American Fisheries Society Oregon Chapter

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Date: 24 March, 2020

To: Governor Kate Brown

RE: PROPOSED JORDAN COVE LIQUIFIED NATURAL GAS PROJECT

The Oregon Chapter of the American Fisheries Society (ORAFS) represents over 600 professional scientists and managers employed by the private sector, tribes, federal and state agencies, universities, and non-governmental organizations. Our mission is to improve the conservation and sustainability of Oregon fishery resources and their aquatic ecosystems for long-term public benefit. The Jordan Cove Energy Project (JCEP) stands to jeopardize critical habitat for Oregon's stream and coastal fisheries. We summarize our six major areas of concern below.

1. Effects of habitat alterations on water quality and listed fish species.

Construction of the proposed JCEP will further degrade stream segments in Southern Oregon that are already listed as impaired for temperature, dissolved oxygen, pH, turbidity, and sedimentation. Removal of riparian vegetation along a minimum 95-foot wide construction easement in areas near streams will likely increase summer water temperatures. The Rogue, Umpqua, and Klamath Basins will be affected by blasting activities that would adversely alter surface water and groundwater used for drinking and commercial and recreational fishing.

As part of Pacific Salmon recovery planning and work, Indian Tribes, the Bureau of Land Management, the USDA Forest Service, and the State of Oregon have worked hard to restore salmon populations along the south coast and connected watersheds. The Endangered Species Act Coho Salmon Recovery Plan produced by NMFS outlines major threats: "Degraded water quality, reduced water quality, including high water temperatures, and increased fine sediment levels affect Coho Salmon production in several populations. Increased water temperature is the primary source of water quality impairment for Oregon Coast Coho Salmon, and rising water temperatures due to climate change is expected to add to this problem. Land use activities have contributed to increased water temperatures in coastal streams by removing riparian vegetation, disconnecting streams from floodplains, and reducing streamflow through water diversions." The JCEP magnifies existing risks to listed salmon species.

2. Interference with existing recreational and commercial fishing.

Access to and attraction to recreational resources will be affected by this project. The recreational fishing industry in Oregon has broadscale economic impact and is tied to trips out of regional bays. Recreational angling for finfish contributes substantially to coastal economies. Trip spending generated $66.7 million in 2013 of total personal income to coastal economies and $68.9 million in 2014. These numbers do not include shellfish harvesting trips that are more tied to the bays[1].

The Oregon Coastal Zone Management Association (OCZMA) conducts studies of Oregon's coastal economy and provides information to an extensive network of government and other agencies, aiming to improve the region's standard of living. Their report on fisheries was highlighted in *Fisherman's News*:

> "Fisheries also provide part of the overall ambience folks want to experience when visiting the Oregon coast or opting to live there. They help attract artists, writers and others, including a

[1] *Oregon Marine Recreational Fisheries Economic Contributions in 2013 and 2014, Revision 2.2,* prepared by The Research Group, LLC for Oregon Department of Fish and Wildlife and Oregon Coastal Zone Management Association, September 2015.

growing number of retirees, who in turn make their own contributions to an ever-changing diverse economy and culture. Travelers spend time watching and photographing the fishing fleets, and visitors often show up at the coast seeking fresh, locally caught seafood"[2].

The Coos Bay area is an important port for commercial fishing on the Oregon Coast. The Charleston Boat Basin, which is outside of the Coos Bay city limits and closer to the mouth of Coos Bay, is the primary area that houses the commercial fleet, processing infrastructure, and marine-related services. A small number of commercial vessels dock in downtown Coos Bay.

Liquefied Natural Gas (LNG) tanker activity would both take regulatory precedence over and physically interfere with all other boating uses. Due to the potential for terrorist activity, the Coast Guard has proposed security measures including a 500-yard safety zone around ships as they navigate the estuary. This will cause serious interference with all other port water access. An estimated 110 to 120 ships are expected to call to the LNG port per year, which will result in an average of 3 ships per week. Having large ships with exclusion zones surrounding them would affect all other associated fish fleet traffic, possibly hindering safe movement of the fishing fleet. Commercial fishing fleets depend on accessibility associated with rapidly changing weather conditions for ocean access and egress. In winter, for example, access into and out of the bay is often limited by weather conditions. The high volume of LNG shipping traffic will further hinder safe access for the commercial fishing fleet.

3. Disruption of tributary watersheds and forest ecosystems.

Landslides are well documented within areas of the proposed Pacific Connector pipeline. Slides are triggered by earthquakes, winter storms, naturally unstable geology, and construction activities. The proposed pipeline route crosses five major Oregon ecoregions: Coast Range, Klamath Mountains, Cascade Range, Eastern Cascades, and Snake River Basin. The Coast Range is especially vulnerable to slides and erosion, because of its relatively soft marine sedimentary rocks overlying basalt. The frequency of landslides and erosion is high and well known. Moreover, areas that are disturbed and permanently cleared of vegetation have increased risks of failure. The proposed use of ridge tops for the pipeline would expose soils to erosion, and channeling of overland water flow will increase risks for slides, slope failures, and mass wasting. A pipeline rupture could occur during an earthquake where subsidence affects the pipeline where it crosses a fault line. Ground-shaking from an earthquake may also cause pipeline failure. Landslides and soil liquefaction are even more likely at the many places where the proposed pipeline crosses waterways. Therefore, the JCEP increases risks of serious soil erosion and stream sedimentation in environmentally sensitive watersheds that support listed fish species.

Increased suspended sediment from Project construction and potential catastrophic events associated with the pipeline can negatively affect fish and other aquatic organisms, as well as their habitats. Fish may suffer clogging and abrasive damage to gills. Abrasion of gill tissues triggers excess mucous secretion, decreased resistance to disease and a reduction or complete cessation of feeding. Deposited particles may obscure food sources, habitat and hiding places for fish. Accelerated sedimentation caused by overland runoff and erosion related to the pipeline, has the potential to adversely affect adult holding and spawning habitats through pool filling and fine sediment infiltration of spawning beds. Sedimentation in channel margins and off-channel habitats may impact juvenile rearing habitats especially in lower gradient reaches which are critical to juvenile fish development. Silt tolerant invertebrate communities may replace benthic communities that prefer low silt substrate, such as mayflies, stoneflies and caddisflies. The short- or long-term disruption of invertebrate communities can deplete an important food source for fish and other species.

4. Effects of habitat alterations on the Coos Bay estuary.

The habitat of the Coos Bay estuary is complex and dynamic throughout each season and among years. The proposed area of excavation for ship berthing is extensive and the associated channel modifications to

[2] Dillman, T, "Oregon Ports Stimulate Coastal, State Economy," Fisherman's News, May 1, 2013.

the entrance and the existing Federal Navigation Channel in Coos Bay will result in removal of more than 4.3 million cubic yards of wet sediments. The JCEP proposes to dredge the slip and access channel to a depth of 45.2 feet with a 1.7 foot over dredge allowance (resulting in 46.9 feet of dredged depth). This area has an extensive eelgrass community along the slope. Eelgrass is known to support diverse and unique communities of species. The dredging will expose and mobilize contaminants from previous industrial activities that are currently trapped in the sediments. Dredging will also trigger increased particle surface reactions, particularly oxidation of metals and metal sulphides as documented in many dredged estuaries[3]. The mixing of suspended matter from river and marine origin in the estuarine region can induce very complicated biological and/or physicochemical responses. Moreover, increased turbidity from regular and ongoing dredging will reduce light penetration and the suspended materials will also be distributed throughout the area depending on tidal and river flows, further reducing eelgrass production. These processes are unique to each estuary's salinity, water temperature and current gradients, therefore the impacts cannot be predicted and have not been fully studied by the proposers.

The timing proposed for major dredging and alteration to the navigation channel is between October and February. Between January and March, Pacific Herring (*Clupea pallasi*) use the bay as a spawning and nursery ground. Eggs can be found on rocks, pilings, seaweed, and seagrasses. Mature and immature herring are present in the bay during spring and summer months, and sampling has found young herring as far upriver as RM 20, though they are more numerous below RM 15.

Dredging will affect shellfish resources by the dredging and by the activities of construction such as pile driving. Populations of native Olympia Oyster (*Ostrea conchaphila)* are dispersed throughout the area, including around the proposed dredging sites and dredge spoils sites. These populations as well as the commercial oyster fisheries can be impaired by elevated suspended sediments. Other important invertebrates found within the bay include ghost shrimp (*Callianassa californiensis*) and mud shrimp (*Upogebia pugettensis*). Both are important shore-based resources that are used as food sources by a variety of species, as well as fish bait.

It is estimated that more than 60 species of fish use the estuary area[4]. Among the better known species are Starry Flounder (*Platichthys stellatus*), English Sole (*Parophrys vetulus*), Kelp Greenling (*Hexagrammos decagrammus*) and Pacific Sand Lance (*Ammodytes hexapterus*)[5]. Green Sturgeon (*Acipenser medirostris*) use the bay for foraging and although they most often are in the mid-reaches near the railroad bridge, they have been reported further upriver. Green Sturgeon from the northern Distinct Population Segment (nDPS) are a federally listed Species of Concern and almost certainly use the bay for foraging habitat. Moreover, it is likely some Green Sturgeon using the estuary may belong to the southern Distinct Population Segment (sDPS), a federally listed Threatened species[6]. Coho Salmon[8] and Chinook Salmon, additional listed salmonids, also use the estuary for juvenile rearing and overwinter refuge. The estuary provides critical habitat that supports diverse life history expression in these fishes.

5. Risks of explosion, accidental discharge and grounding.

LNG Export Terminals handle and store large quantities of natural gas. The Society of International Gas Tanker and Terminal Operators (SIGTTO) has recommended practices to minimize risks, including in the site selection and design for LNG ports and jetties. The proposed JCEP LNG Terminal is inconsistent with several of SIGTTO's recommendations that include avoidance of siting near population centers. Additionally, SIGTTO recommends against siting a facility on a bend, where vessels would be berthed adjacent to each other, near other docking facilities, or in a channel that is less than five times the

[3] Atkinson, C. A., D. F. Jolley and S. L. Simpson. 2007. Effect of overlying water pH, dissolved oxygen, salinity and sediment disturbances on metal release and sequestration from metal contaminated marine sediments. Chemosphere 69:1428–1437.

[4] Cummings, T. E., and E. Schwartz. 1971. Fish in Coos Bay, Oregon, with comments on distribution, temperature, and salinity of the estuary. Coastal Rivers Invest. Info. Rep. 70-11. Fish Commission. Oregon. 22 pp.

[5] Roye, C. 1979. Natural resources of Coos Bay estuary. Oregon Department of Fish and Wildlife. Final Report Estuary Inventory Project Oregon.

[6] Oregon Department of Fish and Wildlife (ODFW). 2005a. Oregon Native Fish Status Report: Southern and Northern Green Sturgeon. Accessed 22 January, 2014. Available online http://www.dfw.state.or.us/fish/onfsr/docs/final/11-other/methods-green-sturgeon.pdf

maximum width of tankers. SIGTTO also recommends that facilities be located in areas that provide ready escape to the open seas at all times.

The entrance to Coos Bay and its navigation channel has a history of problems because of the nature of shore winds, and sea conditions. There is a 90-degree turn from the entrance into the bay, and then another bend near the proposed site that other ship traffic, including commercial and recreational users, must navigate past to enter the Coos Bay-North Bend harbor. If a 950-foot tanker loaded with LNG were to run aground, like the New Carissa did in 1999, the consequences would likely be more extensive than an oil spill. The increasingly high probability of a large nearshore earthquake and subsequent tsunami coincident with an LNG terminal place the aquatic ecosystems in Coos Bay at risk of broadscale contamination and disturbance.

6. Greenhouse gas emissions, ocean acidification and climate change

This project would significantly add to total greenhouse gas emissions within Oregon. According to estimates of life cycle emissions estimated by Oil Change International[7], the emissions from extracting, piping, processing, transporting, and burning the intended volume of gas are estimated to be over 36.8 million metric tons of carbon dioxide equivalent (CO_2e) per year. This is the equivalent of the annual mileage of 7.9 million passenger vehicles (there are 3.2 million registered passenger vehicles currently in Oregon) and 15.4 times the 2016 emissions of the Boardman coal-fired power plant that Oregon has gone to great lengths to retire in 2020.

Increased ocean CO_2 and temperatures have already affected our local and regional fishermen and shellfish industries. Elevated CO_2 concentrations and temperatures have promoted toxic algae growth and increased ocean acidity along the Oregon coast. Elevated ocean temperatures have reduced growth of many species and have delayed the Dungeness crab fishery season in several years, including the 2019-2020 season. The review of these issues, consequences, and summary of the multi-nation coastal effort in ocean acidification and its urgency are provided in the Oregon Ocean Coordinating Council report[8]. Last year, a lawsuit from the Pacific Coast Federation of Fishermen was filed against major oil companies to protest their continued greenhouse gas emissions.

In summary, ORAFS is concerned that the JCEP jeopardizes Oregon's aquatic habitats, watersheds, listed salmon species, an entire estuarine ecosystem, major commercial and recreational fisheries, as well as Oregon's ongoing climate-change mitigation initiatives. Should you wish to consult further with the Chapter members who contributed to this letter, feel free to contact us.

Sincerely,

The Legislative Committee of the Oregon Chapter of the American Fisheries Society

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[7] Oil Change International, "Jordan Cove LNG and Pacific Connector Pipeline Greenhouse Gas Emissions Briefing," January 2018, p. 8.

[8] Weybright, A and G. Giannico. 2018. Juvenile coho salmon movement, growth and survival in a coastal basin of southern Oregon. Ecology of Freshwater Fish 27 (1): 170-183.

[8] Barth, J.A., C.E. Braby, F. Barcellos, K. Tarnow, A. Lanier, J. Sumich, S. Walker, F. Recht, A. Pazar, L. Xin, A. Galloway, J. Schaefer, K. Sheeran, C. M. Regula-Whitefield. 2018. The Oregon Coordinating Council on Ocean Acidification and Hypoxia. First Biennial Report. September 2018. oregonocean.info/index.php/ocean-acidification.