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Via Electronic Mail

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Re: Comments in Opposition to the Oregon LNG Terminal and Pipeline NWP-2005-748 – Public Comment

Dear Staff of the Army Corps and Oregon DEQ,

On behalf of the Center for Biological Diversity (the "Center"), we respectfully submit the following comments urging your agencies to reject the Clean Water Act 404 permit and 401 certification for the Oregon LNG terminal at Warrenton and the accompanying 86.8 miles of pipeline between Woodward, Washington and the terminal (the "Project"). The tremendous environmental and climate impacts and risks to salmon, native wildlife and forests, local communities, and innumerable waterways and wetlands posed by the Oregon LNG terminal and pipeline are simply unjustifiable and warrant denial of permits for this project.

We join in and incorporate by reference the comments submitted by Columbia Riverkeeper on these permits and provide this comment letter to highlight the vast impacts to marine mammals, northern spotted owls, marbled murrelets and other imperiled species as well as our climate from this proposed Project. There are practicable alternatives to the Project that do not involve the destruction of special aquatic sites, the Project does not comport with the 404b Guidelines including because the Project is likely to jeopardize threatened or endangered species or result in destruction or modification of their critical habitat, the Project is not in the public's interest, and the Corps must comply with all applicable environmental laws before approving any permit for the project.

We also question why the Corps and DEQ are taking action on Clean Water Act permitting now, when the lead agency for this project – FERC – has yet to undertake its National Environmental Policy Act, 42 U.S.C. §§ 4321-4370 (NEPA), review or consult under the Endangered Species Act, 16 U.S.C. §§ 1531-1544 (ESA), on this project. By jumping the gun, the Corps and DEQ are depriving themselves and the public of critical information regarding the environmental impacts of the Project. This information is necessary for the public to provide meaningful public comment on the proposal and for the Corps to make an informed decision. Putting the 404 permit out for comment prior to the NEPA and ESA review is inconsistent with established process, violates our environmental laws, and defeats the purpose of having a lead federal agency for this project. No matter what, the Corps must comply with NEPA and the ESA before issuing a permit for this project and it cannot simply rely on some future NEPA processes and consultations that have yet to occur.

As discussed below, there are numerous reasons why this project should not be allowed to proceed and we ask the Corps and DEQ to deny the necessary Clean Water Act permits for the Oregon LNG project.

I. The Proposed LNG Terminal and Pipeline Do Not Comply With the Section 404(b)(1) Guidelines and Are Not in the Public's Interest.

Section 404 of the Clean Water Act ensures that no discharge of dredged or fill material is allowed if a practicable alternative exists that is less damaging to the aquatic environment or if the proposal would significantly degrade the nation's waters. The Clean Water Act Section 404 Guidelines and the Corps' implementing regulations require the Corps to deny the 404 permit "unless it can be demonstrated that such discharge will not have an unacceptable adverse impact" on the aquatic ecosystems.[1] A permit must also be denied if it will jeopardize the continued existence of a threatened or endangered species under the ESA or result in likely destruction or adverse modification of a species' critical habitat.[2] Furthermore, the decision whether to issue a permit must be based on an evaluation of the probable impact of the proposed activity on the public's interest, which includes the cumulative impacts on conservation, general environmental concerns, fish and wildlife values, and the needs and welfare of people.[3]

Here, it is difficult to conceive of a project with greater unacceptable adverse and cumulative impacts. The Center incorporates by reference the comments provided by Columbia Riverkeeper regarding the adverse impacts of the Project. In particular, we share the concerns raised over the detrimental impacts this project would have on salmon, salmon habitat, salmon fisheries, and the economic and recreational role the salmon resource plays in our region. In addition to the impacts identified by Columbia Riverkeeper, the large-scale and permanent damage the Project would have on marine mammals and other threatened and endangered species and their habitat is unacceptable, and requires denial of the permit as explained in detail below.

[1] 40 C.F.R § 230.1(c).
[2] *Id.* § 230.10(b)(3).
[3] 33 C.F.R. § 320.4(a).

The proposed project would significantly increase the amount of tanker traffic moving through the mouth of the Columbia River and offshore of Oregon and Washington (and/or California) and beyond. The increase in tanker traffic associated with the proposed Project (125 round trip ships per year) threatens marine mammals in several ways, including through elevated risk of ship strike, increased noise in the aquatic environment, elevated risk of exposure to toxic contaminants through spills, and the introduction of invasive species in ballast water. Several of the species put at risk by the proposed Project are protected under the ESA and/or Marine Mammal Protection Act ("MMPA"). Allowing activities that may harm these species opens up both the agency and private actors to liability under these acts.[4] Persons subject to the prohibition on take includes individuals and corporations, as well as "any officer, employee, agent, department, or instrumentality of the Federal Government."[5]

Likewise, the proposed Project would disturb 1,195.2 acres of threatened and endangered species' habitat in northwest Oregon, require use and improvement or construction of many miles of access roads, impact over 145 acres of wetlands, cross 185 streams, and require directional drilling under the Columbia and about 20 other rivers. These activities would permanently remove and cause continual harm and harassment to threatened and endangered species and their critical habitat, such as the Northern spotted owl, marbled murrelets, and salmon. Again, the ESA prohibits take of these species and the prohibition applies to both government entities that authorize activities as well as private entities that carry out those activities.[6]

The Corps must, when determining whether the LNG terminal and pipeline are in the public interest, take into account the extent and permanence of the detrimental effects which the proposed Project is likely to have on the area.[7] The Corps must make specific findings on the potential impacts of the project on aquatic ecosystems and organisms and the cumulative effects on the aquatic ecosystems.[8] The impacts to the marine environment, including to protected marine mammals as discussed below, requires a finding that the Project is not in the public interest. The cumulative impacts of this Project on threatened and endangered species and their critical habitat is also not in the public's interest and risks jeopardy or destruction of critical habitat. Nor is it in the public's interest to build infrastructure that supports dirty fossil fuel extraction and the technique known as fracking that is currently used to extract natural gas.

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[4] 16 U.S.C. § 1538(a)(1)(B); 16 U.S.C. § 1362.
[5] 16 U.S.C. § 1532(13).
[6] 16 U.S.C. § 1538(a)(1)(B); CITE.
[7] 33 C.F.R § 320.4(a)(2).
[8] 33 C.F.R § 230.11.

A. Impacts to the Marine Environment and Marine Mammals Demonstrate Why the Project Cannot be Approved.

1. The elevated risk of ship strikes and resulting impacts to marine mammals supports permit denial.

Ship strikes involving large vessels are the "principal source of severe injuries to whales."[9] Most ship strikes to large whales result in death.[10] Ship strike-related mortality is a documented threat to endangered Pacific coast populations of endangered fin, humpback, blue, sperm, and killer whales. In recent years, ship strikes have become an increasing problem for these critically endangered species along the Pacific Coast. For example, between 2001 and 2010, 12 blue whales were reported stranded due to vessel collisions.[11] In 1998, NMFS identified ship strikes as one of the primary threats to the endangered blue whale in the Pacific.[12]

Fin whales, which are routinely sighted in waters off the U.S. Pacific coast, were the most frequently struck species in the analysis conducted by Jensen and Silber (75 confirmed strikes, 26 percent of total strikes).[13] At least 18 fin whale mortalities and injuries due to ship strikes were conclusively documented off the coasts of California, Oregon, and Washington between 1993 and 2008.[14] In their examination of 130 whale strandings in Washington State from 1980-2006, Douglas *et al*. (2008) similarly found fin whales to be very susceptible to ship strikes.[15] The final NMFS recovery plan for fin whales ranks the threat posed by ship strikes as "potentially high."[16]

A spatial risk assessment was conducted in 2004 to identify areas where fin, humpback, and killer whales encounter areas of high shipping intensity.[17] The study found that relative risk was highest in confined areas (geographic bottlenecks), such as the mouth of the Columbia River

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[9] Laist, D.W., Knowlton, A.R., Mead, J.G., Collet, A.S. and Podesta, M., 2001, Collisions between ships and whales, *Marine Mammal Science*, 17(1): 35-75.

[10] Jensen, A.S. and Silber, G.K., 2004, Large Whale Ship Strike Database. U.S. Department of Commerce, *NOAA Technical Memorandum*. NMFS-OPR-25.

[11] National Marine Fisheries Service. 2010. Southwest Regional Office, California Marine Mammal Stranding Network Database.

[12] National Marine Fisheries Service. 1998. Recovery plan for the blue whale (*Balaenoptera musculus*). Prepared by Reeves R.R., P.J. Clapham, R.L. Brownell, Jr., and G.K. Silber for the National Marine Fisheries Service, Silver Spring, MD.

[13] Jensen, A.S. and G.K. Silber. 2004. Large Whale Ship Strike Database. U.S. Department of Commerce, NOAA Technical Memorandum. NMFS-OPR-25.

[14] National Marine Fisheries Service. 2010. Recovery plan for the fin whale (*Balaenoptera physalus*). National Marine Fisheries Service, Silver Spring, MD.

[15] Douglas, Annie B., *et al*., 2008, Incidence of ship strikes of large whales in Washington State, *Journal of the Marine Biological Association of the United Kingdom.* doi:10.1017/S0025315408000295 (available at http://www.cascadiaresearch.org/reports/Douglas%20et%20al%202008-Incidence%20of%20ship%20strikes%20of%20large%20whales.pdf).

[16] National Marine Fisheries Service. 2010. Recovery plan for the fin whale (*Balaenoptera physalus*). National Marine Fisheries Service, Silver Spring, MD. at I-26.

[17] Williams, R, O'Hara, P.J., 2010, Modelling ship strike risk to fin, humpback and killer whales in British Columbia, Canada, *Journal of Cetacean Research and Management*, 11:1-8.

where vessels would have to enter to reach the proposed facility. The study further found that the few known cases of collisions involving fin whales suggest that mortality due to ship strike for this species may already be approaching or even exceeding mortality limits under the most risk-averse management objectives.[18]

Other species, however, are also facing increased risk of harm from ship strikes. For example, the NMFS draft recovery plan for southern resident killer whales documents rare but increasing cases of collisions between ships and individuals of that distinct population segment,[19] which was listed as endangered in 2005.[20] The Center notes that the Applicant has completely disregarded this increased risk to killer whales, claiming that "ship strikes have not been identified as a threat to individual or populations of killer whales."[21] It is notable that the Applicant provides no citation to support this claim. Based on the information in the NMFS draft recovery plan for southern resident killer whales, this is an entirely unsupported claim that the Corps must not take at face value. The Applicant's assessment of potential ship strikes for killer whales (*i.e.*, that there will be none) is entirely erroneous, especially given the Applicant's admission that killer whales are frequently seen at the mouth of the Columbia River.[22]

The Applicants' own materials further show 33 recorded strikes of Gray whales between 1980 and 2008 – an astonishing number that highlights the risks that increased ship traffic can pose to marine mammals.[23]

Given the foregoing, there can be no doubt that the significant increase in deep draft vessel traffic from the proposed Oregon LNG terminal would increase the risk of vessel strikes of marine mammals and turtles. Since several federally-protected species may be affected, the Corps must fully consider whether the increased strikes could jeopardize the continued existence of these species, pursuant to Section 7 of the ESA, 16 U.S.C. § 1536(a)(2), and the 404b guidelines. 40 C.F.R. § 230.10(b)(3). Moreover, the Corps must consider the increased potential for take of federally protected marine mammal species when it considers whether the Project is in the public interest.

The analysis of whether this Project is in the public interest must consider the potential ship strikes of marine mammals, based upon on an accurate estimate of the risk by species per year and cumulatively over the life of the project. The Applicant has provided an "analysis" of the potential for ship strikes on whales (none for other marine mammals or turtles), which estimates a very low incidence of strikes over the 50-year life of the Project; however, it is clear when the methodology and basis for this analysis is examined, that the Applicant has provided an

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[18] *Id.*

[19] National Marine Fisheries Service (NMFS). 2008. Recovery Plan for Southern Resident Killer Whales (*Orcinus orca*). National Marine Fisheries Service, Northwest Region, Protected Resources Division, Seattle, Washington.

[20] 70 Fed. Reg. 69903 (Nov. 18, 2005).

[21] Supplemental Permit Application at 4-14.

[22] *Id.*

[23] Appendix 3H to the Applicant's Biological Assessment (CH2M Technical Memorandum: Oregon LNG Estimate of Potential Whale Strikes) ("Appendix 3H").

unreasonably skewed and unrepresentative estimate which greatly misrepresents the actual number of ship strikes that would result from the development of this Project.

The Applicant has stated its modeling methodology as follows:

> The basic logic used in estimating whale strikes for LNG ship traffic is that the likelihood of an LNG ship striking a whale during a mile of travel can be represented by the average annual number of whale strikes divided by the average annual number of ship-miles (that is, whale strikes per mile).[24]

Using the NMFS whale strike database, the Applicant has provided a very simplified means of calculating the average number of ship strikes per mile of ship travel, then estimated LNG's impacts by dividing the "known whale strikes" by the "total ship miles" of LNG ships.[25] There are, however, several reasons why this methodology and the data and assumptions used by the Applicant do not provide an accurate assessment of the potential ship strikes that can be expected from the hundreds of tanker ships that the Project would be adding to the area.

The first is that the actual number of strikes that occur is much greater than what is reflected in the NMFS database that the Applicant has relied on for its calculation of number of ship strikes per mile. Douglas *et al*. (2008) and others speculate that, since whales killed in water deeper than 1,000 meters are unlikely to surface after death, whale mortalities off the U.S. Pacific coast may be under-reported due to the shallow continental shelf and the closer proximity of deep water to the coast (relative to the East Coast).[26] Other studies have found that there is limited information on the number and species of whales killed by ships, because few are ever recovered for examination. As one study noted, "[t]he small number of whales that have been examined represents an unknown proportion of whales and species struck by ships."[27]

The Applicant in fact admits that "whale strikes are believed to be under-reported because large vessels may not be aware of a strike or because they do not report the incident."[28] They fail entirely, however, to account for this in their estimate model, providing no error rate and including no buffer to ensure that the predicted number of ship strikes reflects reality. The result is an estimate based on uncertain data that is undoubtedly well below the actual number of ship strikes that would occur.

Second, the Applicant has used a 200 nautical mile action area for its analysis, which skews the results of the estimate. This means that the estimate of whale strikes per mile for LNG ships used, as the denominator in the calculation (*i.e.*, whale strikes / miles), 200 miles. It is axiomatic that the larger the denominator used in such a calculation, the lower the resulting calculation will be. Therefore, it is easy to distort the resulting estimate of ship strikes by using the largest possible number for the total ship miles at issue.

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[24] Appendix 3H at 1.
[25] *Id.*
[26] Douglas, et al., *supra* Note 15.
[27] *Id*.
[28] Appendix 3H at 2.

Interestingly, the Applicant has provided no basis for the use of 200 nautical mile for its calculation, other than the fact that this is the area within the defined EEZ. The Applicant claims that "[i]t is not practical to reduce the action area for this study given that the locations of whale strikes are poorly recorded . . . ." This, however, defies logic. The "action area" can and should be limited to the areas in which ship strikes are likely to occur. For few species that are found offshore, such as fin whales, 200 miles might make sense (though this is still artificially high), but for many whale species that migrate up and down the Pacific coast, this is patently unreasonable, and a blatant attempt to drastically reduce the estimate of ship strikes.

What the Applicant should have considered is data on the areas frequented by whales and other marine mammals. Most of these, such as gray whales (which exhibited the highest number of strikes (33) as shown in Table 2 of Appendix 3H in the Applicants materials), migrate very close to the coast, rarely venturing more than 50 miles from shore in their travels through the region.[29] Even though the location of whale strikes may be poorly recorded, they can only occur where the whales actually are. Studies have found that relative risk of ship strike is in fact highest in confined areas (geographic bottlenecks), rather than offshore.[30] Using a more realistic action area for the denominator, such as the 50-100 miles wherein most marine mammal species would be subject to ship strike risk, would have resulted in a more realistic model, showing a higher incidence of strikes per mile, and therefore a higher, more reasonable estimate overall.

Furthermore, the Applicant has stated that:

> The number of whales that might be struck over the life of the Project (estimated to be 50 years) was estimated by assuming that the per-mile rate of whale strikes would remain constant over the entire period (Oregon LNG has no information that would predict a change in this ratio through time).[31]

However, changing sea conditions, in part due to global climate change, may drastically increase the number of whale strikes that will occur in the future. This has already been documents in several studies. For example, in 2010, there were an unusually large number of blue whale sightings off of the coast of California due to abundant krill.[32] Whale mortalities spiked as foraging whales gathered in busy shipping lanes off the coast. Changing ocean conditions can influence the productivity in the current system off the Pacific coast and change the abundance of prey for whales. Therefore, more whales may be at risk due to changing ocean conditions. The estimate of potential whale strikes must take this into account.

Therefore, the Army Corps must consider a much higher number of potential strikes when assessing whether this Project is in the public interest. Given the increased risk of harm,

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[29] *See, i.e*. Moore et. al., 2002, Potential Impacts of Offshore Human Activities on Gray Whales, *Journal of Cetacean Research Managment*, 4(1):19-25.
[30] Williams, R., O'Hara, P.J., 2010, Modelling ship strike risk to fin, humpback and killer whales in British Columbia, Canada, *Journal of Cetacean Research and Management*, 11:1-8.
[31] Appendix 3H at 6.
[32] Sahagun, Louis. 2010. Marine mammal enthusiasts getting a show from blue whales. *Los Angeles Times* (Sept. 3, 2010); Zito, Kelly. 2010. Whale deaths blamed on busy ship traffic, krill. *San Francisco Chronicle* (Oct. 10, 2010).

especially to threatened and endangered species, this standard is not met, and the Project should not be permitted.

2. The increase in chronic ocean noise levels in important marine habitats also supports permit denial.

The proposed Project would substantially increase the amount of ship-related noise in the water, posing a risk of harm to marine mammals. Sound is the key sense for dolphins and whales to find their way around, detect predators, find food and communicate. The sound frequency range within which whales communicate and echolocate corresponds to the frequency range of ship noise. Ships hundreds and even thousands of miles away interfere with the acoustic space of these animals. With more ship traffic, the ability for whales and dolphins to communicate, search for prey, and avoid predators will be compromised. This would not be in the public interest.

Oceans are much louder today than they were a century ago, primarily due to increased anthropogenic noise.[33] Ocean noise pollution, predominantly from large shipping vessels, has created an "omnipresent hum" in our ocean.[34] Large commercial shipping vessels are the primary source of anthropogenic low-frequency sound contributing to ambient (background) noise in the ocean. Because very loud low-frequency sound can travel great distances in the deep ocean, increasing noise impacts areas far beyond the source of the noise.[35] The Army Corps' analysis must account for these far-reaching impacts, which pose a severe threat to marine mammals.

NOAA has recently begun mapping marine noise levels using its SoundMap and CetMap mapping tools.[36] These maps show that human-caused cumulative and ambient ocean noise pollution has increased ambient sound levels to over 100 decibels (dB) over the majority of the

[33] *Phase 1-CetSound*, NOAA, http://cetsound.noaa.gov/cetsound.
[34] For example, tests conducted near San Nicolas Island, one of the Channel Islands just south of the Channel Islands NMS, indicate that ambient noise pollution in that area has increased by 10-12 decibels over the past 40 years. McDonald *et al*. suggest that this increase, potentially reflected throughout the Northeast Pacific, is most likely due to changes in commercial shipping. McDonald, M.A., Hildebrand, J. and Wiggins, S.M., 2006, Increases in deep ocean ambient noise in the Northeast Pacific west of San Nicolas Island, California, *Journal of the Acoustical Society America*, 120(2): 711-718.
[35] Hildebrand, J. 2005. Impacts of anthropogenic sound, *In*: *Marine Mammal Research: Conservation Beyond Crisis. Edited by:* J.E. Reynolds III, W.F. Perrin, R.R. Reeves, S. Montgomery and T.J. Ragen. Johns Hopkins University Press, Baltimore, Maryland, pp. 101-124.
[36] *See* http://cetsound.noaa.gov/

Pacific and Atlantic oceans.[37] This sound level is equivalent to attending a live rock concert or standing next to a running chainsaw.[38]

Marine mammals use different song, chirp, and whistle frequencies for a variety of purposes, including echolocation for feeding, long-distance communication, environmental imaging, individual identification, and breeding.[39] Odontocetes, or toothed mammals such as dolphins and killer whales, produce broad-spectrum clicks and whistles that can range between 1 and 200 kilohertz (kHz).[40] Mysticites, or baleen whales such as blue and right whales, have much lower-frequency calls, ranging between 0.2 and 10 kHz.[41]

Anthropogenic noise pollution can mask marine mammal communications at almost all frequencies these mammals use.[42] "Masking" is a "reduction in an animal's ability to detect relevant sounds in the presence of other sounds."[43] Ambient ship noise can cover important frequencies these animals use for more complex communications.[44] Some species, such as the highly endangered right whale, are especially vulnerable to masking.[45] Ship noise can completely and continuously mask right whale sounds at all frequencies.[46] NOAA has recognized that this masking may affect marine mammal survival and reproduction by

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[37] *Summed Outputs—Sound Field Data Availability*, NOAA, http://cetsound.noaa.gov/SoundMaps/NorthAtlantic/Basin/Chronic/NA_OceanBasin_Chronic_Sum/NorthAtlantic_Sum_ThirdOctave/Atl_Sum_0050Hz_0005m_ThrdOct.png (last accessed Oct. 29, 2014) (Atlantic Ocean noise pollution levels); *Summed Outputs—Sound Field Data Availability*, NOAA, http://cetsound.noaa.gov/SoundMaps/NorthPacific/Basin/Chronic/NP_OceanBasin_Chronic_Sum/NorthPacific_Sum_ThirdOctave/Pac_Sum_0050Hz_0005m_ThrdOct.png (last accessed Oct. 29, 2014) (Pacific Ocean noise pollution levels).

[38] *Comparative Examples of Noise Levels*, INDUSTRIAL NOISE CONTROL, INC. (Feb. 2000), http://www.industrialnoisecontrol.com/comparative-noise-examples.htm.

[39] *Id*. at 42-44; Jason Gedamke, *Ocean Sound & Ocean Noise: Increasing Knowledge Through Research Partnerships*, NOAA 2 (2014), *available at* http://cetsound.noaa.gov/Assets/cetsound/documents/MMC%20Annual%20Meeting%20Intro.pdf; Clark, C.W. et al., *Acoustic Masking in Marine Ecosystems as a Function of Anthropogenic Sound Sources*, *available at* https://www.academia.edu/5100506/Acoustic_Masking_in_Marine_Ecosystems_as_a_Function_of_Anthropogenic_Sound_Sources.

[40] OCEAN NOISE AND MARINE MAMMALS, NAT'L RES. COUNCIL 41-42 (2003), *available at* http://www.nap.edu/openbook.php?record_id=10564&page=R1.

[41] *Id*. at 42.

[42] *See, e.g.*, Hildebrand, J.A., *Impacts of Anthropogenic Sound, in* MARINE MAMMAL RESEARCH: CONSERVATION BEYOND CRISIS (Reynolds, J.E. III et al., eds. 2006); Weilgart, L., 2007, The Impacts of Anthropogenic Ocean Noise on Cetaceans and Implications for Management, 85 CANADIAN J. ZOOLOGY 1091-1116 (2007).

[43] OCEAN NOISE AND MARINE MAMMALS, *supra* note 40, at 96.

[44] *Id*. at 42, 100 ("An even higher level, an understanding threshold" may be necessary for an animal to glean all information from complex signals").

[45] Clark, C.W. at al., *Acoustic Masking in Marine Ecosystems: Intuitions, Analysis, and Implication*, 395 MARINE ECOLOGY PROGRESS SERIES 201, 218-19 (2009), available at http://www.int-res.com/articles/theme/m395p201.pdf; Clark et al., *supra* note 39, at *17, fig. 8.

[46] *Id.* (showing anthropogenic noise masking 100 percent of the frequencies right whales used over the majority of a six-hour study).

decreasing these animals' ability to "[a]ttract mates, [d]efend territories or resources, [e]stablish social relationships, [c]oordinate feeding, [i]nteract with parents, or offspring, [and] [a]void predators or threats."[47] Studies have also found that chronic exposure to boat traffic and noise can cause whales to reduce their time spent feeding.[48]

In addition to masking effects, marine mammals have displayed a suite of stress-related responses from increased ambient and local noise levels. These include "rapid swimming away from [] ship[s] for distances up to 80 km; changes in surfacing, breathing, and diving patterns; changes in group composition; and changes in vocalizations."[49] Some avoidance responses to localized marine sounds may even lead to individual or mass strandings.[50] Louder anthropogenic sounds may also lead to permanent hearing loss in marine mammals.[51]

NOAA and legislative leaders have recognized the threat to ocean species posed by increased anthropogenic ocean noise levels.[52] On the issue of ocean noise, NOAA has stated:

> Rising noise levels can negatively impact ocean animals and ecosystems in complex ways. Higher noise levels can reduce the ability of animals to communicate with potential mates, other group members, their offspring, or feeding partners. Noise can reduce an ocean animal's ability to hear environmental cues that are vital for survival, including those key to avoiding predators, finding food, and navigation among preferred habitats.
>
> NOAA's approach to managing ocean noise aims to reduce negative physical and behavioral impacts to trust species, as well as conserve the quality of acoustic habitats.[53]

Though difficult to detect, noise-induced stress is a serious threat for cetaceans.[54] In a noise exposure study using a captive beluga whale, increased levels of stress hormones were

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[47] Jason Gedamke, *supra* note 39, at 2; Clark, C.W. *et al*., *supra* note 45, at *3.
[48] *See i.e.* Williams, R. D., et al., 2006, Estimating relative energetic costs of human disturbance to killer whales (*Orcinus orca*), *Biological Conservation,* 133: 301-311.
[49] OCEAN NOISE AND MARINE MAMMALS, *supra* note 40, at 94.
[50] *Id*. at 132; BRANDON L. SOUTHALL ET AL., FINAL REPORT OF THE INDEPENDENT SCIENTIFIC REVIEW PANEL INVESTIGATING POTENTIAL CONTRIBUTING FACTORS TO A 2008 MASS STRANDING OF MELON-HEADED WHALES 3 (*PEPONOCEPHALA ELECTRA*) IN ANTSOHIHY, MADAGASCAR, INT'L WHALING COMM'N 4 (2013), *available at* http://iwc.int/private/downloads/4b0mkc030sg0gogkg8kog4o4w/Madagascar%20ISRP%20FINAL%20REPORT.pdf.
[51] Kastak, D. et al., 2008, *Noise-Induced Permanent Threshold Shift in a Harbor Seal*, 123 J. ACOUSTICAL SOC'Y OF AM. 2986; Kujawa, S.G. & Liberman, M.C., 2009, *Adding Insult to Injury: Cochlear Nerve Degeneration After "Temporary" Noise-Induced Hearing Loss*, 29 J. NEUROSCIENCE 14,077.
[52] *See Phase 2-NOAA's Ocean Noise Strategy* (http://cetsound.noaa.gov/cetsound); *Congressional Briefing on Marine Mammal Health and Stranding* (Sept. 24, 2014), http://www.mmc.gov/special_events/capitalhill_briefing/capitalhill_briefing_summary.shtml; *see generally* Jason Gedamke, *Supra Note 25*.
[53] *Underwater Noise and Marine Life*, NOAA, http://cetsound.noaa.gov/index.

documented.[55] Stress due to noise can lead to long-term health problems, and may pose increased health risks for populations by weakening the immune system and potentially affecting fertility, growth rates and mortality.[56]

Many species are already threatened by increasing ocean noise. The NMFS recovery plan for Southern resident killer whales (*Orcinus orca*) describes the disturbance from vessel traffic and the associated noise pollution as a potential threat to the species in Washington State and British Columbia, where population numbers have fallen to below 100 individuals.[57] The recovery plan identifies "sound and disturbance from vessel traffic" as factors that currently pose a risk for this population of Southern resident killer whales.[58] Killer whales rely on their highly developed acoustic sensory system for navigating, locating prey, and communicating with other individuals. Increased levels of anthropogenic sound have the potential to mask echolocation and other signals used by the species, as well as to temporarily or permanently damage hearing sensitivity. Exposure to sound may therefore be detrimental to survival by impairing foraging and other behavior.[59]

Other species that communicate over vast distances in the ocean, such as blue and fin whales, will increasingly have trouble hearing one another as the ambient noise level continues to rise. The masking of reproductive calls may prevent widely distributed mates from finding each other and reproduction rates may fall as a consequence.[60] This could have a significant impact on the survival of species such as Southern resident killer whales and blue whales, which are listed as endangered species.

Hearing loss, classified as either "temporary threshold shift" or "permanent threshold shift," is also a concern for animals exposed to the intense noise pollution produced by human activities. Hearing loss reduces the range in which communication can occur, interferes with foraging efforts and increases vulnerability to predators. Hearing loss may also change behaviors with respect to migration and mating and it may cause animals to strand, which is often fatal. For marine mammals such as whales and dolphins that rely heavily on their acoustic senses, both permanent and temporary hearing loss should be regarded as a serious threat.[61]

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[54] Weilgart, L., 2007, The Impacts of Anthropogenic Ocean Noise on Cetaceans and Implications for Management, 85 CANADIAN J. ZOOLOGY 1091-1116 (2007).
[55] Romano, T.A. *et al.,* 2004, Anthropogenic sound and marine mammal health: measures of the nervous and immune systems before and after intense sound exposure, *Canadian Journal of Aquatic Science,* 61: 1124-1134.
[56] *Id.*
[57] National Marine Fisheries Service (NMFS). 2008. Recovery Plan for Southern Resident Killer Whales (*Orcinus orca*). National Marine Fisheries Service, Northwest Region, Protected Resources Division, Seattle, Washington.
[58] *Id.*
[59] *Id.*
[60] Weilgart, L., 2007, The impacts of anthropogenic ocean noise on cetaceans and implication for management. *Canadian Journal of Zoology,* 85 CANADIAN J. ZOOLOGY 1091-1116.
[61] Hildebrand, J., 2005, Impacts of anthropogenic sound, *In*: *Marine Mammal Research: Conservation Beyond Crisis. Edited by:* J.E. Reynolds III, W.F. Perrin, R.R. Reeves, S. Montgomery and T.J. Ragen. Johns Hopkins University Press, Baltimore, Maryland, pp. 101-124.

Furthermore, noise impacts to marine mammals are predicted to increase with global climate change, wherein the absorption of carbon dioxide by the ocean could create noisier oceans.[62] When greenhouse gas reacts in the ocean, it lowers pH, creating more acidic waters. The more acidic the water, the less that sound waves are absorbed. Keith Hester, a researcher with the Monterey Bay Aquarium Research Institute, predicts sounds will travel 70% further by 2050 because of increased carbon dioxide acidifying our oceans.[63] A louder ocean will negatively affect cetaceans that rely on sound to navigate, communicate, find food, and avoid predators.

The greatest source of human-caused marine noise by far is ship propeller cavitation—the sound poorly designed propellers make as they spin through the water.[64] Cavitation accounts for as much as 85 percent of human caused noise in the world's oceans.[65] Cavitation may also increase due to hull designs that create non-homogenous wake fields behind ships.[66] And even well-designed propellers and hulls may begin to cavitate if they are not regularly cleaned and smoothed.[67]

Another significant source of anthropogenic marine noise is on-board machinery, especially diesel engines.[68] Other onboard machines may also cause vibrations that migrate underwater.[69] Finally, ship noise increases at higher speeds, as this increases the degree and volume of cavitation and onboard machine sounds.[70] The Applicant has failed to discuss any of these sources of marine noise in its application materials.

The increased noise impacts associated with the tanker ships for the proposed Project would likely result in the take of protected species. Congress intended the term "take" to be defined in the "broadest possible manner to include every conceivable way" in which a person could harm or kill wildlife.[71] The term "take" is defined in the statute to include "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."[72] The implementing regulations for the Act define "harm" to include "significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing

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[62] Hester, K. C., *et al.*, 2008, Unanticipated consequences of ocean acidification: A noisier ocean at lower pH. *Geophysical Research Letters*, 35:31.
[63] *Id*.
[64] Joseph J. Cox, *Evolving Noise Reduction Requirements in the Marine Environment*, MARINE MAMMAL COMM'N: CONGRESSIONAL BRIEFING ON OCEAN NOISE, at 12 (2014), *available at* http://www.mmc.gov/special_events/capitalhill_briefing/cox_capitalhill_briefing_0914.pdf; GUIDELINES FOR THE REDUCTION OF UNDERWATER NOISE FROM COMMERCIAL SHIPPING TO ADDRESS ADVERSE IMPACTS ON MARINE LIFE, INT'L MARITIME ORGANIZATION 1-2 (2014) (definition of cavitation) (hereinafter "GUIDELINES").
[65] Joseph J. Cox, *supra* note 64, at 12.
[66] GUIDELINES, *supra* note 64, at 4.
[67] GUIDELINES, *supra* note 64, at 5.
[68] GUIDELINES, *supra* note 64, at 4.
[69] *Id*.
[70] GUIDELINES, *supra* note 64, at 5.
[71] S. Rep. No. 93-307, 93d Cong., 1st Sess. 1, reprinted in 1973 USCAAN 2989, 2995.
[72] 16 U.S.C. § 1532(18).

essential behavioral patterns, including breeding, feeding or sheltering."[73] The term "harass" is defined to mean "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering."[74]

The Corp's approval of this permit would increase noise levels in the marine environment, which clearly has the potential to harm and harass marine mammals, and therefore allowing the Project to move forward would cause the take of federally protected species. At worst, the noise increase could be deadly.[75] As discussed above, exposure of marine animals to intense and/or continuous noise pollution can also trigger behavioral changes, mask biologically important sounds, interfere with foraging efforts, and increase vulnerability to predators and ship strikes. Noise related stress can lead to disruptions in feeding, mating, and migration and may trigger an abandonment of habitat. Noise pollution can make it more difficult for fish and marine mammals to locate food and mates, avoid predators, navigate, and communicate.[76] Hearing damage resulting from noise exposure can sustain these negative impacts for afflicted animals well after the noise itself has ceased.

No information on any of these impacts has been included in the Applicant's materials, which only address the noise from installing piles for the terminal docks, rendering its analysis of potential impacts to marine mammals entirely incomplete. It is clear, however, that permitting the proposed Project would substantially increase tanker traffic, and therefore marine noise in the Project area. This increased noise in the marine environment would cause undue harm to marine species, and is therefore not in the public interest.

3. The elevated risk of spills supports permit denial.

The proposed Project would significantly increase tanker traffic regionally and in and around the mouth of the Columbia River, exacerbating the potential for ship collisions and other accidents that could result in hazardous material spills. Spills from tankers (either their LNG cargo or their own fuel supply) could expose marine mammals to toxic contaminants. Because marine mammals require routine contact with the sea surface, these species experience high risk from floating oil.[77]

Oil and gas spills can have a direct impact on marine mammals from inhalation of toxic fumes, which can lead to brain lesions, stress, and disorientation.[78] Studies have shown that oil from spills not only causes acute short-term mortality, but that tanker accidents have resulted in spilled oil that "persisted beyond a decade in surprising amounts and in toxic forms, was sufficiently

[73] 50 C.F.R. § 17.3.
[74] *Id.* § 17.3.
[75] Andre, M. *et al*., 2011, Low-frequency sounds induce acoustic trauma in cephalopods, *Frontiers in Ecology and the Environment.* doi:10.1890/100124.
[76] Popper, A.N., 2003, Effects of anthropogenic sounds on fishes, *Fisheries,* 28(10): 24-31.
[77] *See* National Research Council, Oil in the Sea III: Inputs, Fates, and Effects (National Academy Press, Washington, DC (2002)).
[78] Peterson, et. al., 2003, Long-Term Ecosystem Response to the Exxon Valdez Oil Spill, *Science,* Vol. 302, No. 5653 pp. 2082-2086.

bioavailable to induce chronic biological exposures, and had long-term impacts at the population level."[79] Therefore, oil spills can cause "a trophic cascade radically modifying a marine community."[80] Chronic toxicological effects from oil spills are therefore a serious concern for whales and other marine mammals. Studies in Pacific waters suggest that oil spills can have severe and chronic impacts to cetacean populations and it is uncertain whether affected populations can recover from such events.[81]

The proposed Project would significantly increase tanker traffic in the region, increasing the risks of ship collisions, accidents and spills. The risk posed by vessels carrying oil is not discountable, because the United States has a history of massive oil spills from oil vessels. For example, the Exxon Valdez spilled almost 11 million gallons of crude oil off the coast of Alaska in 1989, impacting 1,100 miles of Alaska's coastline.[82] Numerous subsequent incidents illustrate that Exxon Valdez was not an isolated incident, and cannot be confined to the past or dismissed as an anomaly. Other examples of oil spills include:

- **June 8, 2000: 59,600 gallons** of oil spilled into the Chelsea River when the *Posavina* collided with a tugboat in the Boston Harbor.[83]
- **November 28, 2000: 554,400 gallons** of crude oil spilled into the Mississippi River when oil tanker *M/T Westchester* lost its main engines and struck an unidentified hazard.[84] The oil reached 35 acres of shoreline habitat.[85]
- **April 27, 2003: 98,000 gallons** of fuel oil spilled into Buzzard's Bay in Massachusetts when a barge ran aground.[86] Oil reached approximately 90 miles of shoreline, killing around 450 birds, including ESA-listed Roseate Terns and Piping Plovers.[87]

[79] *Id.*
[80] *Id.*
[81] *See* Ashe, et al., 2013, Abundance and Survival of Pacific Humpback Whales in a Proposed Critical Habitat Area, *PLoS ONE* 8(9): e75228. doi:10.1371/journal.pone.0075228; Matkin CO, Saulitis EL, Ellis GM, Olesiuk P, Rice SD, 2008, Ongoing population-level impacts on killer whales Orcinus orca following the Exxon Valdez oil spill in Prince William Sound, Alaska, *Marine Ecology Progress Series*, 356: 269–281.
[82] NOAA Incident News: T/V Exxon Valdez, http://www.incidentnews.noaa.gov/incident/6683 (accessed Jan. 6, 2015).
[83] NOAA, *Damage Assessment and Restoration Plan/Environmental Assessment for the June 8, 2000 T/V Posavina Oil Spill* at 5, http://www.gc.noaa.gov/gc-rp/posa-drp.pdf (accessed Jan. 5, 2015).
[84] NOAA, *Shoreline Assessment and Environmental Impacts from the M/T Westchester oil spill in the Mississippi River* at 3-1, http://www.epa.gov/osweroe1/docs/oil/fss/fss02/michelpaper.pdf (accessed Jan. 6, 2015).
[85] *Id*. at 3-7.
[86] Mass. Office of Energy and Environmental Affairs, *Bouchard 120 Oil Spill NRD Damages Assessment*, http://www.mass.gov/eea/agencies/massdep/cleanup/nrd/bouchard-120-oil-spill-nrd-damages-assessment.html, Appendix E.
[87] *Id*.

- **November 27, 2004: 263,371 gallons** of heavy crude oil spilled into the Delaware River when oil tanker *Athos I* struck a large underwater anchor.[88] Oil from the spill reached 1,729 acres of shoreline habitat, 412 acres of aquatic habitat, and killed an estimated 11,869 birds.[89]
- **November 7, 2007: 53,569 gallons** of fuel oil spilled into the San Francisco Bay when freighter *Cosco Busan* struck the Bay Bridge.[90] Oil from the spill impacted 3,367 acres of shoreline habitat. The incident killed 6,489 birds from 65 different species, including the ESA-listed Marbled Murrelets and Snowy Plovers.[91] In addition, an estimated 14-29% of herring stock was lost that winter due to oil-related egg mortality.[92]
- **July 23, 2008: 212,089 gallons** of fuel oil spilled into the Mississippi River when a barge collided with another vessel near New Orleans, Louisiana.[93] Wildlife Group observed oil from the spill on 813 birds, 26 mammals, and 13 reptiles.[94] The spill occurred upstream of the Delta National Wildlife Refuge, placing important habitat for waterfowl at risk.[95]
- **January 23, 2010: 462,000 gallons** of crude oil spilled into the Sabine-Neches Canal when oil tanker *Eagle Otome* collided with another vessel in Port Arthur, Texas.[96]
- **February 22, 2014: 23,500 gallons** of Bakken crude oil spilled into the Lower Mississippi River when oil tanker *E2MS 303* collided with another vessel.[97]
- **March 22, 2014: 168,000 gallons** of fuel oil spilled into Galveston Bay when an oil tanker collided with another vessel.[98] Just over a week after the incident, 21 dolphins and 150 birds were reported dead in the area. Oil from the spill also reached

[88] NOAA, *FINAL RESTORATION PLAN AND ENVIRONMENTAL ASSESSMENT For the November 26, 2004, M/T Athos I Oil Spill on the Delaware River near the Citgo Refinery in Paulsboro, New Jersey* at 1, http://www.darrp.noaa.gov/northeast/athos/pdf/Athos_Final_RP.pdf (accessed Jan. 6, 2015).
[89] *Id*. at vii.
[90] Cosco Busan Oil Spill Trustees, *Cosco Busan Oil Spill Final Damage Assessment and Restoration Plan/Environmental Assessment* at 14, http://www.fws.gov/contaminants/Restorationplans/CoscoBusan/Cosco_Settlement/FinalCoscoBusanDARP.pdf (accessed Jan. 6, 2015).
[91] *Id*. at 16.
[92] *Id*. at 15.
[93] U.S. FWS, After Action Report Barge DM932 Oil Spill, Mississippi River New Orleans, Louisiana at 1, http://www.fws.gov/contaminants/Documents/DM932Spillreport.pdf (accessed Jan. 6, 2015).
[94] *Id*. at 4.
[95] *Id*. at 2.
[96] National Transportation Safety Board, *Collision of Tankship Eagle Otome with Cargo Vessel Gull Arrow and Subsequent Collision with the Dixie Vengeance Tow, Sabine-Neches Canal, Port Arthur, Texas, January 23, 2010. Marine Accident Report* at 1.
[97] NOAA Incident News: Barge E2MS 303, http://www.incidentnews.noaa.gov/incident/8729 (accessed Jan. 5, 2015).
[98] National Ocean Service, *Kirby Barge Oil Spill, Houston/Texas City Ship Channel, Port Bolivar, Texas*, http://response.restoration.noaa.gov/oil-and-chemical-spills/oil-spills/kirby-barge-oil-spill-houstontexas-city-ship-channel-port-bolivar (last accessed Jan. 6, 2015).

> Matagorda Island, part of an important wildlife refuge which provides the winter home to the world's only naturally wild flock of whooping cranes.[99]

In light of the limited history of oil tanker traffic on the Columbia River, and the dramatic increase that would result from the proposed Project, the risk of an oil spill on the Columbia will increase substantially if the Project moves forward.

The Applicant's materials do not analyze the increased risks these spills pose to listed species, nor do they indicate the potential harm that would occur from a hazardous materials spills, and the potential response actions to these spills, which could also impact marine species through the use of toxic dispersants. Dispersants applied in a real-world oil spill setting have been shown to travel up to 180 miles and to persist for at least 64 days.[100] Several research teams have shown that oil dispersed by a common dispersant, Corexit 9500A,[101] is more toxic than either spilled oil or dispersant alone.[102]

The Corps must consider the increased risk of harm to marine mammal species from the escalation in tanker traffic and potential spills associated with the Project. Since the proposed Project would significantly increase the potential for spills and associated harm, it is not in the public interest.

4. Transportation of invasive species in ballast water and the resulting pollution also supports permit denial.

Ballast water is taken on by vessels to increase the water draft, change the trim, regulate the stability, or maintain stress loads within acceptable operational limits. This may lead to the unintentional transportation of non-native invasive species ("NIS"), which can be released into ports when ballast water is discharged. In cases where these species invade ecosystems, they may alter aquatic and marine ecosystems and biodiversity, impact commercial and recreational fisheries, cause infrastructure damage, contribute to potential risks to human health, and generally create detrimental economic impacts.[103]

According to the US Coast Guard, ballast water discharge is a major pathway for NIS introduction from vessels operating in or entering waters of the United States. Studies have

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[99] U.S. FWS National Wildlife Refuge System, *Impacts at Texas Oil Spill*, http://www.fws.gov/refuges/news/ImpactsAtTexasOilSpill.html, Appendix G.

[100] Kujawinski, E. B., *et al*., 2011, Fate of Dispersants Associated with the Deepwater Horizon Oil Spill, *Environmental Science and Technology*, 45: 1298-1306.

[101] This product is approved for use in the region pursuant to the Northwest Area Contingency Plan.

[102] Zhang, Y.Q., *et al*., 2013, Chemical dispersant potentiates crude oil impacts on growth, reproduction, and gene expression in Caenorhabditis elegans, *Archives of Technology*, 87: 371-82; Rico-Martinez, R., Snell, T.W., Shearer, T. L., 2013, Synergistic toxicity of Macondo crude oil and dispersant Corexit 9500A (R) to the Brachionus plicatilis species complex (Rotifera), *Environmental Pollution*, 173: 5-10; Goodbody-Gringly, G., et al., 2013, Toxicity of Deepwater Horizon Source Oil and the Chemical Dispersant, Corexit (R) 9500, to Coral Larvae, *PLOS* ONE, 8:1.

[103] *See* Programmatic Environmental Assessment for Ballast Water Management Program for United States Waters. U.S. Department of Homeland Security, USCG, Washington, DC.

shown that the rate of NIS introductions to waters of the United States is an increasing problem.[104] Ballast water could transport invasive species, facilitate movement of pathogens, or increase the incidence of harmful algal blooms, which can kill marine mammals.[105] The introduction and establishment of organisms into a new environment is so complex and full of variability and uncertainty that it has been compared to a game of "ecological roulette."[106] Furthermore, introduced NIS have been cited as the second largest threat to endangered species after habitat loss.[107] Therefore, the increased ship traffic associated with the proposed Project could pose a threat to the several endangered marine mammal species in the region.

These impacts may be exacerbated by climate change. Increasing winter water temperatures in the mid and high latitudes can provide more favorable conditions for invasive species to become established. This can be compounded by greater competitive advantage of introduced species compared to native species.

While the Applicant's materials suggest that tankers would mitigate the potential for NIS introduction in ballast water, there is insufficient analysis provided to ensure that tanker ships associated with the Project would not introduce dangerous NIS into the area. The Applicant has stated it would follow the Oregon DEQ ballast exchange rules; however, this does not ensure prevention of NIS introduction, since the rules allow for carriers to declare a safety exemption for various reasons, including adverse weather.[108] It is further suspect that the Applicant has not declared that it would follow the U.S. Coast Guard Ballast Water Regulations.[109]

The potential introduction of NIS, and the associated impacts on marine mammals, including the several federally protected species in the area, has not been adequately analyzed by the Applicant. These impacts, and the potential harm to federally-protected species, suggest that the proposed Project poses a threat and is therefore not in the public interest.

5. The proposed mitigation for the project is inadequate and at least must include conditions to limit the speed of tanker ships to reduce ship strikes and noise impacts.

The mitigations measures that are discussed for the project are woefully inadequate to address impacts to the marine environment and marine mammals. We disagree that the Corps can lawfully impose future, undisclosed mitigation measures for the Project.[110] However, reducing

[104] Ruiz, G. M., et al., 2000, Global Spread of Microorganisms by Ship," *Nature* 408: 49–50.
[105] Gulland, F.M.D., and A.J. Hall, 2007, Is marine mammal health deteriorating? Trends in the global reporting of marine mammal disease, *Ecohealth* 4:135–50.
[106] Carlton, J. T. and J. B. Geller, 1993, Ecological Roulette: The Global Transport of Nonindigenous Marine Organisms, *Science*, 261: 78–82.
[107] Wilcove, D. S., and L. Y. Chen., 1998, Management Costs for Endangered Species, *Conservation Biology* 12(6): 1405–7.
[108] ORS 783.630.
[109] 33 C.F.R. Part 151; 46 C.F.R. Part 162. If the Project is approved, the Corps should require that the tanker ships comply with these regulations.
[110] Public Notice at 3; *see also* 40 C.F.R. § 230.93(a)(1) ("Permit applicants are responsible for proposing an appropriate compensatory mitigation option to offset unavoidable impacts.").

ship speed would mitigate several of the impacts of the proposed Project on marine mammals, since ships traveling at lower speeds will reduce significant threats due to ship strikes, noise pollution, air pollution, and greenhouse gas emissions, and therefore any approval must include speed limits for tanker ships.

Speed plays a significant role in risk of ship strikes.[111] If a whale is swimming at mid-depth and hears an approaching ship, it will have difficulty in locating the direction of the ship because of the echoes off the bottom and surface. The loudness will not necessarily indicate how far away the ship is. If the whale then swims toward the surface directly ahead of the ship, the sound levels of that particular ship will become lower because of the downward diffraction, the Lloyd-mirror effect, near-field effects, and possible shielding from the hull. Thus, in terms of the acoustic stimulus associated with an approaching vessel, the quietest location will likely be at the surface, directly ahead of the ship.[112]

The Applicant's materials state that "LNG carrier speeds average approximately 15 to 21 knots in transit."[113] Scientific research has shown that there is a direct correlation between vessel speed and ship strikes resulting in whale mortality,[114] and that speeds below what the Applicant proposes are necessary for avoiding harm to marine mammals, and protecting the public interest.

Ship speed affects the likelihood of whale mortality in two ways. First, slower ship speeds provide whales with a greater opportunity to detect the approaching ship and avoid being hit by it. "To the extent that increasing vessel speed significantly increases accelerations experienced by a whale, limits on vessel speed will reduce the magnitude of the acceleration; may increase response time for a whale attempting to maneuver away from a vessel; and appear to be reasonable actions to consider in policy decisions aimed at reducing the overall threat of ship strikes."[115]

Second, research shows that while slower speeds may not avoid all collisions between whales and ships, collisions at slower speeds are less likely to result in serious injury or death of the

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[111] *See generally,* Conn, P. B., and G. K. Silber, 2013, Vessel speed restrictions reduce risk of collision-related mortality for North Atlantic right whales, *Ecosphere,* 4(4):43.

[112] Terhune, J.M. and Verboom, W.C., 1999, Right whales and ship noise, *Marine Mammal Science,* 15: 256-258.

[113] Biological Assessment at 4-27.

[114] Laist, D.W., Knowlton, A.R., Mead, J.G., Collet, A.S. and Podesta, M., 2001, Collisions between ships and whales, *Marine Mammal Science,* 17(1): 35-75; Pace, R.M. and Silber, G.K., 2005, Abstract: Simple Analyses of ship and large whale collisions: Does speed kill?, *Sixteenth Biennial Conference on the Biology of Marine Mammals*, San Diego (Dec. 2005); Vanderlaan, A.S.M. and Taggart, C.T., 2007, Vessel Collisions with Whales: The probability of lethal injury based on vessel speed, *Marine Mammal Science,* 23(1): 144-156; Panigada, S., et al., 2006, Mediterranean fin whales at risk from fatal ship strikes, *Marine Pollution Bulletin,* 52: 1287-1298; Silber, G.K., Slutsky, J., and Bettridge, S., 2010, Hydrodynamics of a ship/whale collision, *Journal of Experimental Marine Biology and Ecology,* 391: 10-19.

[115] Silber, G.K., Slutsky, J., and Bettridge, S., 2010, Hydrodynamics of a ship/whale collision, *Journal of Experimental Marine Biology and Ecology,* 391: 10-19.

whale that has been struck.[116] Laist *et al*. (2001) reported in a historical analysis of ship strikes involving large cetaceans that "[a]mong collisions causing lethal or severe injuries, 89% (25 of 28) involved vessels moving at 14kn or faster and the remaining 11% (3 of 28) involved vessels moving at 10-14 kn; none occurred at speeds below 10 kn."[117]

Similarly, Vanderlaan and Taggart (2007) report that "as vessel speed falls below 15 knots, there is a substantial decrease in the probability that a vessel strike to a large whale will prove lethal," but that only at speeds slower than 11.8 knots does the chance of a fatal injury to a large whale drop below 50 percent.[118] Pace and Silber (2005) noted that they found "clear evidence of a sharp rise in mortality and serious injury rate with increasing vessel speed."[119] Specifically, they found that probability of serious injury or mortality increased from 45 percent at 10 knots to 75 percent at 14 knots, exceeding 90 percent at 17 knots. Again, the Applicant has stated that its ships will travel at 15-21 knots, well in excess of the speeds that are necessary to avoid serious injury to marine mammals.

Terhune and Verboom recommended that to avoid striking whales, ship operators need to take evasive actions to avoid collisions.[120] This appears to be how the Applicant intends to "mitigate" the risk of strikes – by posting a watch and maintaining a distance from sighted whales; however, this is rarely effective, especially for very large vessels. Since successfully avoiding a collision depends in part on accurately predicting a whale's movement, the ship operator may not be able to maneuver a large vessel in such a way that a collision is successfully avoided. Slower moving vessels may provide more time for a whale to avoid being struck. Laist *et al.* (2001) report situations in which a last-second flight response on the whale's part may serve to avoid collisions. Studies suggest that slower moving vessels are easier for whales to avoid, even if acoustic signals were missed.[121]

NMFS has found that no other measure was as essential or effective as the establishment of a mandatory 10-knot speed limit to reduce and prevent whale strikes.[122] NMFS has found that instituting this speed limit would benefit humpback, fin, sperm, and sei whales, as well as sea turtles.[123] Therefore, should this project be approved, a 10-knot speed limit should be included, along with reporting and monitoring mechanisms to ensure that the Applicant's ships adhere to this limitation.

Limiting the speed of tankers would also reduce noise impacts to marine mammals. As discussed above, vessel traffic is the largest source of noise pollution in the marine

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[116] Laist, *supra* note 114.
[117] *Id.*
[118] Vanderlaan, A.S.M. and Taggart, C.T., 2007, Vessel Collisions with Whales: The probability of lethal injury based on vessel speed, *Marine Mammal Science*, 23(1): 144-156.
[119] Pace, *supra* note 114.
[120] *Id.*
[121] Laist, *supra* note 114; *See also* National Marine Fisheries Service (NMFS). FEIS to Implement Operational Measures to Reduce Ship Strikes to North Atlantic Right Whales (August 2008).
[122] National Marine Fisheries Service (NMFS). FEIS to Implement Operational Measures to Reduce Ship Strikes to North Atlantic Right Whales (August 2008).
[123] *Id.* at 4-19, 4-23.

environment.[124] The intense, low frequency noise pollution generated by ships can travel great distances through the water.[125] Noise pollution from shipping results primarily from the formation and collapse of air bubbles as the propeller turns. This process, known as cavitation, creates very loud acoustic pollution in the same lower-frequency range used for communication by whales, dolphins and other marine animals.[126] Cavitation is the primary source of noise at high speeds.[127] As a result, one of the most efficient ways to reduce noise from cavitation is to reduce the speed of the vessel. For these reasons, any permit for the proposed Project should include a mandatory speed limit to mitigate the noise impacts associated with tanker ships.

B. Impacts to Threatened and Endangered Terrestrial Species Also Support Permit Denial and Illustrate Why Project Alternatives Need to be Explored During the Comment Period.

As an initial matter, the application and related appendices are terribly out of date. The Corps should require Oregon LNG to update its materials before considering its permit application. Of grave concern is the need for Oregon LNG to update its application materials to include species that have been newly listed as threatened or endangered under the ESA. The application appears to be several years old and relies on outdated species information and status.

For example, streaked horned larks are now a threatened species in Oregon and Washington and use habitat around airports and islands in the Columbia River. Impacts to these highly imperiled birds from pipeline construction, use and maintenance of access roads, work in and around the Columbia River, and deposition of dredge spoils needs to be addressed prior to the Corps making any decision on this permit. The USFWS needs to be consulted on the footprint of the project and where it may intersect with streaked horned larks – an inquiry to the ORBIC database is insufficient for Oregon LNG to meet its obligations pertaining to a threatened species. As this example illustrates, the current application materials are incomplete and Oregon LNG should update them in consultation with the relevant fish and wildlife agencies.

The current materials are also insufficient to address the impacts to identified listed species. We ask the Corps to consider the impacts of this Project on bald and golden eagles and to consider the need for an eagle permit. We are also deeply concerned about the impacts of the project on salmon species in the Columbia River estuary and in the many streams that would be impacted by the pipeline construction, maintenance, and access roads. The impacts to marbled murrelets and northern spotted owls are discussed more fully below, but the Project calls for the modification and destruction of critical habitat for both species and would fragment and/or remove important nesting and other habitat with detrimental impacts to both species. We encourage the Corps to deny this permit for these reasons or to at least explore alternatives for the Project that will reduce the Project's impacts to threatened species.

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[124] *Id.*
[125] *Id.*
[126] *Id.*
[127] Arveson, P. T., and Vendittis, D. J., 2000, Radiated noise characteristics of a modern cargo ship, *Journal of the Acoustical Society of America,* 107 (1): 118-129.

1. The Projects Impacts on Threatened Marbled Murrelets and Their Habitat Supports Permit Denial but Also Requires Updating.

The potential impacts of the proposed Project on marbled murrelets are vastly understated throughout the Public Notice and application materials. The proposed pipeline would intersect with and permanently remove designated marbled murrelet habitat in eight areas including removing 2.90 acres of critical habitat to construct roads and removing 36.74 acres of critical habitat for pipeline construction.[128] The Project is also predicted to have direct impacts to murrelets.[129]

Marbled murrelets (*Brachyramphus marmoratus*) are small sea birds and the only tree nesting bird in the alcid family.[130] Marbled murrelets spend most of their time at sea feeding on fish but nest inland in mature and older forests.[131] Murrelets do not build nests but rely on large tree branches with natural depressions and moss in which to lay their egg.[132] Nesting habitat consists of "large core areas of old-growth" or mature forest and "low amounts of edge habitat, reduced habitat fragmentation, proximity to the marine environment, and forests that are increasing in stand age and height."[133]

The birds do not nest every year. When marbled murrelet nesting occurs it takes place between mid-April and September. The birds have high site fidelity, returning to the same tree or stand to nest. Murrelets do not nest in colonies but nest solitarily. Typically, marbled murrelets do not usually nest in the same tree as one another, but they will nest in the same stands of trees.[134] The female lays one egg and the male and female incubate the egg in shifts while the other bird feeds in the ocean.[135] Typically, they switch shifts at dawn or dusk.[136] Predominately due to the risk of predation, marbled murrelets tend to be very secretive when entering and leaving their nest sites making it difficult to detect the birds while nesting.[137]

The primary reason marbled murrelets are listed under the ESA is because of the extensive logging "of late-successional and old-growth forest . . . over the past 150 years" which has resulted in the loss of "at least 82 percent of the old-growth forests existing in western

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[128] Appendix J at 341.
[129] Appendix J at 344.
[130] Burger, Alan E.; Manley, Irene A.; Silvergieter, Michael P.; Lank, David B.; Jordan, Kevin M.; Bloxton, Thomas D.; Raphael, Martin G. Re-use of nest sites by marbled murrelets (*Brachyramphus marmoratus*) in British Columbia. Northwestern Naturalist. 90: 217-226 (2009).
[131] Long, L. and C.J. Ralph. Regulation and Observations of Human Disturbance Near Nesting Marbled Murrelets. Pacific Southwest Research Station, Redwood Sciences Laboratory, Arcata, California (June, 1998).
[132] 75 Fed. Reg. 3,425 (Jan. 21, 2010).
[133] *Id.*
[134] Nelson, K. and R.W. Peck. Behavior of marbled murrelets at nine nest sites in Oregon. Northwest Naturalist 6:43-53. (1995).
[135] *Id.*
[136] *Id.*
[137] Nelson, K. and T.E. Hamer. Nesting Biology and Behavior of the Marbled Murrelet. In USDA Forest Service Gen. Tech. Rep. PSW-152. (1995).

Washington and Oregon . . . .”[138] However, fragmentation of murrelet nesting habitat and resulting impacts are a grave threat – no matter the cause.[139] Habitat fragmentation leads to increased risk of predation, which is a significant threat to murrelet “demographic rates.” “Nest failure rates of 68 to 100 percent . . . due to predation in real nests, and 81 to 95 percent in artificial nests . . . have been reported.”[140] Due to these risks, it is highly recommended that marbled murrelet habitat is maintained “in relatively large contiguous blocks.”[141]

Current research on marbled murrelet populations in the Pacific Northwest shows that populations are rapidly declining.[142] While the primary cause of this decline is nesting habitat loss, changing ocean conditions, including climate change and loss of or limited availability of certain prey species, are an increasing concern for marbled murrelet populations.[143]

The current materials for the proposed Project fail to address the direct impacts from construction of the terminal and its use on the availability of murrelet habitat and prey species in the area, as well as the larger impacts expanding natural gas production and use will have on our changing climate and oceans.[144] These are serious considerations for marbled murrelets that need to be addressed in order for the Corps to ensure the Project would not jeopardize the species and is in the public’s interest.

The murrelet reports, analyses, and surveys offered in support of the Project, chiefly in Appendix J, are incomplete and raise more concerns than they answer. The materials claim the murrelet surveys were performed in compliance with the Pacific Seabird Group’s (PSG) survey protocol, however, this claim is not supported by the application materials, as discussed further below.[145]

As an initial matter, new marbled murrelet surveys for this project are absolutely necessary before the project can proceed. Currently, Oregon LNG is relying upon 2007-2008 surveys, but these surveys expire this year (2015) and cannot be relied upon for project construction, let along project implementation. Additionally, the Project footprint has changed since the 2007-2008

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[138] USFWS, Marbled Murrelet Five-Year Status Review, at 29 (2009).
[139] 75 Fed. Reg. at 3,432.
[140] *Id*.
[141] USFWS, Marbled Murrelet Recovery Plan, at 50 (1997).
[142] 75 Fed. Reg. at 3,433 (noting a “significant population decline” documented in 2008 and since monitoring began in 2000); 75 Fed. Reg. at 3,425 (2007 and 2008 monitoring results were the lowest population estimates since 2000); Falxa, G. et al. Marbled Murrelet Effectiveness Monitoring Northwest Forest Plan 2009 and 2010 Summary Report. Northwest Forest Plan Interagency Regional Monitoring Program (July, 2011) (noting an average annual decline in the CA, OR, WA population from 2001 to 2010 of 3.7%).
[143] Becker, B. H., Peery, M., & Beissinger, S. R. (2007). Ocean climate and prey availability affect the trophic level and reproductive success of the marbled murrelet, an endangered seabird. Marine Ecology Progress Series, 329, 267-279.
[144] The reduction of prey species from the terminal construction and use must also be addressed for other predatory species such as eagles.
[145] The PSG Survey Protocol or PSG Protocol is *the* accepted method for surveying for murrelets inland and can be found on-line using this citation: PSG, Methods for Surveying for Marbled Murrelets in Forests: A Revised Protocol for Land Management and Research, 2 (2003) (PSG Protocol).

surveys were completed and while piecemeal attempts have been made to address these changes,[146] it is clear from the record that a new set of marbled murrelet surveys – *i.e.*, at least two years of surveys performed pursuant to the PSG Protocol – are necessary for this project. Without these surveys, the Corps cannot meet its substantive and procedural duties under Section 7 of the ESA, nor can it conclude that murrelets would not be jeopardized by the Project.

For example, the application materials note the presence of murrelet suitable habitat along the pipeline route that has not been surveyed.[147] If this area is occupied by murrelets, than the pipeline should not run through this area, and if the surveys cannot be performed, then the project proponent and the relevant federal agencies, including the Corps, must assume this area is occupied by murrelets and proceed accordingly.[148] Because murrelets are so difficult to detect while inland (due to their evolution with predators) and show great site fidelity, the detection of certain behaviors during a survey in a forest stand means the entire contiguous stand must be protected as occupied habitat.[149] If surveys cannot be performed for suitable habitat, then those areas must be treated as occupied and logging, construction, road building, and pipeline maintenance activities, which all cause take of the species, must not take place.

Moreover, the application materials discuss "protocol" surveys that only happened for one year.[150] The PSG protocol requires at least two years of surveys before a conclusion is drawn about murrelet presence due to the fact that murrelets do not breed every year and may not be present during surveys one year, but will be the next.

The mapping and modeling information used to establish the presence of murrelet and owl habitat is also a grave concern. Appendix J notes:

> Suitable nesting, roosting and foraging (NRF) habitat has been identified within the Reroute area by NSO Habitat Suitability Index (HSI) BioMapper 3.0 data. In the Oregon Coast bio-region, smoothed NSO HIS values of 52 and above (or 37 and above for raw data) are considered potential suitable NSO habitat. Potential murrelet habitat within the analysis area was first identified by GIS using the murrelet HSI. The cut-point for this analysis was set at 50 to ensure that smaller patches of suitable habitat would not be overlooked.[151]

Field verification of modeling and mapping in Oregon's North coast range has demonstrated that the such modeling/mapping efforts are insufficient for the North coast[152]. These efforts fail to

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[146] Appendix J notes that Turnstone identified eight areas for survey in 2012-2013. Appendix J at 280. However, four of these areas were not properly surveyed – *i.e.*, for two years with 5-9 visits. Therefore, there are open questions about whether the new pipeline route is through occupied murrelet habitat.
[147] Supplemental Application at 3-34.
[148] *Ariz. Cattle Growers' Ass'n v. Salazar*, 606 F.3d 1160, 1167 (9th Cir. 2010)
[149] *Marbled Murrelet v. Babbitt*, 83 F.3d 1060, 1067-68 (9th Cir. 1996); *Marbled Murrelet v. Pac. Lumber Co.*, 880 F. Supp. 1343, 1365-67 (N.D. Cal. 1995).
[150] Supplemental Application at 3-34.
[151] Appendix J at 181.
[152] *See e.g.*, Grenier, J. J., and S. K. Nelson. 1995. Marbled Murrelet habitat associations in Oregon. Pages 191–204 in Ecology and Conservation of the Marbled Murrelet (C. J. Ralph, G. L. Hunt, M. G. Raphael,

catch remnant stands of old-growth or mature forest left from previous fires in the undulating landscape that is dominated by draws, landslides, and numerous waterways. Additionally, most modeling/mapping efforts fail to identify younger trees that provide habitat (*e.g.*, platforms) for murrelets.[153] Thus, reliance upon modeling/ mapping to delineate potentially suitable habitat is not sufficient in the first instance. A "habitat assessment desktop analysis" and field verification of "some potential habitat areas" is also not sufficient.[154]

Nor does the more recent habitat analysis and field survey make up for these deficiencies. The 2013 tech report again notes that "[p]otentially suitable marbled murrelet habitat was initially identified through the use of GIS data, including habitat suitability models. These habitat areas were subsequently confirmed as suitable or nonsuitable by ground-truthing observations."[155] Thus, the initial assumptions that were made about suitable habitat came from mapping and modeling information – not groundtruthing. Based on this record, we can assume the Project materials have under-included the potential suitable murrelet and owl habitat that would be impacted by the Project.

We also are concerned that the murrelet surveys may not have been performed according to the PSG Protocol. The Protocol specifies "[t]he minimum area surveyed should be the potential habitat that falls within the proposed project area and within one-quarter mile (402 m) of the project area boundary that is contiguous with the project area."[156] The Protocol also stresses the importance of station location and that the surveyors "must have at least 1 station per 12 ha (30 acres)."[157] Repeatedly, Appendix J notes that "[t]he extent of each survey site is less than 50 acres."[158] Saying a survey site is less than 50 acres is not the same as saying that the survey site size comports with the PSG protocol requirements. The difference between 30 acre and 50 acre survey sites is significant because murrelets are so difficult to detect while inland. When the survey site is increased, it undercuts the surveyor's chances of picking up murrelet activity in the area.

Furthermore, the surveys were not distributed throughout the breeding season as suggested by PSG. The PSG Protocol notes, "[m]urrelet activity increases to moderate intensity during spring and reaches a peak level generally from early July to early August in California, Oregon, and Washington (O'Donnell et al. 1995; W. Ritchie, pers. comm.)."[159] However, the majority of surveys for murrelets in 2008-2009 and 2012-2013 were conducted prior to July and none

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and J. F. Piatt, Eds.). U.S. Department of Agriculture, Forest Service General Technical Report PSW-GTR-152.

[153] The PSG protocol recognizes two kinds of murrelet habitat: mature and old-growth forests and "younger coniferous forests that have platforms. A platform is a relatively flat surface at least 10 cm (4 in) in diameter and 10 m (33 ft) high1 in the live crown of a coniferous tree." PSG, Methods for Surveying for Marbled Murrelets in Forests: A Revised Protocol for Land Management and Research, 2 (2003) (PSG Protocol).

[154] Appendix J at 182.

[155] Appendix J at 275.

[156] PSG Protocol at 6.

[157] PSG Protocol at 11.

[158] Appendix J at 275.

[159] PSG Protocol at 17.

occurred in August.[160] Thus, most of the surveys took place outside the peak level of murrelet activity making it less likely the surveyors would detect murrelets.

In sum, the application materials pertaining to murrelets are incomplete and need to be updated. However, based on the information that has been provided and the areas that would be impacted by the Project – including both ocean and forest habitat – we recommend the Corps deny the 404 permit.

2. Impacts to Northern Spotted Owls and Their Habitat Support Permit Denial And Also Require Updating.

The proposed Project would negatively impact northern spotted owls and their habitat. The proposed pipeline route intersects with and would destroy critical habitat in two areas and these impacts would be permanent due to the need to maintain the pipeline. The proposed pipeline route would also come within half a mile of four other critical habitat areas. The pipeline route falls within two documented owl activity centers (ACs) or sites.[161] The Project touches on the Wolf Creek owl site[162] and Iler Creek sites and is or was near the West Tidewater, McGregor Road, Buster Quarry, Little Beaver Creek, and Schmidlin Road owl sites.[163] As the Project materials demonstrate, there would be both direct impacts to owls and permanent loss of owl habitat, as well as many indirect impacts that are likely to contribute to owl loss in the area of the Project. Taken together these impacts support project denial.

As with the Applicant's materials for murrelets, the Project materials pertaining to northern spotted owls are entirely deficient and outdated. The materials understate the impacts the proposed Project would have on owls and rely upon woefully outdated science.

The northern spotted owl (*Strix occidentalis caurina*) is a rare and highly studied bird that relies upon the limited mature and old-growth forest habitat remaining in the Pacific Northwest. Northern spotted owls rely on intact stands of old-growth forest and the particular structures and characteristics found within them, such as high canopy enclosure, large accumulations of woody debris, snags, and tree deformities.

Spotted owls do not nest every year and courtship between monogamous pairs begins in early spring. Females generally nest in tree cavities and lay a clutch of two or three eggs that hatch after 30 days. Owls invest heavily in their young and when juveniles leave their parents to establish their own nesting sites in autumn, they usually only travel 10 to 15 miles from their place of birth.

Flying squirrels are predated upon by northern spotted owls living in Washington and Oregon, while further south, dusky-footed wood rats serve as the primary prey species. Other prey species include deer mice, tree voles, gophers, and snowshoe hares. Primarily nocturnal, spotted owls are

[160] Appendix J at 254.
[161] Appendix J at 342.
[162] Appendix J at 356.
[163] Appendix J at 164-165, 169.

also opportunistic feeders during daytime hours. Northern spotted owls are extremely territorial and require large foraging areas, sometimes of more than 15 square miles.

The species has been declining across its range for decades, historically due to the loss of the owl's forest habitat, and more recently due to the continued effects of habitat loss, wildfire, and the rise of a new, more aggressive competitor, the barred owl.

Suitable habitat for northern spotted owls is generally divided into nesting, roosting, and foraging (NRF) habitat as well as dispersal habitat. Given plummeting owl populations and the recovery objectives for this species, land managers also focus on "capable habitat" or habitat that will or could support owls in the future.

The application materials and discussions about the Project's potential impacts to northern spotted owls fail to address recent scientific research highlighting that habitat fragmentation plays an important role in barred owl movement into northern spotted owl habitat and resulting populations impacts and localized loss of northern spotted owls.[164] The application materials and the public notice fail to address the habitat fragmentation from pipeline construction and maintenance and the resulting impacts to northern spotted owls and their habitat. While the Project materials note that the Project would impact 494,912 acres of potential nesting, roosting, foraging, and dispersal habitat[165] and document the loss or modification of 119.41 acres of NRF, 67.05 acres of dispersal habitat, and 119.97 acres of capable habitat,[166] the impacts of this on the northern spotted owl are never fully analyzed. Not only is this habitat loss and modification of concern in-and-of-itself, the related fragmentation is a grave concern with the influx of barred owls and especially with northern spotted owl populations hanging on by a thread in Oregon's north coast.[167] Additionally, the application materials note "the Pipeline passes within 1.5 miles of three recorded occurrences of the northern spotted owl."[168] It is crucial that the Corps consider that forest fragmentation along the pipeline could lead to the loss of northern spotted owls in the region due to likely invasion by barred owls.

In terms of addressing habitat loss due to the Project, the Project materials focus on species' recovery and maintenance of large blocks of habitat. While these are important goals for the species that must be obtained, the fact that the north coast does not contain large blocks of habitat does not negate the importance of protecting what habitat remains in this area. Owl recovery cannot occur simply on federal land. Indeed, the Project area includes Oregon state forest land and other areas in which owls are persisting. The impacts to these remaining owls need to be seriously considered whether the north coast is a target for the species' recovery or not.

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[164] Sovern, S. G., Forsman, E. D., Olson, G. S., Biswell, B. L., Taylor, M., & Anthony, R. G. (2014). Barred owls and landscape attributes influence territory occupancy of northern spotted owls. The Journal of Wildlife Management, 78(8), 1436-1443.

[165] Appendix J at 19.

[166] Appendix J at 343.

[167] Forsman, E. D., Reid, J. A., Flannagan, S. M., Mowdy, J. S., & Price, A. L. (2011). Demographic characteristics of northern spotted owls (Strix occidentalis) on the Tyee Density Study Area, Roseburg, Oregon: 1985-2011. Annual Report. 18p.

[168] Supplemental Application at 3-33.

As with murrelets, we also have concerns about the status of the surveys performed for the Project with regards to owls. The Project materials note instances where the second year of surveys were not performed.[169] This indicates the need for two more years of surveys to occur so the surveys are consecutive. The materials for northern spotted owls are incomplete and require updating, but even as they stand, they support permit denial.

3. The Inumerable Impacts to Wildlife and Habitat From this Project Require Careful Consideration of Publicly Available Project Alternatives.

An 86 mile pipeline impacting over 145 acres of wetlands, requiring 185 stream crossings, impacting 1,195.2 acres of habitat used by threatened and endangered species, and a terminal requiring the dredging of 150 acres is not a run of the mill 404 permit. There are numerous potential configurations of this Project and myriad of impacts that need to be disclosed and publicly addressed through the consideration of alternatives. However, the Corps has not laid out for public consideration a single project alternative. This is a grave error in the public process and a significant legal concern for this Project.

Each stream crossing requires an alternatives analysis. Each wetland impacted requires an alternatives analysis. The Project dredging – including the amount and deposition sites – requires an alternatives analysis. The terminal location requires an alternatives analysis. Directionally drilling under the Columbia River requires an alternatives analysis. However, not one alternative has been presented to the public for comment.

Moreover, taking the Project as a whole we must ask ourselves does this make sense? Should we pipe a substance known to spill in an earthquake prone area under the Columbia River, through important salmon spawning grounds and imperiled species' habitat into the Columbia River estuary at a site in a known tsunami risk area? What are the alternatives? Siting the facility near larger urban areas like Portland or Vancouver and asking them to bear the risks associated with a facility and barges containing highly explosive materials? Is it fair to place these risks on our coastal communities instead? These questions lead one to ask: Do any of these alternatives make sense for Oregon? Nevertheless, these are the questions the Corps should present to the public in the form of an alternative analysis.

Without some public consideration of *this particular Project's* impacts and alternatives we simply cannot grapple with this Project as the Clean Water Act intended. The scope and impacts of the proposed Project, and the potential alternatives to the Project, are so broad and so vast they are mind boggling, yet the Applicant appears to want to minimize, downplay and ignore these important matters. While the Corps may not normally disclose its project alternatives to the public, in this situation it is imperative that it do so. We respectfully request that once the Corps has developed its project alternatives and impacts analysis, that it release them for public comment for at least 30 days before making a decision on the permit and its configuration (if the permit is to be issued).

[169] Appendix J at 282.

C. The Climate Change Impacts from this Project Need to be Addressed and Pose Risks that Call the Project Into Question.

The negative impacts to our climate and "energy independence" from a major LNG export terminal in Oregon also warrant denying the permits. The lifecycle carbon impacts of LNG are just as bad as coal. When methane is fracked, piped hundreds of miles, supercooled to a liquid and shipped overseas, it is neither a "clean" nor "efficient" product.

Moreover, because Asia pays up to four times more for natural gas than the western U.S. price, West Coast LNG export could significantly increase gas production in the United States and Canada. This means more fracking and related pollution in the U.S. and Canada and related impacts to local communities and native biological diversity.

The export of natural gas also raises economic concerns for the U.S. By reducing our supply and creating demand elsewhere, Oregon LNG will be contributing to higher gas prices in the U.S. A project that is neither good for our environment, nor our economy is not in the public' interest.

Furthermore, the Project would contribute to climate change, which in turn raises additional concerns about the current Project configuration. The proposed terminal is already located in one of Oregon's tsunami evacuation areas.[170] The impacts from a tsunami hitting the terminal could be catastrophic – especially for salmon.

Additionally, the terminal is proposed in an area that is and will continue to be impacted by sea level rise. A conservative estimate of sea level rise in Oregon is two inches by 2030 and six inches by 2050.[171] However, when melting of the West Antarctic Ice Sheet is accounted for, then sea level rise predictions are drastically increased and could be more than 16 feet for coastal areas of the U.S. including Oregon.[172]

Another great concern for coastal areas is el niño driven sea level rise and the resulting impacts.[173] Thus, Oregon LNG is proposing a Project that would contribute to climate change in an area that will experience heavy impacts from climate change. This is nonsensical and the related risks are certainly not in the public's interest.

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[170] *See* http://www.oregongeology.org/pubs/tsubrochures/WarrentonEvac.pdf

[171] NRC, Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future (2012) (available at: http://www.nap.edu/openbook.php?record_id=13389&page=R2).

[172] OCCRI, Potential Impacts of Climate Change: Coastal and Marine (available at: http://occri.net/climate-science/potential-impacts-of-climate-change/coastal-and-marine) (citing (IPCC 2007, Mitrovica et al 2009).

[173] *Id.*

D. The Corps Must Comply With NEPA and the ESA Before Issuing a Clean Water Act Section 404 Permit for the Oregon LNG Terminal and Pipeline.

It is unclear from the Project notice how the Corps intends to comply with NEPA and the ESA for this permit. On the one hand, the Corps notes that FERC is the lead agency for this project and is responsible for the NEPA review and ESA Section 7 consultations. On the other hand, the Corps cannot issue this 404 permit without complying with the NEPA and the ESA.

We want to be clear that the Corps cannot issue a 404 permit for this project before completing a NEPA review and completing ESA Section 7 consultations. This means that the Corps must either: 1) wait for FERC to accomplish these critical legal steps and then re-open the 404 permit for public comment; or 2) the Corps must prepare its own Environmental Impact Statement, undertake its own Section 7 consultations, and then hold a new public comment period for this Project. What the Corps cannot do is issue a 404 permit conditioned upon the completion of an EIS/ROD and Biological Opinion – to do so would be unlawful and invite litigation.

We understand that the Corps is to give high priority to energy projects under its regulations.[174] However, rushing to consider this Project now before FERC has undertaken its process is nonsensical.[175] NEPA and Section 7 consultations provide critical information about the environmental impacts of proposed activities, and any decision by the Corps absent these analyses would be unwarranted.

As discussed above, for example, Oregon LNG needs to update the list of threatened and endangered species that would be impacted by this Project. That updating should occur through the initiation of Section 7 consultations, which begins with the identification of potentially impacted ESA protected species. Also as previously discussed, the consideration of the impacts of this project and its alternatives is critical to informed decision-making and that is precisely what the NEPA process is designed to achieve. Moreover, the NEPA process provides critical information to the public and aids in its ability to comment on the 404 permit. Without this information, the Corps cannot make an informed decision and the public cannot offer meaningful public comments.

Lead agencies are appointed for vast projects, such as this, to coordinate the environmental and other reviews necessary. We respectfully request that the Corps follow FERC's lead, engage in the primary process for this Project, and provide the public the opportunity to comment on the 404 permit with the results of the NEPA process and Section 7 consultations in hand.

CONCLUSION

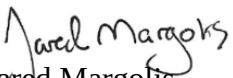
For all the foregoing reasons, and those discussed in Columbia Riverkeeper's comment letter, we respectfully request that the Corps and DEQ deny the 404 permit and not certify it under Section 401 of the Clean Water Act. This Project is not in the public's interest, does not comport with

[174] 33 C.F.R. § 320.4(n).

[175] The Corps own regulations specify that "[t]he Corps believes that state and federal regulatory programs should complement rather than duplicate one another." 33 CFR 320.1(a)(5).

the 404b guidelines, has an incomplete application, threatens potential jeopardy of imperiled species or destruction of their designated critical habitat, and otherwise fails to comport with the Clean Water Act's requirements. Moreover, without a NEPA process and Biological Opinion for the Project, the Corps cannot make an informed decision about this Project, and the public has been deprived of its ability to offer informed comments. Please contact us with any questions about these comments and thank you for your attention to this comment letter.

Sincerely,



Jared Margolis
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Center for Biological Diversity

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Enclosures (34 attachments)

List of Attachments to Center for Biological Diversity Comment Letter

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