600	159,400	18,400	Sand overlying Soft Siltstone / Sandstone. Dredging of up to twelve feet of siltstone/sandstone will be required.	Rock 633 to 1,120 psi UCS

The DMMP does not explain how this quantity of rock will be removed, other than to state that, "mechanical dredge might need to chisel the harder rock if the clamshell bucket is not heavy enough to break out the rock."[186] The applicant notes that hydraulic dredging is not appropriate for rock removal: "Hydraulic dredging is most efficient when working with fine materials and sands since they are easily held in suspension," yet suggests that at Dredging Areas #1 and #2 a "27-30 inch size hydraulic dredge (depending on available equipment on the West coast) is assumed to allow for sufficient cutter-head power for cutting into the rock."[187]

More importantly, the application fails to explain how the dredging will remove harder rock in the vicinity of Guano Rock. Specifically, the DMMP states:

> "The rock near Guano Rock is relatively hard, but the extent of this harder rock is limited and *largely* outside of the footprint of the navigation reliability improvements."[188]

[185] JPA Attachment 1.A at 12-13.
[186] DMMP at 30.
[187] *Id*. at 31.
[188] *Id*. at 40 (emphasis added).

This indicates that the harder rock is at least partially within the footprint of the NRIs. Yet nothing in the application explains how this harder rock will be removed, whether through blasting or other methods. Blasting can have significant impacts on marine organisms from plants to fish to marine mammals, and would need to be thoroughly evaluated, including evaluation of alternatives and mitigation, before the Corps or the State could approve this proposal.

Similarly, the JPA fails to explain how rock discovered in Borehole #B15 within Dredge Area #3 would be removed. The DMMP acknowledges that the borehole indicates rock within the dredge depth at Dredge Area #3, but states that the material is primarily sand.[189] Even if the material is primarily sand, the applicant must explain how the rock would be removed and evaluate those impacts and alternatives.

c. Impacts to Biological Criteria

OAR 340-041-0011 provides that "Waters of the State shall be of sufficient quality to support aquatic species without detrimental changes in the resident biological communities." DEQ's regulations define "without changes in the resident biological community" to mean "no loss of ecological integrity when compared to natural conditions at an appropriate reference site or region."[190] "Ecological integrity" means "the summation of chemical, physical and biological integrity capable of supporting and maintaining a balanced, integrated, adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of the natural habitat for the region."[191]

The Biocriteria standard is intended to assess total impact to a biological community, including multiple stressors and cumulative effects. In this way, the Biocriteria standards complement the other parameter-specific water quality standards. In 2015, DEQ noted that the DEIS does not address whether the terminal construction and operation activities will achieve compliance with the biocriteria standard.[192] As noted by ODFW, "despite modest changes to the project configuration . . . ODFW expects the impacts to fish and wildlife resources to remain largely the same."[193]

While the applicant suggests that all impacts will be temporary and localized, the significant re-shaping of the bay, together with ongoing operations and related discharges, will likely result in permanent and/or chronic detrimental changes in the resident biological communities.

d. Impacts from Construction Noise

Increased noise from LNG ship traffic creates conditions that are deleterious to fish or other aquatic life.[194] The noise emitted from LNG ships is above the NMFS's noise threshold for

[189] DMMP at 40.
[190] OAR 340-041-0002.
[191] *Id.*
[192] State of Oregon 2015 DEIS comments at 60.
[193] State of Oregon 2017 Scoping comments at 11.
[194] OAR 340-041-0007(10).

physical harm to fish. LNG ships are considered cargo vessels and cargo vessels are known to emit high levels of low frequency sound (6.8 to 7.7 hertz (Hz) at 181 to 190 dB, re: 1 μPa) capable of traveling long distances (Richardson et al., 1995).[195] The NMFS' current noise thresholds for fish are a peak pressure of 180 dB re: 1 μPa for physical harm and an impulse pressure, or root mean square (rms), of 150 dBrms re: 1 μPa for behavioral disruption. Noise from LNG vessels can adversely affect whale behavior.

In addition, noise from construction of the marine slip (including pile driving) may adversely impact pinnipeds. Jordan Cove would install 112 steel piles for the LNG vessel berth on the east side of the marine slip. This pile driving could exceed NMFS noise criteria and cause adverse impacts to pinnipeds.

3. Operation of Terminal

The applicants have failed to provide reasonable assurances that operation of the terminal will not result in violations of water quality standards in Coos Bay. Operation of the terminal will likely violate Oregon water quality standards by entraining and killing fish as LNG vessels uptake millions of gallons of engine cooling water; by discharging heated cooling water above ambient temperatures into Coos Bay; by killing and injuring aquatic life through ship-animal collisions (vessel strikes) and beaching (stranding) of animals in the vessels' wakes.

a. Temperature Impacts from Operation of Terminal (OAR 340-041-0028)

Jordan Cove states that water will be discharged from engine cooling at 3 degrees C (5.4 degrees F) above ambient water temperatures.[196] Modeling of mixing zones and dissipation of water temperature increases were likewise based on this assumed 3 degrees increase. However, Jordan Cove did not provide any information regarding the source of this assumed temperature of cooling water. Nothing in the JPA or FERC filings appears to support the assertion that engine cooling water will be only 3 degrees C higher than the average ambient Coos Bay water temperatures of 50 degrees F. In fact, FERC's FEIS for the Bradwood LNG Project states that "cooling water discharged from a 150,000 m^3 steam powered LNG carrier could initially be 19.4 ºF higher than ambient water temperatures" as compared to seasonally ranging ambient temperatures in the Columbia River of 42 to 68 ºF.[197] Oregon LNG, also proposed for the Columbia River, estimated that "according to industry sources, the water taken for cooling the vessel's machinery is warmed by 6 to 9 degrees Celsius at the point of discharge" and that the average for diesel-powered LNG vessels would be 8.9 ºC above ambient water temperatures.[198] And according to EPA, cooling water can reach high temperatures with the "thermal difference between seawater intake and discharge typically ranging from 5 ºC to 25 ºC, with maximum temperatures reaching 140 ºC."[199] Given these widely varying ranges of cooling water discharge

[195] *See* Bradwood Landing LNG Terminal DEIS at 4-224.
[196] JPA, Resource Report 2 at 27. See also Cooling Water Discharge memo.
[197] Bradwood LNG Project FEIS at 4-85 (2008).
[198] Oregon LNG, CH2MHill Technical Memorandum, Appendix F Cooling Water Discharge Analysis, at 2 (Sept. 10, 2008).
[199] EPA, *Final 2013 Vessel General Permit Fact Sheet* at 133.

temperatures, DEQ should at the very least require Jordan Cove to provide a worst case analysis of temperature increases from diesel and steam powered vessels. DEQ should also require that the applicants provide an accurate number of shipments that would occur using 148,000 cubic meter ships (the maximum size that would be allowed to transit Coos Bay) to export the full proposed natural gas export amounts (0.9 Bcf/d according to FERC, 1.2 Bcf/d according to DOE, 1.55 Bcf/d according to NEB and DOE).

b. Entrainment of Fish by LNG Vessels (OAR 340-041-0007)

The LNG vessels that would dock in the new marine slip under the proposed action would take in large amounts of bay water from the slip to cool vessel engines. Jordan Cove estimates that a 148,000 m^3 LNG vessel would take in approximately 6.1 million gallons of water for engine cooling while at the dock.[200] Jordan Cove is not proposing any additional screening system other than that already employed on LNG vessels. The screens would not meet NMFS (1997a) screening criteria for juvenile salmonids.[201] As a result, fish at least up to fry and possibly larger juvenile salmonids, smaller marine and estuarine fish, juvenile stages of crab and shrimp, and other zooplankton and eggs and larvae fish could be entrained. The 2014 DEIS acknowledged that a high portion of juvenile larval stages of fish and invertebrates entrained or impinged would suffer mortality.[202] Nevertheless, the DEIS concludes that entrainment impacts are minimal because "natural mortality of these early life stages is extremely high."[203] The JPA similarly asserts that "percentages of entrainment and entrapment [ ] will not be much greater than natural levels of mortality for invertebrate larval stages in Coos Bay."[204] In other words, because many juvenile and larval aquatic organisms die, the additional mortality caused by entrainment is not significant. This logic flies in the face of standards for protection of water quality set forth in OAR 340-041-0007(10). Simply because juvenile fish already suffer high mortality, that is not sufficient to discount the additional mortality caused by entrainment in LNG vessels via cooling water uptake. Furthermore, the JPA fails to explain how the data regarding overall juvenile fish mortality is relevant to the specific conditions of Coos Bay and its ESA and EFH species and benthic communities.

In addition, the applicant states that the overall abundance of organisms in the slip will be relatively low compared to the main channel. NMFS previously rejected this assumption:

> The NMFS knows of no literature to support this assumption. In fact, it is more likely that the abundance of organisms, including OC Coho salmon juveniles and southern DPS green sturgeon, especially smaller life stages, may be greater in the slip area as they use it for refuge from the higher velocities of the main channel. Secondly, the FERC analysis minimizes the potential for effects to resources based on the percentage of Coos Bay water that will be taken aboard ships. The analysis incorrectly assumes that resources are evenly distributed throughout the

[200] 2014 DEIS at 4-572.
[201] *Id.*
[202] 2014 DEIS at 4-573.
[203] *Id.*
[204] JPA, Attachment A.2: Cumulative Impacts Analysis at 28-29.

> bay. Provide an effects analysis that incorporates the likely heterogeneity of resources in the estuarine environment.[205]

The unnecessarily high levels entrainment of fish and other aquatic life in engine cooling water for LNG vessels is, within the meaning of OAR 340-041-0007(10), a condition deleterious to fish or other aquatic life that may not be allowed.

The JPA fails to present a comprehensive description of alternative fish screen designs and their impacts. The current proposal appears to dismiss fish screening, totally ignoring ODFW's prior comments stating, the "Coast Guard's concerns should not be interpreted to mean that ballast and cooling water screening cannot occur. Screening can and should occur to reduce negative impacts to fish as a result of this project. Additional marine industry review and permitting may be necessary, but this has not eliminated the opportunity to develop and use fish screens."[206] The JPA should evaluate clearly fish screen alternatives and the impacts of the proposed screening alternative, which would negatively impact ESA protected Coho salmon.

c. Strikes and Strandings by LNG Vessels

Approximately 110 to 120 LNG tankers will dock at Jordan Cove each year. Movement of these massive vessels will injure fish and aquatic life by ship-animal collisions (vessel strikes) and beaching (stranding) of animals in the vessels' wakes. Wake stranding will likely increase greatly due to the additional deep draft ships. Further, turning of the LNG tankers with high thrust tugs will increase wake stranding and disorientation of salmon.

The Vessel Wake Impacts Analysis demonstrates that tugs will generate wakes of about 0.6 to 0.8 feet at the shoreline, with greater impacts on the right back than the left.[207] The right bank is more prone to wake impacts, as it is includes important shellfish and crabbing areas.
The killing and injuring of whales, leatherback sea turtles, harbor seals and fish caused by strikes with vessels or wake stranding, is, within the meaning of OAR 340-041-0007(10), a condition deleterious to fish or other aquatic life that may not be allowed.

d. Exotic and Invasive Species

Jordan Cove will likely introduce or allow the proliferation of invasive species to Coos Bay, the terminal site, and along the pipeline route. First, ships from foreign ports will transport exotic species on multiple surfaces and in water releases from ballast or engine cooling water. These species may harm the aquatic ecosystem. Second, the removal of vegetation, and long-term disturbances at the site will allow the introduction and proliferation of exotic species, which will harm native ecosystems and may require herbicides and pesticides to manage. Third, a large swath of clearing and ground disturbance across Oregon for the pipeline will create an ideal site for exotic species to thrive and harm native ecosystems, forestland, and farmland. These impacts will significantly affect fish, wildlife, and special aquatic sites.

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[205] NMFS 2008 DEIS comments at 2.
[206] State of Oregon 2009 FEIS comments at 37.
[207] Vessel Wake Impacts memorandum at 16.

B. South Coast Basin – Coquille Subbasin

The South Coast Basin stretches across 1.9 million acres and consists of the Coos, Coquille, Sixes, Chetco, and part of the Smith subbasins.[208] The proposed pipeline route would cross through the Coos and Coquille subbasins. Impacts to the Coos subbasin are discussed above. The Coquille subbasin drains 1,058 square miles and the Coquille is the longest river in the South Coast Basin.[209] Waterways in the Coquille subbasin are impaired for dissolved oxygen, sedimentation, temperature, habitat modification, and biological criteria. In 1994, DEQ established a TMDL for the Coquille River for dissolved oxygen.[210]

The applicants propose to cross multiple streams within the Coquille subbasin that are already impaired for multiple water quality parameters, including but not limited to dissolved oxygen, temperature, biological criteria, and sedimentation.

Table 4. 303(d) Listings for Streams Crossed by Pacific Connector Pipeline in the South Coast Basin – Coquille River Subbasin[211]

Waterbody Crossed by Pipeline	Dissolved Oxygen	Habitat Modification	Temperature	Biological Criteria	Sedimentation	Turbidity
Belieu Creek			X			
Big Creek		X	X		X	
Coquille River			X		X	X
East Fork Coquille River	X	X	X	X	X	
Elk Creek	X		X	X	X	
Middle Creek	X		X	X		
Middle Fork Coquille River	X	X	X		X	
North Fork Coquille River	X	X	X	X	X	X
Rock Creek	X	X	X	X	X	

The Coquille subbasin supports multiple native fish species, including coho salmon, winter steelhead, fall chinook, spring chinook, coastal cutthroat trout, rainbow trout, and green and white sturgeon.[212] The Oregon Coast coho ESU was listed as a threatened species under the ESA

[208] South Coast Basin Report. 2016. Oregon DEQ.
[209] Coquille River & Estuary Water Quality Report. Total Maximum Daily Load Program. Oregon DEQ. March 1994. https://www.oregon.gov/deq/FilterDocs/scCoquilleRiverTMDL.pdf. P. 1.
[210] Coquille River & Estuary Water Quality Report. Total Maximum Daily Load Program. Oregon DEQ. March 1994. https://www.oregon.gov/deq/FilterDocs/scCoquilleRiverTMDL.pdf. P. 3.
[211] Oregon's 2012 Integrated Report Assessment Database and 303(d) list. Oregon DEQ. https://www.deq.state.or.us/wq/assessment/rpt2012/search.asp.
[212] "Chapter 2: The Coquille Fishery." Coquille Watershed Action Plan. 16 May 2003. https://www.coquillewatershed.org/wp-content/uploads/2016/02/CHAP2.pdf.

in 1998.[213] According to the Oregon Coast coho 2012 Recovery Plan, the primary threats to the species include reduced amount and complexity of habitat as well as degraded water quality.[214] The 2007 Coquille River Subbasin Plan specifically points to water quality impairments from sedimentation and temperature as threats to Oregon Coast coho:

> Excessive sedimentation from erosion in the watershed was identified as a potential cause for concern by the Soil and Water Conservation District (1983) and in the Preliminary Statewide Nonpoint Source Assessment (ODEQ 1988 in CWA 1997). Elevated turbidity and sediment loads in all zones can be attributed to the effects of soil disturbing activities such as management practices associated with road building, timber harvest, agriculture and active bank erosion above the head of tide.[215]

Further, the 2007 Coquille River Subbasin Plan also identifies temperature as an existing water quality impairment that threatens salmonids:

> Warm season water temperatures appear to be one of the most critical, potential limiting factors in the Coquille drainage: 21 out of the 25 303(d) listed stream segments are listed for temperature. In addition, elevated water temperatures work in concert with other limiting factors to exacerbate their impacts. Salmonids and some amphibians appear to be of the most temperature-sensitive species. Stream temperatures during the salmonid spawning, incubation and emergence life stages are desirable, but are elevated during the summer rearing life stage.[216]

Additionally, the North and South Forks of the Coquille River were identified as Tier 1 Key Watersheds under the Northwest Forest Plan that "serve as refuge areas critical for maintaining and recovering habitat for at-risk stocks of anadromous salmonids on federally administered land (CWA 1997)."[217]

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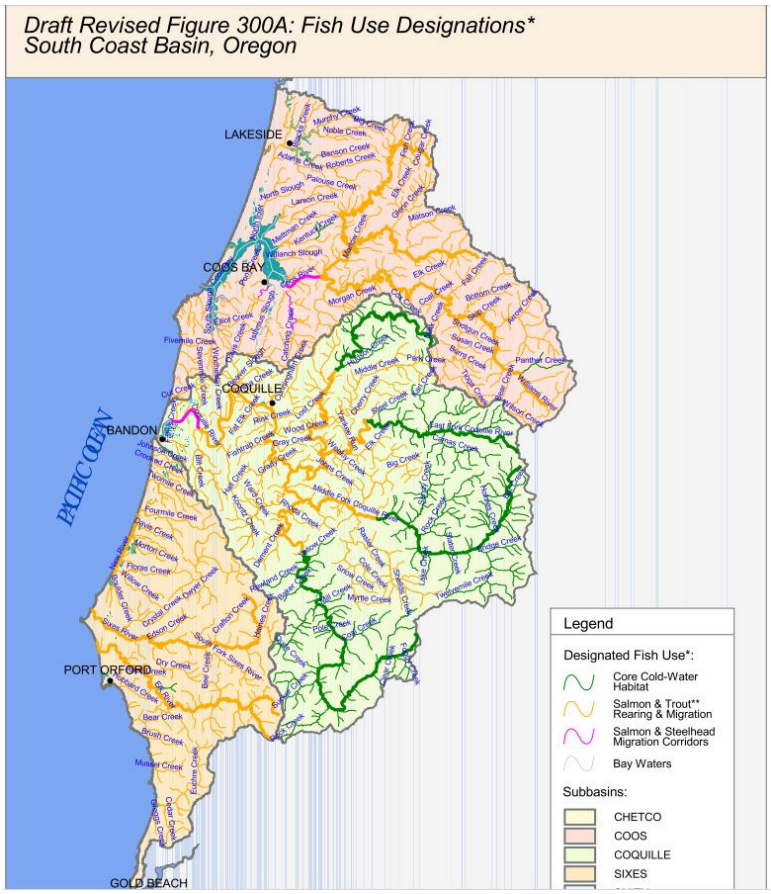
[213] Oregon Coast Coho Salmon Recovery Plan Summary. NOAA Fisheries. December 2016. http://www.westcoast.fisheries.noaa.gov/publications/recovery_planning/salmon_steelhead/domains/oregon_coast/oc_coho_plan_exec_summary_12_16.pdf.

[214] Oregon Coast Coho Salmon Recovery Plan Summary. NOAA Fisheries. December 2016. http://www.westcoast.fisheries.noaa.gov/publications/recovery_planning/salmon_steelhead/domains/oregon_coast/oc_coho_plan_exec_summary_12_16.pdf. P. 6.

[215] Coquille River Subbasin Plan. NOAA Fisheries. June 2007. https://www.coquillewatershed.org/wp-content/uploads/2017/01/CoquilleRiversub-basinplan.pdf. P. 29.

[216] Coquille River Subbasin Plan. NOAA Fisheries. June 2007. https://www.coquillewatershed.org/wp-content/uploads/2017/01/CoquilleRiversub-basinplan.pdf. P. 29.

[217] Coquille River Subbasin Plan. NOAA Fisheries. June 2007. https://www.coquillewatershed.org/wp-content/uploads/2017/01/CoquilleRiversub-basinplan.pdf. P. 18.



OAR 340-041-0101 to 340-041-0340: Figure 300A Fish Use Designations, South Coast Basin.

As discussed in Sections II-VI, the applicants have failed to provide reasonable assurances that state water quality standards will be met in the Coquille Subbasin. The proposed activities related to identified stream crossings in the Coquille Subbasin will likely:

- Violate Oregon's anti-degradation policy by causing significant temperature increases in numerous stream segments, by causing significant decreases in dissolved oxygen levels, and by further degrading stream segments that are already water quality impaired for temperature, dissolved oxygen, pH, turbidity, and sedimentation;
- Violate Oregon's statewide narrative criteria by creating conditions deleterious to aquatic species, including but not limited to threatened and endangered species (e.g. Oregon Coast coho, green sturgeon);
- Violate Oregon's water quality standard for temperature by removing riparian vegetation that shades streams, causing stream heating along a minimum 75-foot wide construction easement;
- Violate Oregon's water quality standard for turbidity by causing a more than 10% increase in natural turbidity levels in stream segments impacted by pipeline installations;
- Violate Oregon's toxics standard by disturbing and re-suspending contaminated material in and around waters of the state; and
- Impair beneficial uses to be protected in the South Coast Basin.

The applicants have not provided reasonable assurances that the proposed activities will not violate state water quality standards and, therefore, DEQ cannot certify that the project will be in compliance with the Clean Water Act.

1. Construction

Construction of the project within the Coquille Subbasin primarily consists of pipeline construction and related stream crossings, vegetation removal, and temporary or permanent road construction. All of the proposed activities within the Rogue Basin are likely to impair water quality and the applicants do not provide reasonable assurance that the proposed activities will not violate state water quality standards. Therefore, DEQ cannot certify that the project will comply with state water quality standards.

a. Stream Crossings

All of the proposed stream crossings within the Coquille Subbasin would use the dry open cut method. In order for DEQ to effectively determine the direct, indirect, and cumulative impacts of these crossings, the applicants should provide a comprehensive environmental review for each stream crossing, particularly for those crossings identified as moderate or high risk. However, the JPA does not include such site-specific analysis. DEQ should review the assessment of the New York Department of Environmental Conservation (DEC), which denied 401 certification due to the applicant's failure to provide site-specific analysis of each stream crossing.[218] Without comprehensive environmental reviews of and detailed plans for stream crossings, particularly those identified as at a high or moderate risk of scour, channel migration, and/or avulsion, DEQ cannot certify that the project will comply with state water quality standards.

As demonstrated in the table below, the applicants identify seven stream crossings in the Coquille Subbasin as Level 1 (moderate) risk of channel migration, avulsion, and/or scour. Two stream crossings within the subbasin are identified as a Level 2 (high risk) of channel migration, avulsion, and/or scour (Middle Creek and South Fork Elk Creek).

Table 5. Moderate and High Risk Stream Crossings in the Coquille Subbasin

Waterbody crossed by pipeline	Level 1 (moderate) risk of channel migration, avulsion, and/or scour	Level 2 (high) risk of channel migration, avulsion, and/or scour
North Fork Coquille River (MP23.06)	X	
Middle Creek (MP 27.04)		X
Trib. To E Fork Coquille River (MP 28.86)	X	
East Fork Coquille River	X	
Elk Creek	X	
South Fork Elk Creek		X
Upper Rock Creek (MP 44.21)	X	

[218] Joint Application: DEC Permit# 0-9999-00181/00024 Water Quality Certification/Notice of Denial. New York State Department of Environmental Conservation. 22 April 2016. P. 13. http://www.dec.ny.gov/docs/administration_pdf/constitutionwc42016.pdf.

Deep Creek (MP 48.27)	X	
Middle Fork Coquille River (MP 50.28)	X	

Although the applicants include some analysis of the open-cut method proposed for the North Fork Coquille River crossing, there is no site-specific analysis for Middle Creek or the South Fork of Elk Creek, which are both identified as high risk sites for channel migration, avulsion, and/or scour. DEQ cannot certify that the proposed activities will not violate water quality standards without this information.

In addition to the potential for increased erosion, channel migration, avulsion, and/or scour as a result of pipeline crossings, many of the proposed crossings cut through waterbodies that are already impaired for sedimentation. Specifically, the North Fork of the Coquille, East Fork of the Coquille, Elk Creek, Middle Fork of the Coquille, and Rock Creek are all water quality limited for sedimentation and also have at least a moderate risk of channel migration, avulsion, and/or scour.

Channel modifications that increase sedimentation can decrease the depth and frequency of pools, which decreases the assimilative capacity for thermal loading of a stream. Elk Creek, East Fork of the Coquille, Middle Creek, Middle Fork Coquille River, North Fork Coquille River, and Rock Creek are all impaired for temperature.[219]

Proposed activities to conduct dry open cut technology have the potential to increase sedimentation, modify habitat, decrease dissolved oxygen, and impair the aquatic habitat. As a result, DEQ cannot certify that the proposed activities will not result in violations of water quality standards.

b. North Fork and East Fork Coquille River Crossings

The applicants provide limited additional detail regarding the North Fork and East Fork Coquille River crossings. As stated in the both plans for the North Fork and East Fork crossings, the applicants propose using either a flume or dam and pump crossing method.[220] Limited detail is provided regarding the methods proposed as well as methods to mitigate sediment pollution. No analysis is provided regarding potential impacts to water quality, including but limited to increased stream temperature as a result of removing riparian vegetation, increased sedimentation, decreased dissolved oxygen, or degraded habitat. As discussed previously, the applicants do not provide site-specific analysis for Middle Creek and South Fork Elk Creek, the two crossings within the Coquille Subbasin that were identified as a high risk for channel migration, avulsion, and/or scour. Both of these waterways are already water quality impaired for temperature and sedimentation.

c. Removal of Riparian Vegetation

[219] Oregon's 2012 Integrated Report Assessment Database and 303(d) list. Oregon DEQ. https://www.deq.state.or.us/wq/assessment/rpt2012/search.asp.

[220] Site Specific Plan for Open Cutting The North Fork Coquille River. 9 June 2008. P. 1. Pacific Connector Pipeline. Appendix 2 Part B. 8 May 2018. P. 1325.

The proposed action would likely cause stream temperature increases by removing riparian vegetation across a wide construction easement. Removing riparian vegetation will increase water temperature by decreasing shade in numerous streams identified as having salmon and steelhead spawning use, having core cold water habitat use, having salmon and trout rearing and migration use, or having migration corridor use. Without specific information about baseline temperatures in streams where riparian vegetation would be removed, it is impossible to review potential violations of numerical temperature limits specified in OAR 340-041-0028(4).

Further, temperature and dissolved oxygen levels are closely related. The Coquille River already has a TMDL for dissolved oxygen. The proposed pipeline would cross the East Fork, Middle Fork, and North Fork of the Coquille which are impaired for dissolved oxygen, as well as Elk Creek, Middle Creek, and Rock Creek.

Riparian vegetation is critical to overall stream health and water quality. Removing riparian vegetation, as proposed by the applicants, will likely impair water quality in violation of the Clean Water Act. Not only will removing riparian vegetation likely increase water temperature, but it is also likely to result in increased sedimentation. Further, removal of riparian vegetation that results in increased sedimentation can impact interactions between surface water and groundwater, further impairing streams for temperature. Removing riparian vegetation also decreases Large Woody Debris that is an important component of stream morphology and habitat for aquatic species.

Not only is riparian vegetation critical for water quality, but removing riparian vegetation has direct, indirect, and cumulative impacts on threatened salmonids. Specifically, NOAA Fisheries identifies protection of stream buffers and riparian forests as a priority action to protect Oregon Coast coho in the Coquille subbasin:

> Improve timber management activities, including road management, by protecting riparian forests and providing stream buffers sufficient for OC coho salmon recovery through protection and enhancement of shade to reduce stream temperatures and improve water quality.[221]

DEQ cannot certify that the proposed activities will not violate water quality standards including but not limited to dissolved oxygen, temperature, sedimentation, and biological criteria.

d. Roads

[221] 6.3.5 Strategies and Actions for the Mid-South Coast Stratum. ESA Recovery Plan for Oregon Coast Coho Salmon. NOAA Fisheries. http://www.westcoast.fisheries.noaa.gov/publications/recovery_planning/salmon_steelhead/domains/oregon_coast/final_mid-south_coast_stratum.pdf. P. 7.

The applicants propose construction of temporary access roads (TARs) at 10 locations impacting 3.8 acres and construction of 15 permanent access roads (PARs) impacting 2.16 acres.[222] Because the project continues to change throughout the public process, impacts to streams may be significantly altered as well. The applicants do not provide site-specific details to minimize impacts of temporary or permanent road construction to waterways beyond general descriptions of BMPs. Not only is road construction inadequately described, but the measures to prevent significant sedimentation and turbidity in streams are neither site-specific nor reliable. DEQ should not rely upon later analysis to determine how construction of permanent or temporary roads will impact wetlands, streams, and rivers.

e. Hydrostatic Testing

Potential sources for hydrostatic testing water identified by the applicants within the Coquille Subbasin include the Coos Bay-North Bend Water Board, Kinnan Lake, and Looking Glass Olalla Water District. The applicants provide minimal information regarding the source and discharge of hydrostatic testing water. Not only would these water withdrawal impact existing water rights, but reducing flows can also impair water quality, in violation of water quality standards.[223] Water withdrawals from the Coquille Subbasin for hydrostatic testing and other related uses should be carefully reviewed by DEQ to evaluate the direct, indirect, and cumulative impacts on water quality.

C. Umpqua Basin

The South Umpqua fifth-field watershed is 141,575 acres and begins at the confluence of the South Umpqua River and Elk Creek and flows 28 miles to the confluence with Cow Creek.[224] The proposed pipeline would enter the South Umpqua watershed with a crossing at Olalla Creek-Lookingglass Creek at pipeline milepost 55.9 and cross approximately 85 streams until leaving the watershed with a crossing of Upper Cow Creek.

The South Umpqua is impaired for temperature, dissolved oxygen, sediment/turbidity, and habitat modification.[225] These water quality parameters would be both directly and indirectly impacted by the proposed activities.

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[222] Pacific Connector Pipeline Resource Report 1 General Project Description. p. 31, PCP Part 2 Appendix B 8 May 2018. p. 329.
[223] PUD No. 1 of Jefferson Cty v. Washington Dept. of Ecology. 511 U.S. 700 (1994). https://www.law.cornell.edu/supct/html/92-1911.ZO.html.
[224] South Umpqua River Watershed. Institute for Natural Resources. Oregon State University. http://oregonexplorer.info/content/south-umpqua-river-watershed.
[225] Umpqua Basin Status Report and Action Plan. Oregon DEQ. 30 July 2014. https://www.oregon.gov/deq/FilterDocs/BasinlUmpquaAssess.pdf.

Table 26: General Surface Water Quality by Subbasin

Surface Water	Bacteria	Biological Stressors Harmful Algae Blooms	Temperature	Dissolved Oxygen	Nutrients, pH Chlorophyll a	Altered Hydrology	Habitat Modification	Sediment / Turbidity	Toxics: Emerging Contaminants Pharmaceuticals, PCPs	Toxics: Metals	Toxics: Arsenic	Toxics: Mercury	Toxics: Pesticides
South Umpqua													
North Umpqua													
Umpqua													

Umpqua Basin Status Report and Action Plan at 79.

The incomplete information provided by the applicants regarding waterways that may be impacted by the pipeline reveals at least 13 different waterways that are 303(d) listed for temperature, sedimentation, biological criteria, habitat modification, and dissolved oxygen within the South Umpqua watershed.[226] In addition to statewide numeric and narrative criteria, the Umpqua watershed has basin-specific water quality standards for turbidity, pH, and total dissolved solids.[227] DEQ should fully evaluate the potential for the proposed activities to violate these water quality standards.[228]

Table 6. 303(d) Listings for Streams Crossed by Pacific Connector Pipeline in the South Umpqua Watershed

Waterbody Crossed by Pipeline	Dissolved Oxygen	Habitat Modification	Temperature	Biological Criteria	Sedimentation
Bilger Creek	X				
Days Creek	X	X	X		
East Fork Cow Creek	X		X		
Fate Creek			X		
Kent Creek		X	X		
North Myrtle Creek	X	X	X	X	X
Olalla Creek			X	X	X
Rice Creek		X	X		
Saint John Creek			X		
Shields Creek				X	
South Myrtle Creek	X		X	X	X
South Umpqua River	X	X	X	X	X
Wood Creek	X		X		

[226] Oregon's 2012 Integrated Report Assessment Database and 303(d) list. Oregon DEQ. https://www.deq.state.or.us/wq/assessment/rpt2012/search.asp.
[227] OAR 340-041-0326.
[228] Oregon's 2012 Integrated Report Assessment Database and 303(d) list. Oregon DEQ. https://www.deq.state.or.us/wq/assessment/rpt2012/search.asp.

Additionally, the project area within the South Umpqua watershed includes designated critical habitat for threatened Oregon Coast Coho listed under the ESA. The 2014 DEIS acknowledged that the project is likely to adversely affect Oregon Coast Coho and its critical habitat.[229] Fish use designations for the Umpqua, as identified by DEQ, include salmon and steelhead spawning, core coldwater habitat, and salmon and trout rearing and migration use. [230,231] The South Umpqua River is also designated as a Tier 1 Key Watershed under the Northwest Forest Plan. Key Watersheds serve as strongholds or potential strongholds for Oregon Coast coho. The Northwest Forest Plan states of Key Watersheds:

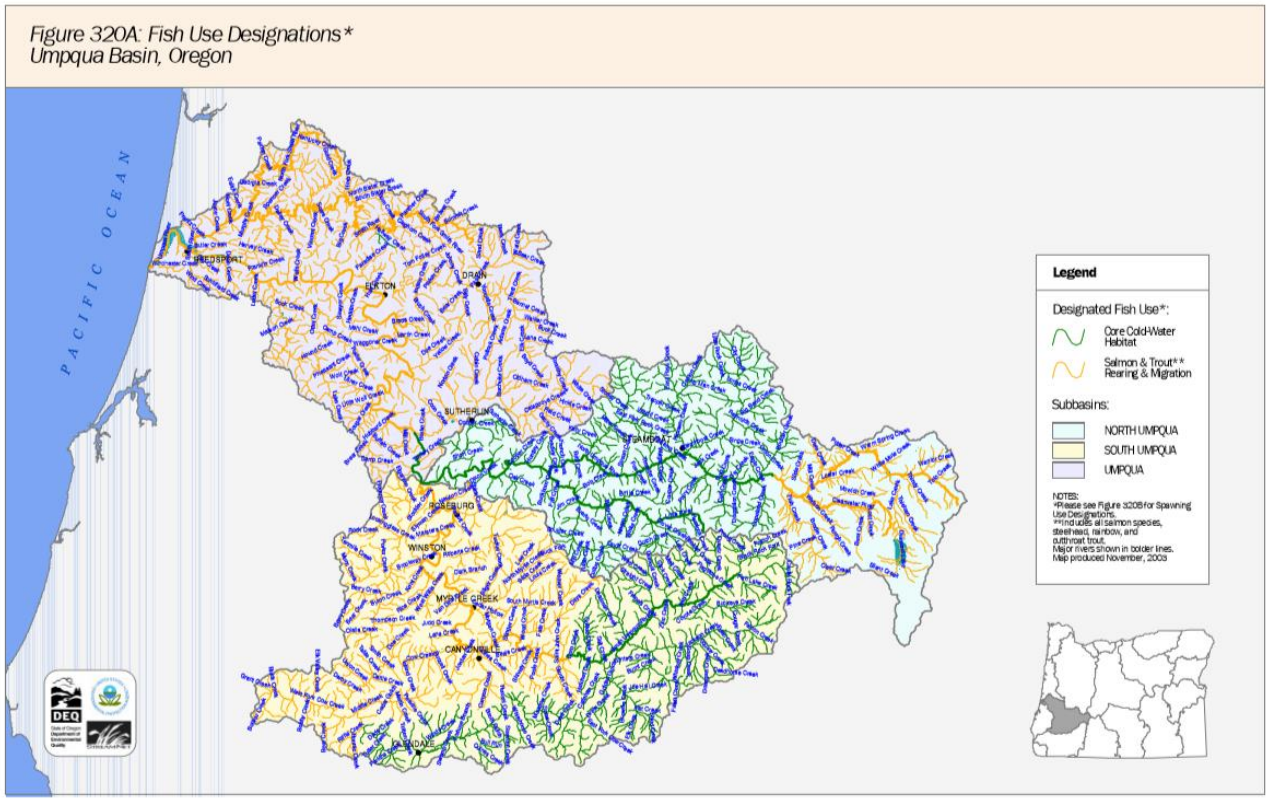
> Refugia are a cornerstone of most species conservation strategies. They are designated areas that either provide, or are expected to provide, high quality habitat. A system of Key Watersheds that serve as refugia is crucial for maintaining and recovering habitat for at-risk stock of anadromous salmonids and resident fish species. These refugia include areas of high quality habitat as well as areas of degraded habitat. Key Watersheds with high quality conditions will serve as anchors for the potential recovery of depressed stocks. Those of lower quality habitat will have a high potential for restoration and will become future sources of high quality habitat with the implementation of a comprehensive restoration program.[232]

[229] DEIS at 4-644, 4645.

[230] See Subbasin maps and tables set out in OAR 340-041-0101 to 340-041-0340: Figure 320A Fish Use Designations, Umpqua Basin. https://www.oregon.gov/deq/Rulemaking%20Docs/figure320a.pdf.

[231] See Subbasin maps and tables set out in OAR 340-041-0101 to 340-041-0340: Figure 320B Salmon and Steelhead Spawning Use Designations, Umpqua Basin. https://www.oregon.gov/deq/Rulemaking%20Docs/figure320b.pdf

[232] Northwest Forest Plan at B-18.



OAR 340-041-0101 to 340-041-0340: Figure 320A Fish Use Designations, Umpqua Basin. https://www.oregon.gov/deq/Rulemaking%20Docs/figure320a.pdf.

As discussed in Sections II-VI, the applicants have failed to provide reasonable assurances that the project will not violate state water quality standards in the Umpqua Basin. Proposed activities related to identified stream crossings in the Umpqua watershed will likely:

- Violate Oregon's anti-degradation policy by causing significant temperature increases in numerous stream segments, by causing significant decreases in dissolved oxygen levels, and by further degrading stream segments that are already water quality impaired for temperature, dissolved oxygen, pH, turbidity, and sedimentation;
- Violate Oregon's statewide narrative criteria by creating conditions deleterious to aquatic species, including Coho salmon (*Oncorhynchus kisutch*);
- Violate Oregon's water quality standard for temperature by removing riparian vegetation that shades streams, causing stream heating along a minimum 75-foot wide construction easement;
- Violate Oregon's water quality standard for turbidity by causing a more than 10% increase in natural turbidity levels in stream segments impacted by pipeline installations;
- Violate Oregon's toxics standard by disturbing and re-suspending contaminated material in and around waters of the state; and
- Impair beneficial uses to be protected in the Umpqua Basin.

The applicants have not provided reasonable assurances that the proposed activities will not violate state water quality standards and, therefore, DEQ cannot certify that the project will be in compliance with the Clean Water Act.

1. Construction

Construction of the project within the Umpqua watershed primarily consists of pipeline construction and related stream crossings, vegetation removal, and temporary or permanent road construction. All of the proposed activities within the Umpqua watershed are likely to impair water quality and the applicants do not provide reasonable assurance that the proposed activities will not violate state water quality standards. Therefore, DEQ cannot certify that the project will comply with state water quality standards.

a. Stream Crossings

The JPA provides multiple versions of tables and different total number of waterways crossings. Therefore, it is nearly impossible to comprehensively review the direct, indirect, and cumulative impacts of stream crossings without the mandatory minimum information required under OAR 340-048-0020(2). As of the 6 February 2018 JPA, the applicants identified 85 stream crossings within the South Umpqua watershed.[233] Of these identified stream crossings, nine were identified as Level 1 moderate risk of channel migration, avulsion, and/or scour and four were identified as Level 2 high risk. The applicants propose to use dry open cut technology for all of the identified stream crossings, except for the crossing of the South Umpqua River at milepost 71.27 using Direct Pipe technology.

The applicants should provide a comprehensive environmental review for each stream crossing, particularly for those crossings identified as moderate or high risk. However, the JPA does not include such site-specific analysis. DEQ should review the assessment of the New York Department of Environmental Conservation (DEC), which denied 401 certification for the Constitution Pipeline in part because the applicants failed to provide this site-specific analysis.[234] Without comprehensive environmental reviews of and detailed plans for stream crossings, particularly those identified as at a high or moderate risk of scour, channel migration, and/or avulsion, DEQ cannot certify that the project will comply with state water quality standards.

Additionally, the applicants propose to cross streams that are already impaired for dissolved oxygen, habitat modification, temperature, biological criteria, and sedimentation. Proposed activities to conduct dry open cut technology have the potential to increase sedimentation, modify habitat, decrease dissolved oxygen, and impair the aquatic habitat.

b. South Umpqua River Crossings

[233] See Table A.2-2.

[234] Joint Application: DEC Permit# 0-9999-00181/00024 Water Quality Certification/Notice of Denial. New York State Department of Environmental Conservation. 22 April 2016. P. 13. http://www.dec.ny.gov/docs/administration_pdf/constitutionwc42016.pdf.

Specific to the South Umpqua, the applicants propose to use Direct Pipe technology for the first crossing of the South Umpqua River near Milepost 71 concurrently with the crossing of I-5. The applicants then propose to cross the South Umpqua a second time at MP 94.73 near Milo using a diverted open-cut method. Direct Pipe technology is a new technology and, according to the applicants, "is still in its infancy with respect to construction and wide-spread adoption."[235] DEQ must closely evaluate the feasibility of this new technology and potential problems that may not be identified by the applicants.

Regarding the potential release of drilling fluid directly into the South Umpqua River, the applicants state:

> Fractures and voids in the rock, if encountered, could result in a loss of fluid (formational fluid loss) into the subsurface. The lost slurry or lubrication fluid could then potentially emerge at the ground surface or within the South Umpqua River and/or sensitive area as a slurry surface release. We believe the risk of formational fluid loss to be low to moderate. We judge the risk of slurry surface release resulting from formational fluid risk to be low, provided that the contractor responds rapidly and appropriately to unexpected changes in fluid pressures during mining.[236]

DEQ must fully evaluate whether the applicants' analysis of the potential pollution from Direct Pipe Technology discharged into the South Umpqua River provides reasonable assurance that state water quality standards for biological criteria, toxics, turbidity, and others will be met. This is even more important because the South Umpqua River is already water quality limited for dissolved oxygen, habitat modification, temperature, biological criteria, and sedimentation.[237]

According to the 2013 Umpqua Basin Report from DEQ:

> The South Umpqua River at HWY 42 (Winston) shows a decreasing trend in water quality. Temperature, bacteria, nutrients and fine sediment have been identified as pollutant stressors that affect fish and other aquatic life throughout the basin. TMDLs were approved by EPA for bacteria, temperature, algae/aquatic weeds, dissolved oxygen and pH for the Umpqua Basin in 2007.[238]

The use of a diverted open-cut method to cross the South Umpqua River combined with removal of riparian vegetation to create the 75-foot clear-cut buffer will likely result in increased temperature, increased sedimentation, and degraded habitat and biological conditions in violation of state water quality standards.

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[235] Appendix J.2 Direct Pipe Technology Overview Memo I-5/South Umpqua Direct Pipe Feasibility Evaluation. P. 3. 8 May 2018 JPA. PCP Part 2 Appendix B 8 May 2018 P. 1800.
[236] Appendix J.2 Direct Pipe Technology Overview Memo I-5/South Umpqua Direct Pipe Feasibility Evaluation. P. 8. 8 May 2018 JPA. PCP Part 2 Appendix B 8 May 2018 P. 1815.
[237] Oregon's 2012 Integrated Report Assessment Database and 303(d) list. Oregon DEQ. https://www.deq.state.or.us/wq/assessment/rpt2012/search.asp.
[238] Umpqua Basin Report. Oregon DEQ. 2 June 2013. P. 145.

c. Removal of Riparian Vegetation

The proposed action would cause stream temperature increases by removing riparian vegetation across a wide construction easement. Removing riparian vegetation will increase water temperature by decreasing shade in numerous streams identified as having salmon and steelhead spawning use, having core cold water habitat use, having salmon and trout rearing and migration use, or having migration corridor use. According to the FEIS:

> In response to requests from the USFS, Pacific Connector submitted the results of a water temperature impacts assessment for this project (North State Resources 2009). The assessment looked at 6 waterbody crossings that would occur on USFS managed lands. Five of the locations modeled occur in the Upper Umpqua River sub-basin; two on East Fork Cow Creek and three small tributaries to East Fork Cow Creek. The sixth modeled location was on the South Fork Little Butte Creek in the Upper Rogue River sub-basin. The analysis used two models to estimate instream temperature effects that would occur as a result of vegetation clearing for pipeline construction immediately after construction and after 5, 10, and 20 years based on conditions that could be expected on the hottest summer days. The conceptual model for the analysis assumed that for a given stream temperature at base flow, the main source of heat load is direct and indirect solar radiation and that effective shade from topographic features and vegetation is a dominant influence of stream temperatures regimes. The analysis is conservative in that it assumed a maximum amount of anticipated disturbance at each crossing based on 95-foot construction right-of-way, while Pacific Connector would actually reduce the construction right-of-way to 75 feet at stream crossings.
>
> Most of the streams that were modeled were small streams; three were tributaries to East Fork Cow Creek that are 3 feet wide or less with baseflows estimated at 0.9 cfs to practically zero. Two streams were between 5 and 6 feet wide with baseflows estimated between 0.18 and 0.48 cfs. The sixth stream, South Fork Little Butte Creek, is about 22 feet wide and has an estimated baseflow of 4.2 cfs. The results of the analysis indicated that the greatest effect would occur in the smallest and slowest waterbodies immediately following disturbance. *For the three smallest streams, the model predicted initial average temperature changes of 1.0° to 8.6° C (1.8° to 15.4° F).* The highest predicted increase (8.6° C) was in a very small drainage that is frequently dry in the summer, but occasionally has water present from phreatic groundwater and any water present infiltrates back into the ground shortly downstream of the proposed crossing location. Just as these very small waterbodies are modeled to warm quickly in response to clearing, they would likely also have rapid temperature reductions downstream of the affected reach; thus there would be no measurable effect on stream temperatures in East Fork Cow Creek. At the two modeled crossing locations on East Fork Cow Creek, the creek would be about 5 to 6 feet wide. Average Temperature changes in East Fork Cow Creek as a result of pipeline construction and maintenance were predicted to be up to 0.5° C (0.8°F) immediately following disturbance. The predicted temperature increase in the largest stream, 22 feet wide, was 0.1° C (0.1° F). All temperature impacts were predicted to decrease with time as vegetation returns to provide shade; with significant recovery occurring between 5 and 10 years following disturbance. Most of the values presented

> here are well below the uncertainty of the model (1 to 2°C). For comparison to the modeled crossings, about 62 percent of the perennial and intermittent dry open-cut stream crossings would occur on streams 10 feet wide or less.[239]

Commenting on the above results of the FEIS water temperature impacts assessment for this project, DEQ observed:

> Stream temperature increases were discussed in the FEIS on pages 4.3-42 through 4.345. The last paragraph on page 4.3-43 notes that for the smallest streams modeled 'predicted initial average temperature changes of 1.0 to 8.6 degrees C.' This is obvious stream heating and may be on streams with relatively steeper gradients than valley floor streams. The valley floor streams crossed might have slower times of travel and thus subjected to increase times of solar radiation.[240]

The applicants do not provide information about baseline temperatures in streams that would suffer removal of riparian vegetation and stream shading. Therefore, it is impossible to undertake a systematic analysis of the extent to which modeled increases in stream temperatures would cause violations of numerical temperature limits specified in OAR 340-041-0028(4). However, numerous stream segments that would be impacted by the proposed action already suffer high temperatures that violate state water quality standards. Of the identified waterways proposed to be crossed within the Umpqua watershed, all but two are impaired for temperature.[241] Therefore, any temperature increases in these streams attributable to the proposed action would result in exacerbations of existing violations of state water quality standards. The Ninth Circuit Court of Appeals recently made clear that new dischargers may not add a pollutant into a water body that is water quality limited.[242]

Additionally, removing riparian vegetation also decreases Large Woody Debris that is an important component of stream morphology and habitat for aquatic species.[243] As demonstrated in the map below from the South Umpqua River Watershed Assessment and Action Plan from 2003, streams that will be crossed by the pipeline are also in poor condition for Large Woody Debris. Specifically, Fate, Days, and Wood Creeks are in poor condition for Large Woody Debris.[244]

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[239] FEIS at 4.3-43 (emphasis added)

[240] State of Oregon FEIS comments at 24, DEQ Section (emphasis added).

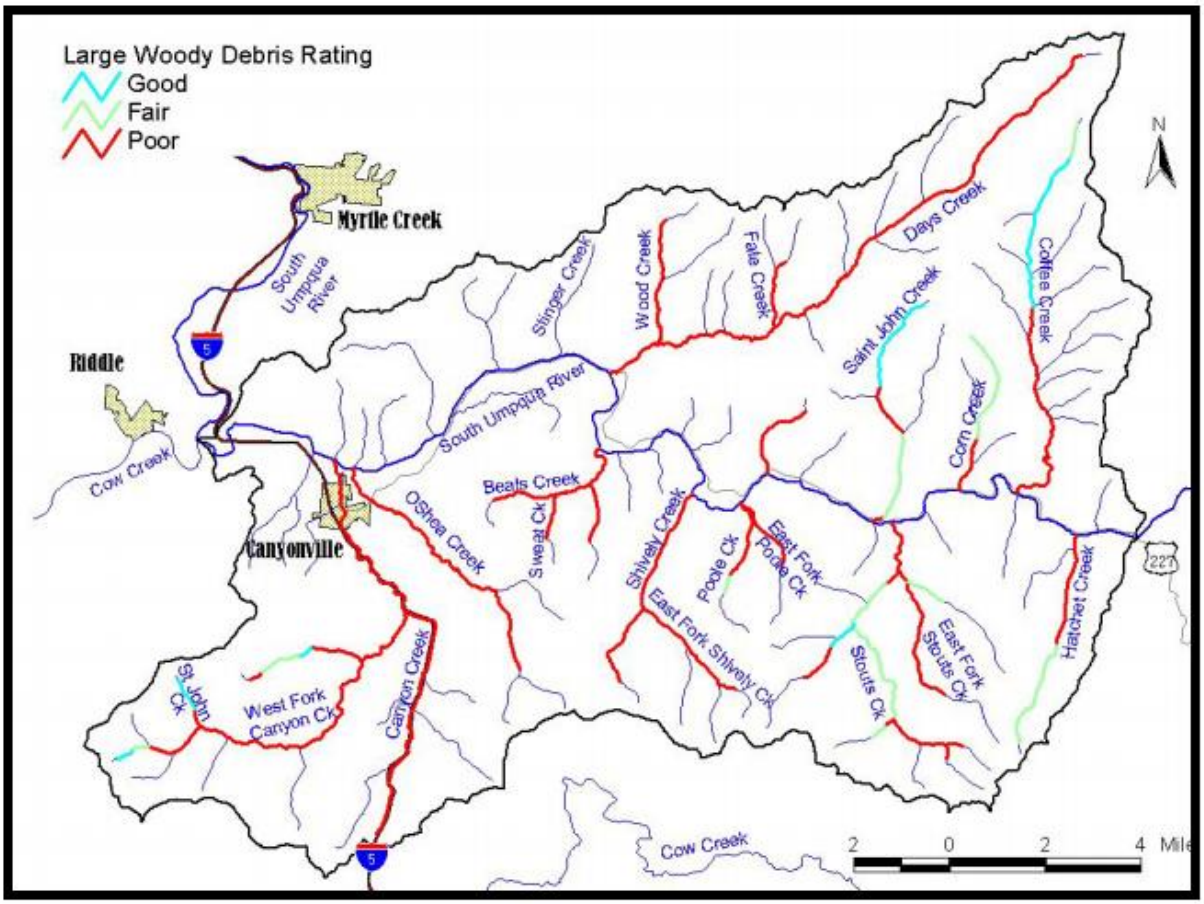
[241] Oregon's 2012 Integrated Report Assessment Database and 303(d) list. Oregon DEQ. https://www.deq.state.or.us/wq/assessment/rpt2012/search.asp.

[242] See Friends of Pinto Creek v. United States Environmental Protection Agency, No. 05-70785, (9th Cir. Oct. 4, 2007).

[243] Bisson, Peter A. et al. Large Woody Debris in Forested Streams in the Pacific Northwest: Past, Present, and Future. https://andrewsforest.oregonstate.edu/sites/default/files/lter/pubs/pdf/pub1316.pdf.

[244] South Umpqua River Watershed Assessment and Action Plan. Umpqua Basin Watershed Council. 2003. Available https://nrimp.dfw.state.or.us/web%20stores/data%20libraries/files/Watershed%20Councils/Watershed%20Councils_280_DOC_South_Umpqua_RiverUBWC2003WSAssess.pdf.

South Umpqua River Watershed Assessment and Action Plan. Umpqua Basin Watershed Council. 2003.



d. Road Construction

According to the 8 May 2018 JPA materials, the applicants propose construction of temporary access roads ("TARs") at 10 locations impacting 3.8 acres and construction of 15 permanent access roads ("PARs") impacting 2.16 acres.[245] The applicants continue to amend this information as plans are changed and access roads relocated. As a result, impacts to fish-bearing and non-fish-bearing streams may be significantly altered as well. However, no site-specific details are provided to avoid and minimize impacts beyond general descriptions of Best Management Practices ("BMPs"), such as silt fences or straw bale sediment barriers. On steep slopes, particularly in rainy winter months, similar BMPs have failed in the past to prevent impacts to streams, creeks and ditches. Not only is road construction inadequately described, but the measures to prevent significant sedimentation and turbidity in streams are neither site-specific nor reliable. State and federal agencies cannot defer until later analysis of how the project will impact wetlands, streams, and rivers.

[245] Pacific Connector Pipeline Resource Report 1 General Project Description. p. 31, PCP Part 2 Appendix B 8 May 2018. p. 329.

Particularly because the South Umpqua is a Key Watershed under the Northwest Forest Plan, it is even more important to have accurate information involving direct, indirect, and cumulative impacts regarding temporary and permanent roads. The Forest Plan directs that, "[t]he amount of existing system and nonsystem roads within Key Watersheds should be reduced through decommissioning of roads. Road closures with gates or barriers do not qualify as decommissioning or a reduction in road mileage."[246] By constructing roads in key watershed areas, the Pacific Connector will harm salmon habitat and water quality. The Forest Plan concludes: "The most important components of a watershed restoration program are control and prevention of road-related runoff and sediment production, restoration or the condition of riparian vegetation, and restoration of in-stream habitat complexity." Without adequate description of road construction activities and related impacts, the JPA fails to disclose impacts of road construction and modification, and fails to demonstrate how it meets the goals described in the Northwest Forest Plan.

Additionally, use of existing access roads does not mean that these roads are anywhere close to being ready for the proposed industrial use. Many of these are old, decrepit logging spurs or Off-Road Vehicle tracks, which would require significant construction to handle heavy equipment.

e. Hydrostatic Testing

The applicants provide minimal information regarding the source and discharge of hydrostatic testing water. As stated in Resource Report 1:

> Water for hydrostatic testing will be obtained from commercial or municipal sources or from surface water right owners (see Table 1.3-2). If water for hydrostatic testing is acquired from surface water sources, PCGP will obtain all necessary appropriations and withdrawal permits (see Appendix C.1). As required by ODFW, pumps used to withdraw surface water will be screened according to National Marine Fisheries Service screening criteria to prevent entrainment of aquatic species.[247]

In Table 1.3-2, the applicants identify four potential sources of hydrostatic testing water within the Umpqua Basin including the Ben Irving reservoir, Looking Glass Olalla Water District, and both crossings of the South Umpqua River. DEQ should fully evaluate the potential impact of water withdrawals from these sources within the context of existing water rights and the resulting consequences for water quality. Reducing flow by withdrawing water for hydrostatic testing has the potential to exacerbate water quality impairments. The South Umpqua River is already impaired for temperature, sedimentation, dissolved oxygen, biological criteria, and habitat modification. Olalla Creek is impaired for temperature, sedimentation, and biological criteria.[248]

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[246] Northwest Forest Plan at B-19.

[247] Pacific Connector Pipeline Resource Report 1 General Project Description. 8 May 2018. P. 53. PCP Part 2 appendix B from DEQ 8 May 2018 p. 351.

[248] Oregon's 2012 Integrated Report Assessment Database and 303(d) list. Oregon DEQ. https://www.deq.state.or.us/wq/assessment/rpt2012/search.asp.

Table 1.3-2
Potential Hydrostatic Source Locations

County	MP	Source		Owner	Estimated Withdrawal Requirement *(Longest Test Segment Volume)*[1]
South Coast Basin - Coos Bay Frontal Pacific Ocean (1710030403) - Fifth Field Watershed					
Coos	0.00	Coos Bay - North Bend Water Board		Coos Bay - North Bend Water Board	4,999,228
South Coast Basin - M. F. Coquille River (1710030501) - Fifth Field Watershed					
Douglas	50.20	Water Impoundment	Kinnan Lake	5-J Limited Partnership, Donald R. Johnson 29080601300	3,315,584
Umpqua Basin - Olalla Creek-Lookingglass Creek (1710030212) - Fifth Field Watershed					
Douglas	55.90	Water Impoundment	Ben Irving Reservoir	Douglas County Public Works/ Looking Glass Olalla Water District/ Winston-Dillard Water District	3,315,584
Douglas	58.75	Looking Glass Olalla Water District (Olalla Creek Crossing)		Looking Glass Olalla Water District	3,315,584
Umpqua Basin - Clark Branch-South Umpqua River (1710030211) - Fifth Field Watershed					
Douglas	71.30	S. Umpqua River Crossing #1		Oregon Department of Water Resources	2,037,230
Umpqua Basin - Days Creek-South Umpqua River (1710030205) - Fifth Field Watershed					
Jackson	94.73	S. Umpqua River Crossing #2		Oregon Department of Water Resources	2,525,177
Rogue Basin - Shady Cove-Rogue River (1710030707) - Fifth Field Watershed					
Jackson	122.5	Rogue River Crossing		Oregon Department of Water Resources	1,951,591
Rogue Basin - Little Butte Creek (1710030708) - Fifth Field Watershed					
Jackson	133.38	Medford Aqueduct		Eagle Point Irrigation	2,256,357
Jackson	146.70	N. Fork Little Butte Creek Crossing		Medford Irrigation District/ Rogue River Valley Irrigation District	2,847,495
Jackson	161.40	Water Impoundment	Fish Lake		2,847,495
Klamath Basin - Fourmile Creek (1801020302) - Fifth Field Watershed					
Klamath	168.90	Water Impoundment	Lake Of The Woods National Forest Lake	United States (Rogue River-Siskiyou NF)	5,565,825

Table 1.3-2 Potential Hydrostatic Source Locations. Pacific Connector Pipeline Resource Report 1. 8 May 2018. P. 53. PCP Part 2 Appendix B P. 351.

D. Rogue Basin

The Rogue Basin stretches 3.3 million acres in southwestern Oregon and northern California. According to the 2012 303(d) list, waterbodies in the Rogue watershed do not meet state water quality standards for temperature, dissolved oxygen, sedimentation, bacteria, pH, and nuisance weeds and algae.[249] The table below lists the waterbodies in the Upper Rogue sub-watershed (HUC 17100307) that the applicants propose to cross that do not meet water quality standards for dissolved oxygen, temperature, and sedimentation. These proposed crossings include: Big Butte Creek, Indian Creek, Lick Creek, Little Butte Creek, Trail Creek, and the Rogue River. Additionally, Little Butte Creek and the Rogue River are also impaired for multiple toxics, including but not limited to cadmium, selenium, mercury, nickel, silver, and zinc.[250]

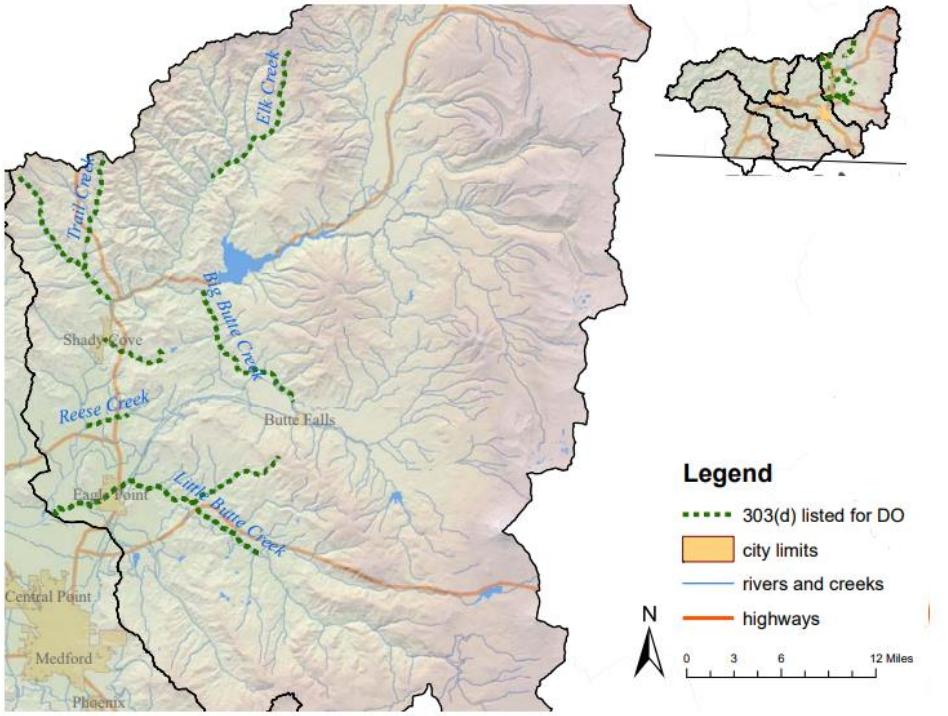
[249] Oregon's 2012 Integrated Report Assessment Database and 303(d) list. Oregon DEQ. https://www.deq.state.or.us/wq/assessment/rpt2012/search.asp.
[250] Oregon's 2012 Integrated Report Assessment Database and 303(d) list. Oregon DEQ. https://www.deq.state.or.us/wq/assessment/rpt2012/search.asp.

Table 7. 303(d) Listings for Streams Crossed by Pacific Connector Pipeline in the Rogue Basin[251]

Waterbody Crossed by Pipeline	Dissolved Oxygen	Habitat Modification	Temperature	Biological Criteria	Sedimentation
Big Butte Creek	X		X		X
Indian Creek	X		X		
Deer Creek			X		X
Lick Creek	X			X	
Little Butte Creek	X		X		X
Trail Creek	X		X		X
West Fork Trail Creek	X		X		X
Rogue River	X		X		X

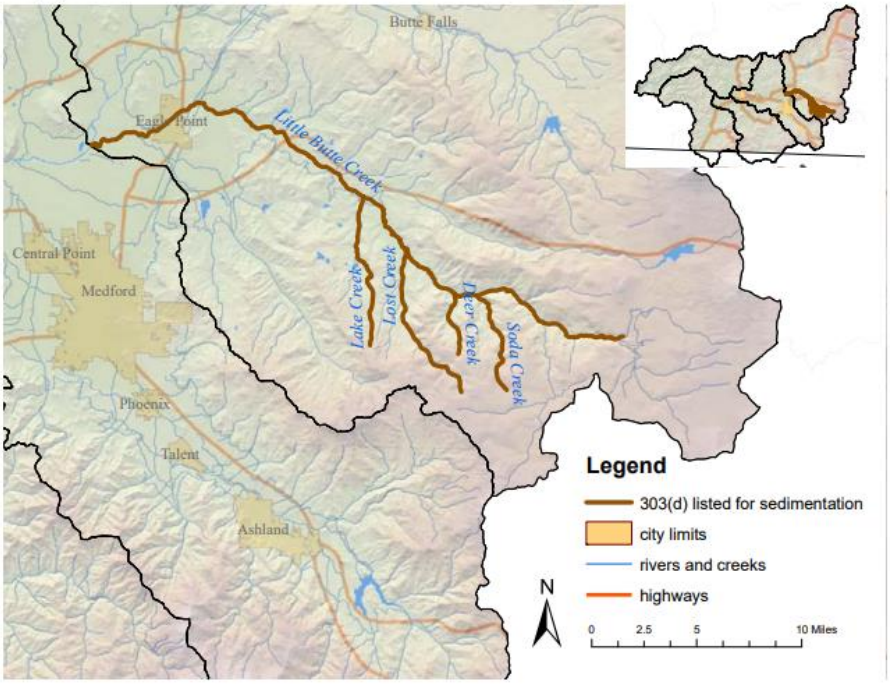
[251] Oregon's 2012 Integrated Report Assessment Database and 303(d) list. Oregon DEQ. https://www.deq.state.or.us/wq/assessment/rpt2012/search.asp.

Figure 1.9. 2004/2006 303(d) Dissolved Oxygen Listed Waterbodies in the Rogue River Basin



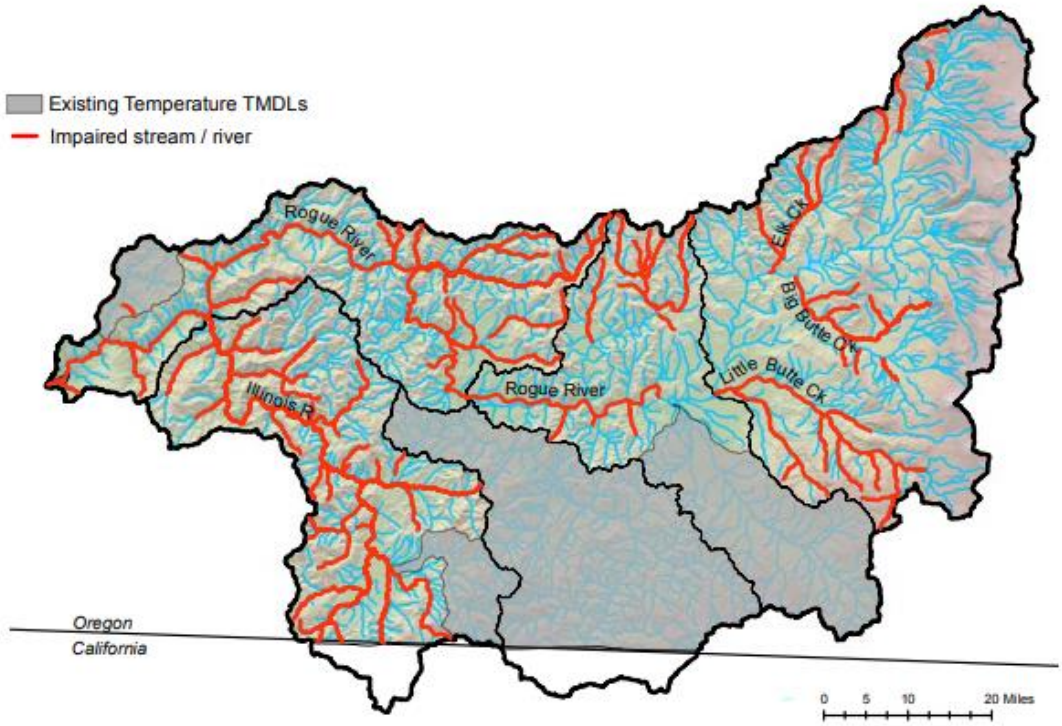
Rogue River Basin TMDL. Oregon DEQ. December 2008. P. 1-19.

Figure 1.10. 303(d) Sedimentation Listed Waterbodies in the Rogue River Basin



Rogue River Basin TMDL. Oregon DEQ. December 2008. P. 1-20.

Figure 2.3. 2004/2006 303(d) list for temperature (Red)



"Chapter 2: Temperature." Rogue River Basin TMDL. Oregon DEQ. December 2008. P. 2-9.

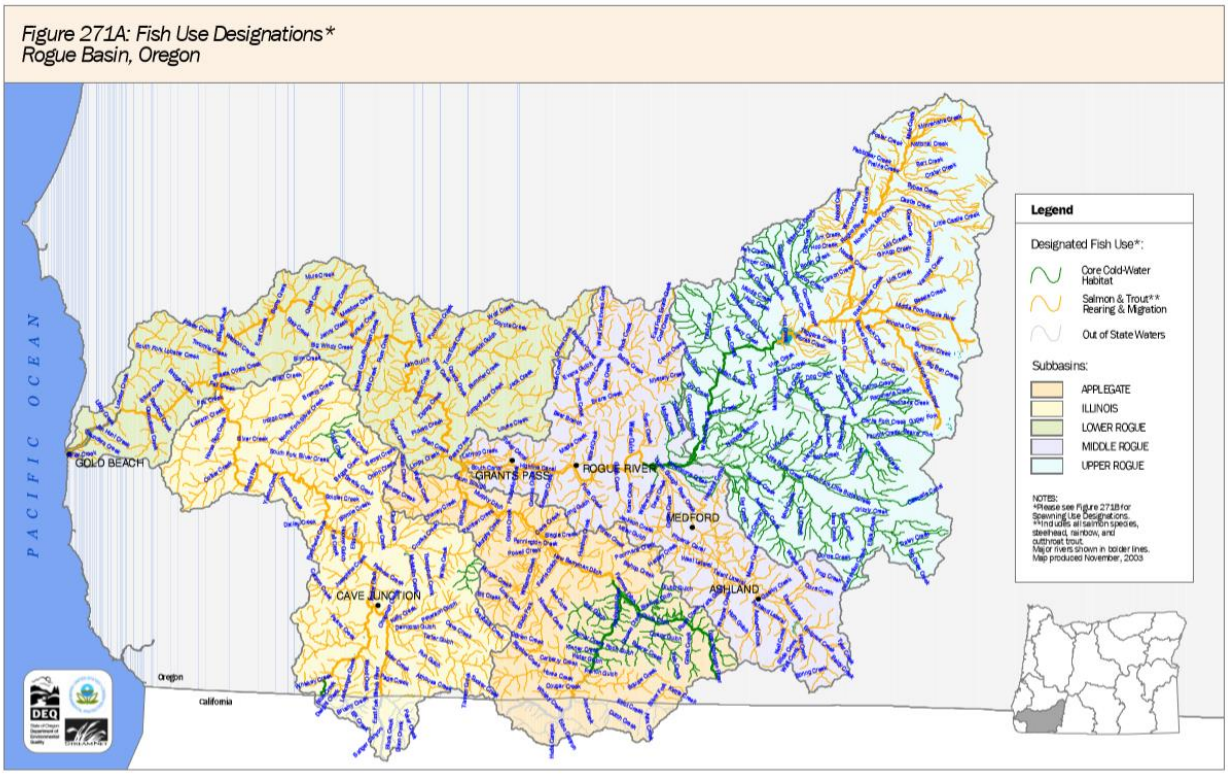
The Rogue Basin supports coho salmon, spring chinook salmon, fall chinook salmon, summer steelhead, winter steelhead, cutthroat trout, Pacific lamprey, green sturgeon, and other native freshwater species. In 1997, the Southern Oregon/Northern California Coast (SONCC) coho salmon were federally listed as threatened.[252] As discussed in more detail in Section VI, the proposed activities will likely create conditions deleterious to these threatened and endangered species, in violation of OAR 340-041-0007(10). The Rogue Basin TMDL states:

> Urbanization, agriculture, water withdrawals, warm water temperatures, and loss of stream/floodplain connectivity in the greater Rogue River Basin inhibit the recovery of coho salmon (USFS 1995).[253]

Further, the 2014 Southern Oregon/Northern California Coast (SONCC) Coho Recovery Plan identifies impaired water quality as one of the key limiting stressors for the Upper Rogue River

[252] Rogue River Basin TMDL. Oregon DEQ. December 2008. P. 1-6. https://www.oregon.gov/deq/FilterDocs/rogueChapter1andExecutiveSummary.pdf.
[253] Rogue River Basin TMDL. Oregon DEQ. December 2008. P. 1-8. https://www.oregon.gov/deq/FilterDocs/rogueChapter1andExecutiveSummary.pdf

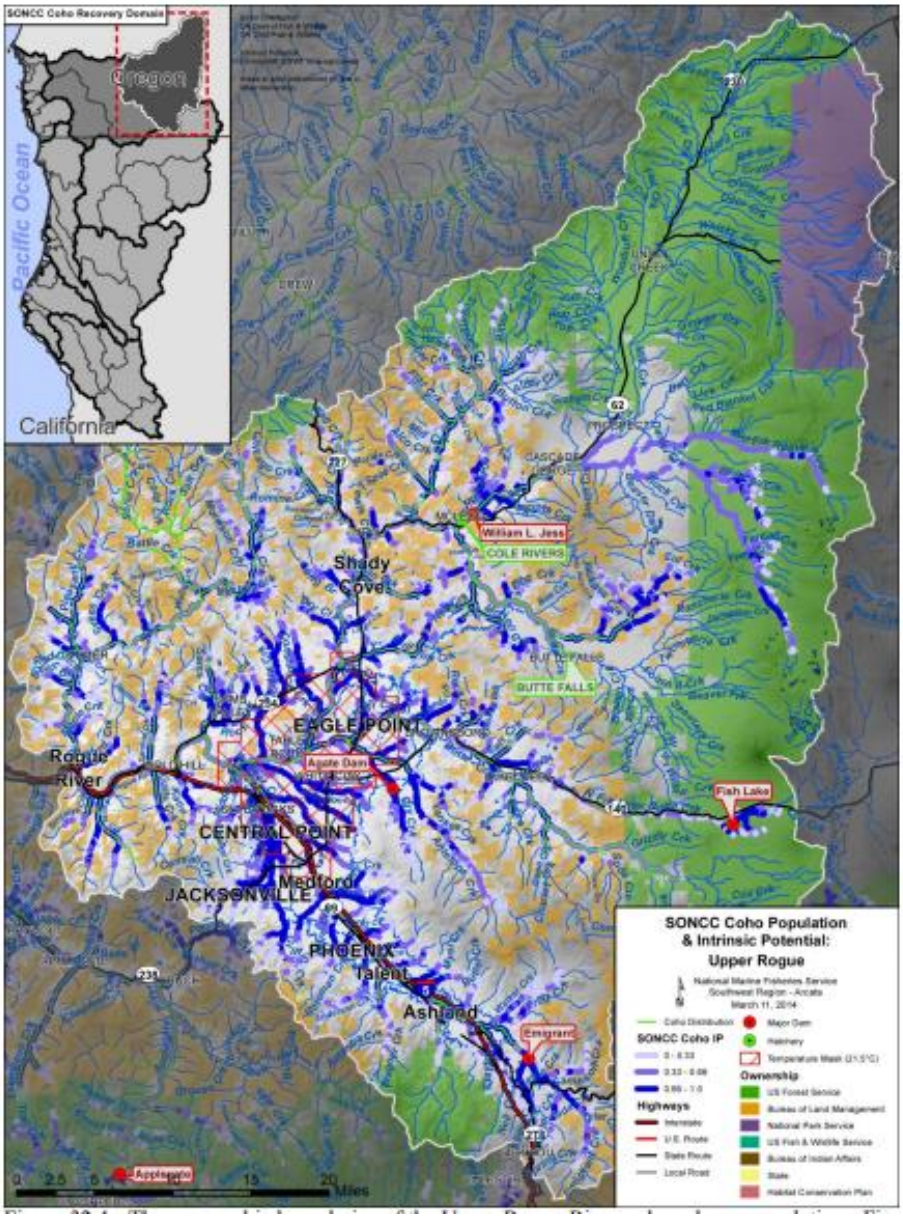
population.[254] Among six high priority recovery actions, the Recovery Plan identifies increasing Large Woody Debris as a priority recovery action. The proposed pipeline route would cross waterbodies that support threatened SONCC or have high Intrinsic Potential to support habitat.[255]



OAR 340-041-0101 to 340-041-0340: Figure 271A Fish Use Designations, Rogue Basin.

[254] "Upper Rogue River Population." Southern Oregon/Northern California Coast (SONCC) Coho Recovery Plan. NOAA Fisheries. 2014. P. 32-1.

[255] "Upper Rogue River Population." Southern Oregon/Northern California Coast (SONCC) Coho Recovery Plan. NOAA Fisheries. 2014. P. 32-3.



"Upper Rogue River Population." Southern Oregon/Northern California Coast (SONCC) Coho Recovery Plan. NOAA Fisheries. 2014. P. 32-3.

As discussed in Sections II-VI, the applicants have failed to demonstrate that water quality standards will not be violated in the Rogue Basin. Proposed activities related to identified stream crossings in the Rogue Basin will likely:

- Violate Oregon's anti-degradation policy by causing significant temperature increases in numerous stream segments, therefore causing a decrease in dissolved oxygen levels, and further degrading stream segments that are already water quality impaired for temperature, dissolved oxygen, pH, turbidity, and sedimentation;

- Violate Oregon's statewide narrative criteria by creating conditions deleterious to aquatic species, including but not limited to threatened and endangered species (e.g. SONCC coho, green sturgeon);
- Violate Oregon's water quality standard for temperature by removing riparian vegetation that shades streams, causing stream heating along a minimum 75-foot wide construction easement;
- Violate Oregon's water quality standard for turbidity by causing a more than 10% increase in natural turbidity levels in stream segments impacted by pipeline installations;
- Violate Oregon's toxics standard by disturbing and re-suspending contaminated material in and around waters of the state; and
- Impair beneficial uses to be protected in the Rogue Basin.

The applicants have failed to provide reasonable assurances that water quality standards will not be violated and, therefore, DEQ must not certify the project.

1. Construction

Construction of the project within the Rogue Basin primarily consists of pipeline construction and related stream crossings, vegetation removal, and temporary or permanent road construction. All of the proposed activities within the Rogue Basin are likely to impair water quality and the applicants do not provide reasonable assurance that the proposed activities will not violate state water quality standards. Therefore, DEQ cannot certify that the project will comply with state water quality standards.

a. Stream Crossings

With the exception of the proposed Rogue River crossing upstream from Shady Cove, all of the proposed stream crossings within the Rogue Basin will use the dry open cut method. In order for DEQ to effectively determine the direct, indirect, and cumulative impacts of these crossings, the applicants should provide a comprehensive environmental review for each stream crossing, particularly for those crossings identified as moderate or high risk. However, the JPA does not include such site-specific analysis. DEQ should review the assessment of the New York Department of Environmental Conservation (DEC), which denied 401 certification due to the applicant's failure to provide site-specific analysis of each stream crossing.[256] Without comprehensive environmental reviews of and detailed plans for stream crossings, particularly those identified as at a high or moderate risk of scour, channel migration, and/or avulsion, DEQ cannot certify that the project will comply with state water quality standards.

As demonstrated in the table below, the applicants identify seven stream crossings in the Rogue Basin as Level 1 (moderate) risk of channel migration, avulsion, and/or scour. The crossing of North Fork Little Butte Creek, which is already impaired for dissolved oxygen, temperature, and sedimentation, is identified as having a high risk of channel migration, avulsion, and/or scour.

[256] Joint Application: DEC Permit# 0-9999-00181/00024 Water Quality Certification/Notice of Denial. New York State Department of Environmental Conservation. 22 April 2016. P. 13. http://www.dec.ny.gov/docs/administration_pdf/constitutionwc42016.pdf.

The proposed bore crossing of the Medford Aqueduct and the HDD crossing of the Rogue River will be discussed separately in subsequent sections.

No site-specific analyses of these moderate and high risk crossings is provided by the applicants. DEQ should require site-specific information including, but not limited to the specific location of access roads, details of proposed blasting, and the location of temporary coffer dams.

Table 8. Stream Crossings Identified with Moderate and High Risk of Channel Migration, Avulsion and/or Scour

Waterbody crossed by pipeline	Level 1 (moderate) risk of channel migration, avulsion, and/or scour	Level 2 (high) risk of channel migration, avulsion, and/or scour	Bore	HDD
West Fork Trail Creek (MP 118.89)	X			
Canyon Creek (MP120.45)	X			
Rogue River (MP 122.65)				X
Deer Creek (MP 128.49)	X			
Neil Creek (MP132.12)	X			
Medford Aqueduct (MP 133.38)			X	
Lick Creek (MP 140.27)	X			
Salt Creek (MP 142.57)	X			
North Fork Little Butte Creek (MP 145.69)		X		
South Fork Little Butte Creek (MP 162.45)	X			

The FEIS from the previous iteration of the proposed pipeline specifically addressed the potential water quality impairments as a result of channel migration, avulsion, and/or scour. The FEIS states:

> Fluvial erosion represents potential hazard to the proposed pipeline where streams are capable of exposing the pipe as a result of channel migration, avulsion, widening, and/or streambed scour. The principal hazard resulting from channel migration and streambed scour is complete or partial exposure of the pipeline within the channel from streambed and bank erosion or within the floodplain from channel migration and/or avulsion….two crossings were identified that require additional field reconnaissance; West Fork Trail Creek and North Fork Little Butte Creek.[257]

The JPA for the current version of the proposed project does not provide further information regarding these crossings.

In addition to the potential for increased erosion, channel migration, avulsion, and/or scour as a result of pipeline crossings, many of the proposed crossings cut through water bodies that are already impaired for sedimentation. According to the 2008 Rogue Basin TMDL:

> There are six segments in the Rogue River Basin that were listed in the 2004/2006 WQ Assessment as sedimentation impaired (Table 1.12 and Figure 1.10). The impairments

[257] FEIS at 4.3-36.

> were determined based on Oregon Department of Fish and Wildlife (ODFW) reporting that a high percentage of fine sediment was measured in most reaches during a 1994 survey. At the time of the writing of this TMDL, DEQ is in the process of developing a sedimentation assessment methodology that could be used for implementing the narrative sedimentation standard. When the methodology and associated guidance is completed, the agency will establish sedimentation TMDLs for those waterways on the 303(d) list. DEQ also intends to re-visit the Rogue River Basin sedimentation impairments when the temperature and bacteria TMDLs are reviewed, on a 5 year basis.[258]
>
> Disturbances that change riparian vegetation, increase the rate or amount of overland flow, or destabilize a stream bank may increase the rates of stream bank erosion and result in sedimentation increases. Disturbances in the uplands that remove vegetation, reduce soil stability on slopes, or channel runoff can increase sediment inputs (DEQ 2003, DEQ 2007). Sediment created from upland erosion is delivered to a stream channel through various erosional processes. Wide mature riparian vegetation buffers filter sediment from upslope sources as well as stabilize stream banks from erosion. System potential riparian vegetation measured by percent effective shade is a surrogate measure that has been used in other TMDLs to address sedimentation (DEQ 2003).

Modifications to the stream channel, as a result of the proposed activities that can result in channel migration, avulsion, and/or scour, will also impact temperature. As described in the Rogue Basin TMDL, channel modifications that increase sedimentation can decrease the depth and frequency of pools, which decreases the assimilative capacity for thermal loading of a stream.[259]

Specifically, Little Butte Creek and the South Fork of Little Butte Creek are both listed as impaired for sediment.[260] The South Fork Little Butte Creek crossing is identified as a moderate risk for channel migration, avulsion, and/or scour while the North Fork Little Butte Creek is identified as high risk. However, the applicants do not provide any further field assessments or site-specific analysis regarding these high risk crossings in water bodies that are already impaired for sediment. According to Table 2.2-13 Site-Specific Waterbody Crossing Plans, the applicants have provided a site-specific crossing plan in Appendix E.2 for the South Fork Little Butte Crossing, but this plan is not included in the 8 May 2018 JPA documents.

Proposed activities to conduct dry open cut technology have the potential to increase sedimentation, modify habitat, decrease dissolved oxygen, and impair the aquatic habitat. As a result, DEQ cannot certify that the proposed activities will not result in violations of water quality standards.

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[258] Rogue River Basin TMDL. Oregon DEQ. December 2008. P. 1-19. https://www.oregon.gov/deq/FilterDocs/rogueChapter1andExecutiveSummary.pdf.

[259] "Chapter 2: Temperature." Rogue River Basin TMDL. Oregon DEQ. December 2008. P. 2-20.

[260] Rogue River Basin TMDL. Oregon DEQ. December 2008. P. 1-20. https://www.oregon.gov/deq/FilterDocs/rogueChapter1andExecutiveSummary.pdf.

b. Rogue River Crossing

The applicants propose to use Horizontal Directional Drilling (HDD) technology to cross the Rogue River at MP 122.65. As discussed in more detail in Sections II-VI, the use of HDD also poses the risk of an unintended release of drilling fluid known as a frac-out. The applicants fail to comprehensively disclose and analyze the likelihood and frequency of frac-out events. The State re-iterated these concerns in its 2017 scoping comments.[261] Without this information, DEQ cannot evaluate whether the project is likely to degrade water quality below state standards.

The applicants failed to conduct a numerical hydraulic fracture analysis, instead relying upon a qualitative analysis.[262] As part of the qualitative analysis, GeoEngineers identifies the presence of gravels and cobbles near the HDD entry point and cautions that:

> If cuttings are not effectively removed from the hole during HDD operations, pullback forces could be excessively high during pullback of the 36-inch-diameter product pipe, or the product pipe could become lodged in the hole. The failure to effectively remove cuttings from the hole could potentially result in failure of the HDD installation. Therefore, we recommend that the drilling contractor maintain drilling fluid returns at all times, and use appropriate means and methods (appropriate penetration rates, drilling fluid management, mechanical methods) to ensure that cuttings are adequately removed from the hole during the HDD process.[263]

Further, the qualitative assessment of the potential for a frac-out results in the following conclusion from GeoEngineers:

> It is our opinion that there is a low risk of drilling fluid surface release along the proposed HDD profile, except within about 50 to 100 feet of the entry and exit points where the HDD profile passes through alluvial and colluvial soils, and the cover between the HDD profile and the ground surface is relatively thin. As is typical with most HDD installations, the risk of drilling fluid surface release within about 100 feet of the entry and exit points is relatively high.[264]

Additionally, the applicants do not provide adequate information regarding impacts to groundwater as a result of HDD. The September 2017 GeoEngineers report states:

> We did not measure groundwater levels upon completion of the borings because of the presence of drilling fluid in the holes at the time of drilling. We anticipate that groundwater levels will mimic the elevation of the Rogue River around 1,410 feet mean

[261] Stat of Oregon 2017 Scoping comments at 15.

[262] Rogue River HDD Pacific Connector Pipeline Project Jackson County, Oregon. 1 September 2017. P. 7. Pacific Connector Pipeline Part 2 Appendix B. P. 1578.

[263] Rogue River HDD Pacific Connector Pipeline Project Jackson County, Oregon. 1 September 2017. P. 11. Pacific Connector Pipeline Part 2 Appendix B. P. 1582.

[264] Rogue River HDD Pacific Connector Pipeline Project Jackson County, Oregon. 1 September 2017. P. 12. Pacific Connector Pipeline Part 2 Appendix B. P. 1583.

> sea level (MSL). We anticipate that groundwater levels will fluctuate with precipitation, site utilization and other factors. During heavy prolonged precipitation, and probably during most of the winter months, we expect that groundwater will be near or at the surface of the site on the east side of the Rogue River. [265]

DEQ should conclude that merely "anticipating" impacts to groundwater is not a comprehensive and site-specific review of the potential consequences of a frac-out related to HDD crossing of the Rogue River.

Finally, the applicants have inaccurately included Klamath River crossing data in the Rogue River crossing section. The HDD Design Summary provided is for the Klamath River and not for the Rogue River.[266] Therefore, the JPA is completely missing information regarding HDD design for the Rogue River crossing. Without this information, DEQ cannot certify that the proposed HDD crossing for the Rogue, in addition to the other proposed activities, will not violate state water quality standards.

c. Medford Aqueduct Crossing

In addition to the dry open-cut methods and the HDD proposed for the Rogue River, the applicants also propose to bore below the Medford Aqueduct. The 31-inch Medford Aqueduct pipeline was constructed in 1927 and carries approximately 40 cubic feet per second of drinking water from Big Butte Springs to the City of Medford and communities within the Bear Creek watershed.[267] The applicants provide very minimal information regarding construction of this crossing. The plan and profile for the Medford Aqueduct state that the depth of the aqueduct is unknown.[268] DEQ should require more information regarding the depth of the bore and site-specific details to evaluate the potential direct, indirect, and cumulative impacts of the proposed pipeline crossing the main source of the City of Medford's drinking water.

d. Removal of Riparian Vegetation

The proposed action would cause stream temperature increases by removing riparian vegetation across a wide construction easement. Removing riparian vegetation will increase water temperature by decreasing shade in numerous streams identified as having salmon and steelhead spawning use, having core cold water habitat use, having salmon and trout rearing and migration use, or having migration corridor use. Without specific information about baseline temperatures in streams where riparian vegetation would be removed, it is impossible to review potential violations of numerical temperature limits specified in OAR 340-041-0028(4).

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[265] Rogue River HDD Pacific Connector Pipeline Project Jackson County, Oregon. 1 September 2017. P. 6. Pacific Connector Pipeline Part 2 Appendix B. P. 1577.

[266] Pacific Connector Pipeline. Rogue River HDD Pacific Connector Pipeline Project Jackson County, Oregon. 1 September 2017. Appendix B HDD Design Drawing and Calculations. PCP Part 2 Appendix B 8 May 2018. P. 1633.

[267] "Big Butte Creek." Eagle Point Irrigation District. https://www.eaglepointirrigation.com/big-butte-creek.html.

[268] Pacific Connector Gas Pipeline Project. Plan and Profile – Medford Aqueduct. PCP A-B Part 7. 6 February 2018. P. 1.

Riparian vegetation is critical to overall stream health and water quality. Removing riparian vegetation, as proposed by the applicants, will likely impair water quality in violation of the Clean Water Act. As described in the Rogue Basin TMDL:

> Near-stream vegetation disturbance/removal reduces stream surface shading via decreased riparian vegetation height, width and/or density, thus increasing the amount of solar radiation reaching the stream surface (shade is commonly measured as percent-effective shade or open sky percentage). Furthermore, forests even beyond the distance necessary to shade a stream can influence the microclimate, providing cooler daytime temperatures (Chen et al. 1999). Riparian vegetation also plays an important role in shaping channel morphology, resisting erosive high flows, and maintaining floodplain roughness.[269]

Not only will removing riparian vegetation likely increase water temperature, but it is also likely to result in increased sedimentation. As stated in the Rogue Basin TMDL:

> Increased sediment loading can result from agricultural, logging and mining activities which can result in increased runoff, landslides, debris torrents and other mass wasting events. Lastly, removal of riparian vegetation can lead to bank instability and increased erosion.[270]

Further, removal of riparian vegetation that results in increased sedimentation can impact interactions between surface water and groundwater, further impairing streams for temperature. As stated in the Rogue Basin TMDL:

> Excess fine sediment can also decrease permeability and porosity in the hyporheic zone, greatly reducing hyporheic flow, and resulting in less cool water inputs (Rehg et al. 2005).[271]

Stream temperature is also closely related to dissolved oxygen levels. Removing riparian vegetation will not only increase stream temperature, but also likely result in decreased dissolved oxygen. As stated in the Rogue Basin TMDL:

> Stream temperature has a significant impact on the dissolved oxygen level in a stream in two ways. As stream temperatures decrease, the amount of oxygen that can remain dissolved in water increases, and as temperatures decrease the amount of oxygen consumed by biological processes decreases.[272]

Multiple streams that would be crossed by the pipeline are also impaired for dissolved oxygen (e.g. Big Butte Creek, Little Butte Creek, and the Rogue River). The Ninth Circuit Court of

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[269] "Chapter 2: Temperature." Rogue River Basin TMDL. Oregon DEQ. December 2008. P. 2-19.
[270] "Chapter 2: Temperature." Rogue River Basin TMDL. Oregon DEQ. December 2008. P. 2-19.
[271] "Chapter 2: Temperature." Rogue River Basin TMDL. Oregon DEQ. December 2008. P. 2-20.
[272] Rogue River Basin TMDL. Oregon DEQ. December 2008. P. 1-18.

Appeals made clear that new dischargers may not add a pollutant into a water body that is water quality limited.[273]

Removing riparian vegetation also decreases Large Woody Debris that is an important component of stream morphology and habitat for aquatic species.

The Rogue Basin supports habitat for threatened and endangered species listed under the ESA that are sensitive to temperature, sedimentation, and dissolved oxygen levels. Specifically, the Upper Rogue provides habitat for threatened SONCC coho. Regarding the Upper Rogue River population of SONCC coho, NOAA Fisheries stated:

> The most pervasive problem affecting coho salmon is water temperature. Very few reaches in the Upper Rogue River Sub-basin meet ODEQ (2008) water standards compatible with coho salmon recovery…Flow depletion reduces water volume and slows water velocity, thus promoting warming, stagnation, and depressed dissolved oxygen (D.O.) (Thompson and Fortune 1970). Nawa (1999) documented loss of coho salmon juveniles in Trail Creek due to flow depletion and low D.O. Little Butte Creek is similar to Trail Creek and has both low flow and D.O. problems.[274]

Further, regarding the Upper Rogue River population, the 2014 SONCC Recovery Plan states:

> Poor pool frequency and depth throughout the Upper Rogue River basin (URWA 2006) are likely due to elevated levels of fine sediment partially filling pools, a lack of scour-forcing obstructions such as large wood, and in some reaches diminished scour due to channel widening.[275]

Based on the existing water quality impairments for temperature, sedimentation, and dissolved oxygen in the Rogue Basin and the presence of ESA-listed species specifically threatened by increased temperature, decreased dissolved oxygen, and increased sedimentation as a result of removing riparian vegetation, DEQ cannot certify that the proposed activities will not violate water quality standards.

e. Road Construction

Runoff and sedimentation from roads is a major source of pollution to the streams of southwest Oregon. The Rogue Basin TMDL states:

> Excessive summer water temperatures have been recorded in a number of tributaries. These high summer temperatures are reducing the quality of rearing and spawning habitat

[273] See Friends of Pinto Creek v. United States Environmental Protection Agency, No. 05-70785, (9th Cir. Oct. 4, 2007).
[274] "Upper Rogue River Population." Southern Oregon/Northern California Coast (SONCC) Coho Recovery Plan. NOAA Fisheries. 2014. P. 32-15.
[275] "Upper Rogue River Population." Southern Oregon/Northern California Coast (SONCC) Coho Recovery Plan. NOAA Fisheries. 2014. P. 32-17.

> for chinook and coho salmon, steelhead and resident rainbow trout. The potential causes of high water temperatures in the Rogue River subbasins include urban and rural residential development near streams and rivers, reservoir management, irrigation water return flows, past forest management within riparian areas, NPDES regulated point sources, agricultural land use within the riparian area, water withdrawals, and road construction and maintenance.[276]

Increased sediment as a result of road construction, operation, and maintenance is also identified as a risk to threatened SONCC coho under the 2014 Recovery Plan:

> Sediment contribution from landslides and erosion occurs naturally in the Upper Rogue River basin; however, roads, timber harvest, and bank erosion following removal of riparian vegetation have elevated fine sediment input. Excess fine sediment directly impacts coho salmon egg viability and can reduce food for fry, juveniles and smolts.[277]

The applicants propose construction of temporary access roads (TARs) at 10 locations impacting 3.8 acres and construction of 15 permanent access roads (PARs) impacting 2.16 acres.[278] Because the project continues to change throughout the public process, impacts to streams may be significantly altered as well. The applicants do not provide site-specific details to minimize impacts of temporary or permanent road construction to waterways beyond general descriptions of BMPs. Not only is road construction inadequately described, but the measures to prevent significant sedimentation and turbidity in streams are neither site-specific nor reliable. DEQ should not rely upon later analysis to determine how construction of permanent or temporary roads will impact wetlands, streams, and rivers.

f. Hydrostatic Testing

Potential sources of hydrostatic test water from the Rogue Basin include the Rogue River, the Medford Aqueduct, Eagle Point Irrigation, or the North Fork of Little Butte Creek.[279] Water withdrawals from the Rogue Basin for hydrostatic testing and other related uses should be carefully reviewed by DEQ to evaluate the direct, indirect, and cumulative impacts on water quality. The applicants provide minimal information regarding the source and discharge of hydrostatic testing water. Not only would these water withdrawals impact existing water rights, but reducing flows can also impair water quality, in violation of water quality standards.[280]

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[276] "Chapter 2: Temperature." Rogue River Basin TMDL. Oregon DEQ. December 2008. P. 2-2.

[277] "Upper Rogue River Population." Southern Oregon/Northern California Coast (SONCC) Coho Recovery Plan. NOAA Fisheries. 2014. P. 32-17.

[278] Pacific Connector Pipeline Resource Report 1 General Project Description. p. 31, PCP Part 2 Appendix B 8 May 2018. p. 329.

[279] Pacific Connector Pipeline Resource Report 1 General Project Description. 8 May 2018. P. 58. PCP Part 2 Appendix B from DEQ 8 May 2018. P. 352.

[280] PUD No. 1 of Jefferson Cty v. Washington Dept. of Ecology. 511 U.S. 700 (1994). https://www.law.cornell.edu/supct/html/92-1911.ZO.html.

E. Upper Klamath and Lost River Subbasins

The Upper Klamath Basin covers approximately 5.6 million acres and includes six hydrologic sub-basins above Iron Gate dam. As stated in the Upper Klamath and Lost Subbasins TMDL:

> The Klamath River basin is of vital economic and cultural importance to the states of Oregon and California, as well as the Klamath Tribes in Oregon; the Hoopa, Karuk, and Yurok tribes in California; the Quartz Valley Indian Reservation in California, and the Resighini Rancheria in California…. Historically, the Basin once supported vast spawning and rearing fishery habitat with cultural significance to the local Indian tribes. The watershed supports an active recreational industry, including activities that are specific to the Wild and Scenic portions of the river designated by both the states and federal governments in both Oregon and California.[281]

The proposed pipeline would enter the Upper Klamath watershed with a crossing of Spencer Creek at MP 171.07 and cross approximately 10 streams within the watershed. The Upper Klamath has TMDLs for Dissolved Oxygen, Chlorophyll a, pH, and Ammonia Toxicity.[282] These water quality parameters would be both directly and indirectly impacted by the proposed activities. Multiple streams crossed by the pipeline within the Upper Klamath subbasin are impaired for dissolved oxygen, temperature, habitat modification, biological criteria, sedimentation, and toxics.[283]

The headwaters of the Lost River are located in California and the sub-basin stretches across both Oregon and California.[284] Approximately 109 waterways would be crossed by the pipeline in the Lost River watershed. The Lost River subbasin also has TMDLs for Dissolved Oxygen, Chlorophyll a, pH, and Ammonia Toxicity.[285] Regarding water quality in the Lost River subbasin, DEQ states:

> High nutrient loading in the Lost River subbasin contributes directly to exceedances of the ammonia toxicity and nuisance phytoplankton water quality criteria. In addition, nutrient loading promotes the production of aquatic plants and algae (macrophytes, epiphyton, periphyton, and phytoplankton), resulting in exceedances of water quality criteria for dissolved oxygen (DO) and pH. Biochemical oxygen demand (BOD), in the water column and sediment, also contributes to the dissolved oxygen limitation.[286]

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[281] Upper Klamath and Lost River Subbasins TMDL. Oregon DEQ. December 2017. https://www.oregon.gov/deq/FilterDocs/UpperKlamathandLostRiverTMDL.pdf. P. 15.
[282] Upper Klamath and Lost River Subbasins TMDL. Oregon DEQ. December 2017. https://www.oregon.gov/deq/FilterDocs/UpperKlamathandLostRiverTMDL.pdf.
[283] Oregon's 2012 Integrated Report Assessment Database and 303(d) list. Oregon DEQ. https://www.deq.state.or.us/wq/assessment/rpt2012/search.asp.
[284] Upper Klamath and Lost River Subbasins TMDL. Oregon DEQ. December 2017. https://www.oregon.gov/deq/FilterDocs/UpperKlamathandLostRiverTMDL.pdf.
[285] Upper Klamath and Lost River Subbasins TMDL. Oregon DEQ. December 2017. https://www.oregon.gov/deq/FilterDocs/UpperKlamathandLostRiverTMDL.pdf.
[286] Upper Klamath and Lost River Subbasins TMDL. Oregon DEQ. December 2017. https://www.oregon.gov/deq/FilterDocs/UpperKlamathandLostRiverTMDL.pdf. P. 92

Table 9. 303(d) Listings for Streams Crossed by Pacific Connector Pipeline in the Upper Klamath and Lost River Subbasins

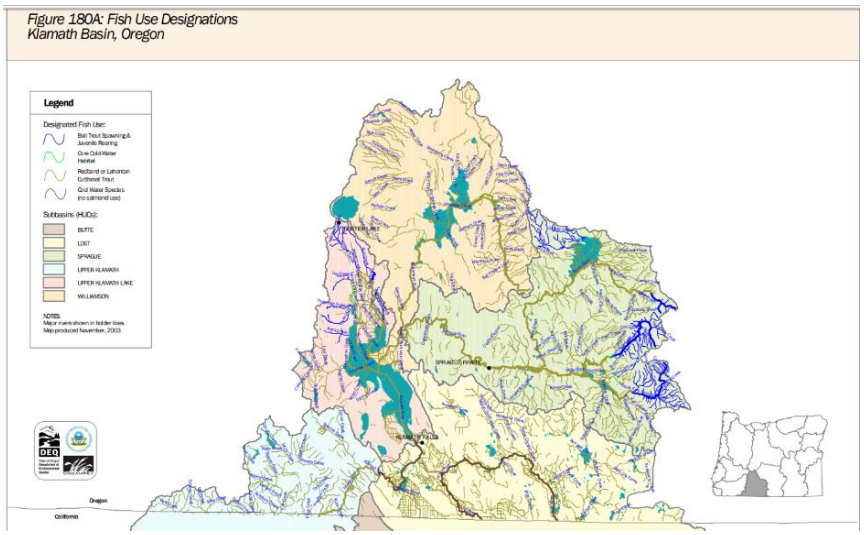
Waterbody Crossed by Pipeline	Dissolved Oxygen	Habitat Modification	Temperature	Biological Criteria	Sedimentation	Toxics
Klamath River	X	X	X		X	X
Clover Creek		X	X	X	X	
Spencer Creek		X	X	X	X	
Lake Ewauna	X					

Additionally, the Upper Klamath subbasin supports threatened and endangered species listed under the ESA, including the shortnose sucker, Lost River sucker, Bull trout, and Redband/Rainbow trout.[287] As discussed in more detail in Section VI, the proposed activities will likely create conditions deleterious to these threatened and endangered species, in violation of OAR 340-041-0007(10). According to the USFWS, factors that impact the persistence and abundance of Lost River and shortnose suckers include habitat fragmentation and "decreases in water quality associated with timber harvest, removal of riparian vegetation, livestock grazing, and agriculture practices."[288]

Regarding impacts of decreased water quality on threatened and endangered fish within the Upper Klamath and Lost River subbasins, DEQ states:

> Water quality problems are of great concern because of their potential impact on native fish populations in the Klamath basin including the Shortnose sucker (*Chasmistes brevirostris*), Lost River sucker (*Deltistes luxatus*), and interior redband trout (*Oncorhynchus mykiss ssp.).* Both sucker species were listed as endangered under the Endangered Species Act in 1988, and water quality degradation has been identified as a probable major factor in their declines. Populations of listed sucker species in the main stem of the Lost River, and Tule Lake are small and consist primarily of adults. Suckers have been eliminated entirely from the middle portion of the main stem of the Lost River and Lower Klamath Lake (NRC 2004).[289]

[287] Upper Klamath and Lost River Subbasins TMDL. Oregon DEQ. December 2017. https://www.oregon.gov/deq/FilterDocs/UpperKlamathandLostRiverTMDL.pdf. P. 30.
[288] Upper Klamath and Lost River Subbasins TMDL. Oregon DEQ. December 2017. https://www.oregon.gov/deq/FilterDocs/UpperKlamathandLostRiverTMDL.pdf. P. 32.
[289] Upper Klamath and Lost River Subbasins TMDL. Oregon DEQ. December 2017. https://www.oregon.gov/deq/FilterDocs/UpperKlamathandLostRiverTMDL.pdf. P. 96.



OAR 340-041-0101 to 340-041-0340: Figure 180A Fish Use Designations, Klamath Basin.

As discussed in Sections II-VI, the applicants have failed to provide reasonable assurances that the proposed activities will not violate state water quality standards. Proposed activities related to identified stream crossings in the Upper Klamath and Lost River watersheds will likely:

- Violate Oregon's anti-degradation policy by causing significant temperature increases in numerous stream segments, by causing significant decreases in dissolved oxygen levels, and by further degrading stream segments that are already water quality impaired for temperature, dissolved oxygen, pH, turbidity, and sedimentation;
- Violate Oregon's statewide narrative criteria by creating conditions deleterious to aquatic species, including but not limited to threatened and endangered species (shortnose sucker, Lost River sucker, Bull trout, and Redband/Rainbow trout);
- Violate Oregon's water quality standard for temperature by removing riparian vegetation that shades streams, causing stream heating along a minimum 75-foot wide construction easement;
- Violate Oregon's water quality standard for turbidity by causing a more than 10% increase in natural turbidity levels in stream segments impacted by pipeline installations;
- Violate Oregon's toxics standard by disturbing and re-suspending contaminated material in and around waters of the state; and
- Impair beneficial uses to be protected in the Klamath Basin.

The applicants have failed to provide reasonable assurances that the project will not violate state water quality standards and, therefore, DEQ must not certify the project.

1. Construction

Construction of the project within the Upper Klamath and Lost River subbasins primarily consists of pipeline construction and related stream crossings, vegetation removal, and temporary or permanent road construction. All of the proposed activities within the Upper Klamath and Lost River subbasins are likely to impair water quality and the applicants do not provide

reasonable assurance that the proposed activities will not violate state water quality standards. Therefore, DEQ cannot certify that the project will comply with state water quality standards.

a. Stream Crossings

The applicants should provide a comprehensive environmental review for each stream crossing, particularly for those crossings identified as moderate or high risk. However, the JPA does not include such site-specific analysis. DEQ should review the assessment of the New York Department of Environmental Conservation (DEC), which denied 401 certification due to the applicant's failure to provide site-specific analysis of each stream crossing.[290] Without comprehensive environmental reviews of and detailed plans for stream crossings, particularly those identified as at a high or moderate risk of scour, channel migration, and/or avulsion, DEQ cannot certify that the project will comply with state water quality standards.

With the exception of the Klamath River crossing, all of the proposed crossings will use either a dry open cut method or a bore. The crossing of Clover Creek at MP 177.76 is identified as a Level 1 moderate risk of scour, channel migration, and/or avulsion. However, no site-specific analysis of this higher risk crossing is provided. DEQ should require site-specific information including, but not limited to the specific location of access roads, details of proposed blasting, and the location of temporary coffer dams.

Additionally, the applicants propose to cross streams that are already impaired for dissolved oxygen, habitat modification, temperature, biological criteria, and sedimentation. Proposed activities to conduct dry open cut technology have the potential to increase sedimentation, modify habitat, decrease dissolved oxygen, and impair the aquatic habitat. Specifically, the crossing of the Klamath River, Clover Creek, and Spencer Creek should be carefully evaluated because these waterways are already listed as impaired for multiple water quality parameters.

b. Klamath River Crossing

The applicants propose to use Horizontal Directional Drilling (HDD) technology to cross the Klamath River at MP 199.38. The HDD crossing is given a Level 1 moderate risk of channel migration, scour, and/or avulsion. As discussed in more detail in Sections II-VI, the use of HDD also poses the risk of an unintended release of drilling fluid known as a frac-out. The applicants fail to comprehensively disclose and analyze the likelihood and frequency of frac-out events. The State re-iterated these concerns in its 2017 scoping comments.[291] Without this information, DEQ cannot evaluate whether the project is likely to degrade water quality below state standards.

The September 2017 GeoEngineers report states:

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[290] Joint Application: DEC Permit# 0-9999-00181/00024 Water Quality Certification/Notice of Denial. New York State Department of Environmental Conservation. 22 April 2016. P. 13. http://www.dec.ny.gov/docs/administration_pdf/constitutionwc42016.pdf.

[291] Stat of Oregon 2017 Scoping comments at 15.

> As is typical of HDD installations, we anticipate that there is a relatively high risk of hydraulic fracture and drilling fluid surface release within about 100 feet of the entry and exit points.[292]

This assessment emphasizes both the uncertainty and likelihood of a frac-out event using HDD technology to drill under the Klamath River. The Klamath is already water quality impaired for dissolved oxygen, toxics, sedimentation, habitat modification, and temperature. Further, the Klamath River provides habitat for threatened and endangered fish. Under OAR 340-041-0180, designated uses for the Klamath include:

- Public domestic water supply
- Private domestic water supply
- Industrial water supply
- Irrigation
- Livestock watering
- Fish and aquatic life
- Wildlife and hunting
- Fishing
- Boating
- Water contact recreation
- Aesthetic quality
- Hydropower (RM 255-232.5)
- Commercial navigation and transportation (RM 255-232.5)

A frac-out as a result of HDD would impair water quality and designated beneficial uses, in violation of state water quality standards and the Clean Water Act.

Additionally, the applicants do not provide adequate information regarding impacts to groundwater as a result of HDD. The September 2017 GeoEngineers report states:

> We did not measure groundwater levels upon completion of the borings because of the presence of drilling fluid in the holes at the time of drilling. We anticipate that groundwater levels will mimic the elevation of the Klamath River around 4,092 feet MSL. We anticipate that groundwater levels will fluctuate with precipitation, site utilization and other factors.[293]

DEQ must conclude that "anticipating" impacts to groundwater is not a comprehensive and site-specific review of the potential consequences of a frac-out related to HDD crossing of the Klamath River.

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[292] Klamath River HDD Pacific Connector Gas Pipeline Project Klamath County, Oregon. 1 September 2017. P. ES-1. PCP Part 2 Appendix B 8 May 2018. P. 1662.

[293] Klamath River HDD Pacific Connector Gas Pipeline Project Klamath County, Oregon. 1 September 2017. P. ES-6. PCP Part 2 Appendix B 8 May 2018. P. 1671.

c. Removal of Riparian Vegetation

The proposed action would cause stream temperature increases by removing riparian vegetation across a wide construction easement. Removing riparian vegetation will increase water temperature by decreasing shade in numerous streams identified as having salmon and steelhead spawning use, having core cold water habitat use, having salmon and trout rearing and migration use, or having migration corridor use. Without specific information about baseline temperatures in streams where riparian vegetation would be removed, it is impossible to review potential violations of numerical temperature limits specified in OAR 340-041-0028(4).

The Upper Klamath watershed supports habitat for the following threatened and endangered species listed under the ESA that are sensitive to temperature: shortnose sucker, Lost River sucker, Bull trout, and Redband/Rainbow trout. The Klamath River, Spencer Creek, and Clover Creek are all listed as water quality impaired for temperature. Any temperature increases in these streams as a result of the proposed activities would exacerbate existing violations of state water quality standards. The Ninth Circuit Court of Appeals recently made clear that new dischargers may not add a pollutant into a water body that is water quality limited.[294]

Additionally, removing riparian vegetation also decreases Large Woody Debris that is an important component of stream morphology and habitat for aquatic species.

d. Road Construction

According to the 8 May 2018 JPA materials, the applicants propose construction of temporary access roads (TARs) at 10 locations impacting 3.8 acres and construction of 15 permanent access roads (PARs) impacting 2.16 acres.[295] However, this information continues to change throughout the public process. As a result, impacts to fish-bearing and non-fish-bearing streams may be significantly altered as well. The applicants do not provide site-specific details to minimize impacts of temporary or permanent road construction to waterways beyond general descriptions of BMPs. Not only is road construction inadequately described, but the measures to prevent significant sedimentation and turbidity in streams are neither site-specific nor reliable. DEQ should not rely upon later analysis to determine how construction of permanent or temporary roads will impact wetlands, streams, and rivers.

e. Hydrostatic Testing

The applicants provide minimal information regarding the source and discharge of hydrostatic testing water. As stated in Resource Report 1:

> Water for hydrostatic testing will be obtained from commercial or municipal sources or from surface water right owners (see Table 1.3-2). If water for hydrostatic testing is

[294] See Friends of Pinto Creek v. United States Environmental Protection Agency, No. 05-70785, (9th Cir. Oct. 4, 2007).

[295] Pacific Connector Pipeline Resource Report 1 General Project Description. p. 31, PCP Part 2 Appendix B 8 May 2018. p. 329.

> acquired from surface water sources, PCGP will obtain all necessary appropriations and withdrawal permits (see Appendix C.1). As required by ODFW, pumps used to withdraw surface water will be screened according to National Marine Fisheries Service screening criteria to prevent entrainment of aquatic species.[296]

For the Klamath watershed, the applicants propose hydrostatic testing water withdrawals from "Klamath River, or Lake of the Woods, or Keno Reservoir, or John C. Boyle Reservoir."[297] According to Table 1.3-2 Potential Hydrostatic Source Locations, the applicants could withdraw 5.6 million gallons from Lake of the Woods, 5.6 million gallons from John C. Boyle Reservoir, 5.6 million gallons from the Klamath River, and 4.6 million gallons from the High Line Canal. In coordination with OWRD, DEQ should fully evaluate the availability of this surface water for the proposed hydrostatic testing, even with cascading water from one test site to the next. As the applicants admit:

> If determined to be feasible for hydrostatic testing requirements, water would be returned to its withdrawal source location after use; however, cascading water from one test section to another to minimize water withdrawal requirements may make it impractical to release water within the same watershed where the water was withdrawn. If it is impracticable to return hydrostatic test source water to the same water basin from which it was withdrawn, PCGP would employ an effective and practical water treatment method (chlorination, filtration, or other appropriate method) to disinfect the water that would be transferred across water basin boundaries. The hydrostatic test water would be treated after it is withdrawn and prior to hydrostatic testing.[298]

The applicants have failed to analyze the feasibility of withdrawing and discharging water for hydrostatic testing within the same watershed. Further the applicants must disclose the quantity and impacts of discharging chlorinated water on fish and other aquatic life.

Not only would these water withdrawal impact existing water rights, but reducing flows can also impair water quality, in violation of water quality standards. In the U.S. Supreme Court decision in *Jefferson City Public Utility District v. Ecology Dept. of Washington* in 1994, Justice O'Connor wrote:

> In many cases, water quantity is closely related to water quality; a sufficient lowering of the water quantity in a body of water could destroy all of its designated uses, be it for drinking water, recreation, navigation or, as here, as a fishery. In any event, there is recognition in the Clean Water Act itself that reduced stream flow, *i.e.*, diminishment of water quantity, can constitute water pollution. First, the Act's definition of pollution as "the man made or man induced alteration of the chemical, physical, biological, and

[296] Pacific Connector Pipeline Resource Report 1 General Project Description. 8 May 2018. P. 53. PCP Part 2 appendix B from DEQ 8 May 2018 p. 351.
[297] Pacific Connector Pipeline Resource Report 1 General Project Description. 8 May 2018. P. 58. PCP Part 2 Appendix B from DEQ 8 May 2018. P. 352.
[298] Pacific Connector Pipeline Resource Report 1 General Project Description. 8 May 2018. P. 52. PCP Part 2 Appendix B from DEQ 8 May 2018. P. 350.

> radiological integrity of water" encompasses the effects of reduced water quantity. 33 U.S.C. § 1362(19). This broad conception of pollution--one which expressly evinces Congress' concern with the physical and biological integrity of water--refutes petitioners' assertion that the Act draws a sharp distinction between the regulation of water "quantity" and water "quality." Moreover, §304 of the Act expressly recognizes that water "pollution" may result from "changes in the movement, flow, or circulation of any navigable waters . . . including changes caused by the construction of dams." 33 U.S.C. § 1314(f).[299]

Water withdrawals from the Klamath Basin for hydrostatic testing and other related uses should be carefully reviewed by DEQ to evaluate the direct, indirect, and cumulative impacts on water quality.

F. Conclusion

In conclusion, these comments provide specific examples from each of the impacted watersheds to illustrate the points raised in Sections II-VI. DEQ must deny the 401 certification because the application fails to include mandatory minimum information under OAR 340-048-0020. Further, the applicants have failed to provide reasonable assurances that the project will comply with Oregon's antidegradation policy, that beneficial uses will be protected, and that numeric and narrative water quality standards will not be violated.

As discussed in Sections II-VI, the applicants have failed to demonstrate that the project will not violate state water quality standards. The proposed activities related to identified stream crossings in the Coos, South Coast (Coquille Subbasin), Umpqua, Rogue, and Klamath (Upper Klamath and Lost Subbasins) Basins will likely:

- Violate Oregon's anti-degradation policy by causing significant temperature increases in numerous stream segments, by causing significant decreases in dissolved oxygen levels, and by further degrading stream segments that are already water quality impaired for temperature, dissolved oxygen, pH, turbidity, and sedimentation;
- Violate Oregon's statewide narrative criteria by creating conditions deleterious to aquatic species, including but not limited to threatened and endangered species (e.g. Oregon Coast coho, green sturgeon);
- Violate Oregon's water quality standard for temperature by removing riparian vegetation that shades streams, causing stream heating along a minimum 75-foot wide construction easement;
- Violate Oregon's water quality standard for turbidity by causing a more than 10% increase in natural turbidity levels in stream segments impacted by pipeline installations;
- Violate Oregon's toxics standard by disturbing and re-suspending contaminated material in and around waters of the state; and
- Impair beneficial uses to be protected in the each of the impacted watersheds.

[299] PUD No. 1 of Jefferson Cty v. Washington Dept. of Ecology. 511 U.S. 700 (1994). https://www.law.cornell.edu/supct/html/92-1911.ZO.html.

VIII. Request for Public Hearing

Commenters reiterate the request for public hearings regarding the Clean Water Act 401 permit application. Hearings are necessary here for meaningful public comment. Public delivery of public comment is a unique and valuable form of input, that is not replicated in other settings. As required under OAR 340-048-0027, DEQ "may also provide a public hearing on a proposed certification decision or provide informational meetings regarding a certification application as it deems appropriate." In determining whether to schedule public hearings, we request that DEQ consider the unique and unprecedented nature of project in Oregon, the extensive scope of its impacts, the significant harm to Oregon's rivers and clean water, and the challenges that local landowners and community members who live in rural southern Oregon and who are directly impacted by the pipeline and terminal face in accessing and participating in the public process.

IX. Conclusion

In conclusion, DEQ must deny the 401 certification for the Jordan Cove Terminal and Pacific Connector Pipeline Projects because the applicants have not provided reasonable assurances that the project will not violate state water quality standards.

Under Section 401(a) of the Clean Water Act (CWA), any applicant for a Federal license or permit to conduct any activity that may result in a discharge to navigable waters in Oregon must obtain a certification from DEQ stating that the discharge from the proposed action will comply with the requirements of the CWA. *See* 33 U.S.C. § 1341. Before DEQ may certify the project, it must affirm "that there is a reasonable assurance that the activity will be conducted in a manner which will not violate water quality standards." 40 C.F.R. § 121.2(a)(3).

Water quality standards include three elements: (1) one or more designated "uses" of a waterway; (2) numeric and narrative "criteria" specifying the water quality conditions, such as maximum amounts of toxic pollutants, maximum temperature levels, and the like, that are necessary to protect the designated uses; and (3) an antidegradation policy that ensures that uses dating to 1975 are protected and high quality waters will be maintained and protected. 33 U.S.C. §§ 1313(c)(2), 1313(d)(4)(B); 40 C.F.R. Part 131, Subpart B. Compliance with water quality standards requires protection of all three of these components.

<u>DEQ must deny the 401 certification for the project because:</u>

- The application fails to contain the mandatory minimum information (*See* Section II);
- There is no reasonable assurance that the project will comply with Oregon's antidegradation implementation policy (*See* Section III);
- There is no reasonable assurance that designated beneficial uses will be protected (*See* Section IV);
- There is no reasonable assurance that numeric criteria will not be violated (*See* Section V); and
- There is no reasonable assurance that narrative criteria will not be violated (*See* Section VI).

In addition to general comments regarding the lack of reasonable assurance from the applicants that the project will not violate water quality standards, we have provided specific examples and detailed information regarding each of the impacted watersheds in Section VII.

For the foregoing reasons, the Coalition urges DEQ to deem the JPA legally and factually insufficient and deny the 401 certification for this project.

Dated this 8th day of August, 2018.

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