

December 5, 2019

Robert Lobdell
Aquatic Resource Coordinator
Oregon Department of State Lands
775 Summer Street NE, Suite 100
Salem, Oregon 97301-1279

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

Dear Mr. Lobdell:

Since the close of the public review period on February 3, 2019 for our removal-fill permit, we have had several meetings with you and have provided written responses to the substantive issues and comments as requested in your April 10, 2019 letter. Despite this, in your letter of November 12, 2019, you identify substantive issues that have purportedly not been addressed. The November 12th letter begins with a lengthy re-iteration of the Oregon administrative rules applicable to removal fill permits from the Department's April 10th letter. Following this re-iteration, substantive comment topics are set out with the Department's response as to the adequacy of Jordan Cove's information responding to public comments. Our responses to the November 12th letter are set out below.

As further described herein and detailed in Jordan Cove's May 9th and August 30th responses, the scope of the Department's evaluation of permit applications is specifically defined through rules¹ and further clarified through DSL guidance (*A Guide to the Removal-Fill Permit Process*, Chapter 6 (2019)). To that end, such evaluation is generally limited to the actual removal-fill actions themselves and includes considering only public comments that are substantive and related to such removal/fill actions.

Public Comment: *Jordan Cove failed to demonstrate the project is consistent with the protection, conservation and best use of Oregon's waters.*

Department's response: *The applicant is reliant on future issuance of the ODEQ 401 Water Quality Certification (WQC) to demonstrate consistency with state water quality standards. ODEQ denied Jordan Cove's last application for water quality certification.*

¹ (OAR 141-085-0565)

Adherence to FERC guidelines and procedure manuals does not equate to adequately demonstrating consistency with state water quality standards or provide assurances that water quality will be protected.

Please advise, what is Jordan Cove's anticipated resubmittal date to ODEQ 401 WQC? In the absence of a complete application before ODEQ, we would need to make those independent determinations regarding water quality impacts. We currently do not have adequate information to make those determinations.

Jordan Cove's Response: Setting aside for the moment the implication from the above statement that the filing of "a complete application before ODEQ" would satisfy this issue, the Department appears to ignore the information provided by Jordan Cove in both its May 9, 2019 response and its August 30, 2019 response. Our August 30th response informed the Department of the status of our new application for a WQC stating "...Applicants are working closely with ODEQ on a new 401 application schedule."² This was followed with additional information regarding the status. The August 30th response then provided detailed descriptions of the measures proposed to protect designated beneficial uses, agricultural/irrigation uses, drinking water supplies and water body crossings along the pipeline³. Protection of potential impacts to in-stream water quality such as temperature, dissolved oxygen, Ph, turbidity and mercury are also all addressed.⁴ Our May 9th response addressed these same water quality parameters although in a different fashion tying our response to each of the nine factors the Department is to evaluate with respect to a removal/fill permit.

The simple assertion by DSL that it does "not have adequate information to make those determinations." Runs counter to its initial statement of purpose in the November 12th letter, which is to "provide...clarity on which issues or information is still needed..." Merely stating the Department does not have enough information provides no clarity. It is unclear at this juncture what additional information DSL believes would be necessary. Will submittal of our WQC application suffice? If so, we informed the Department at our meeting on November 14th that we anticipate submitting our application to DEQ on January 15, 2020. As acknowledged by the Department, and outlined in DSL's Removal-Fill Permit rules, and more importantly, dictated by the Oregon Department of Environmental Quality's (DEQ) delegated authority under the federal Clean Water Act, Section 401, DEQ is charged with, and will, make a determination about whether the proposed action complies with Oregon's water quality standards⁵. It is not a determination for the Department to make, but rather one to sensibly and practicably

² August 30th Response at 5

³ August 30th Response 5 -13

⁴ August 30th Response 14 – 22.

⁵ (see OAR Chapter 340, Division 48)

and legally defer to DEQ. DSL's rules do not require, for all of these reasons, an applicant to obtain a federally-delegated CWA Section 401 certification, certifying a federal authorization, not a state removal-fill permit, as part of an applicant's DSL permit application.

Public Comment: The project (removal/fill activities) does not conform to sound policies of conservation and will likely interfere with public health and safety

Department's response: Applicant is reliant on ODEQ 401 WQC to demonstrate compliance with state water quality standards yet ODEQ denied the last application from Jordan Cove. No reapplication has been made to ODEQ but is highly recommended to add weight to the applicant's assertions that those standards can and will be met through future issuance of a 401 WQC. Applicant is also reliant on the project and its mitigation proposals being consistent with ODFW Habitat Mitigation Policy which, based on ODFW's comments on the record, they currently are not. Applicant relies heavily on the federal siting rules and regulations which are the sole responsibility of FERC to ensure public health and safety, yet no FERC decision has been made on this project. Emergency Response Plans (ERP) are required by FERC prior to construction but future development and implementation does not adequately address public safety concerns. We currently do not have enough information to make a determination on this issue.

Jordan Cove's Response: Our May 9th response provided substantial information as to how Jordan Cove's removal/fill activities conformed to sound policies of conservation and would not interfere with public health and safety. Our response directs the Department to provisions or other permits we would be obtaining from other state and federal agencies to demonstrate this point, including our 401 WQC. However, we do not rely solely on the issuance of these permits, such as the 401, to demonstrate compliance. Our May 9th and August 30th responses provided detailed information as to how Jordan Cove would address each of the factors the Department considers in evaluating whether an applicant has demonstrated conformance to sound policies of conservation addressing among other topics – protection of municipal water supplies, surface and ground water; protection of fish, shellfish, wildlife and special aquatic sites, and minimization of dredge disposal and forest, vegetation and habitat mitigation⁶. Our August 30th response provided additional information and included responses to topics that are outside of the Department's jurisdiction in this context such as floods, tsunamis, wildfires, landslides, earthquakes, and emergency response plan⁷. In part, the Department appears to object to our reliance on permits from other state and federal agencies, yet these are the agencies charged with administering these programs

⁶ May 9th Response at pages 28 – 47 and August 30th Response at 5 -46.

⁷ August 30th Response at 23 -29

and not DSL. In any permitting decision, DSL relies on and defers to the expertise of these sister agencies. It is unclear why the Department would not act in a similar manner here.

As with the response above, absent a more specific request, it is impossible to understand what additional material the Department believes is necessary for it to make a determination on this factor.

Public Comment: Jordan Cove failed to demonstrate a comprehensive analysis of alternatives to the project.

Department's Response: *The May 9th and September 4th responses do not demonstrate the purpose and need. The applicant has provided conflicting responses to the question of demonstrating LNG buyers to show need or demand for the proposed project output of 7.8 mtpa of LNG export. Named companies (JERA and ITOCHU) only account for 3.0 Mtpa of the 7.8 Mtpa proposed for annual export. The May 9th response indicated that negotiations continue with other LNG buyers for the balance of the marketed plant capacity. The September 9th response states that identification of the remaining buyers (with agreements totaling an additional 8 Mtpa) must be withheld due to non-disclosure agreements in place with those buyers. The May 9th response repeated indicates that Jordan Cove has proposed a project production capacity of 7.8 Mtpa, which is economically feasible and allows for the reliability of supply to customers to meet the purpose and need. The increase in output from previous applications is [sic] result of design optimization and adjusting site-specific ambient temperatures. This statement lacks the justification on who the customers are and why the 7.8 Mtpa is the needed design capacity showing demand or need for the project as proposed.*

The response provides expanded alternatives analysis for the fixed elements of the project, the LNG terminal design capacity and the pipeline intersection at the GTN and Ruby Pipelines. No justification is provided on how or why the production capacity is fixed? All presented parts of the alternative analysis are predicated on meeting the project purpose which is to export a maximum of 7.8Mtpa with average of 7.5Mtpa export, anything less doesn't meet the purpose and need for the project. PCGP has applied to FERC for authorization to install a 36-inch pipeline. This pipeline limitation will allow 7.8Mtpa of natural gas to reach the LNG Terminal. Economic analysis favored 5 liquefaction trains (7.8Mtpa) production at the LNG Terminal. In order to export an average of 7.5Mtpa of LNG, the two storage tanks must each be emptied soon after they are filled with newly processed LNG. Each LNG carrier will be capable of loading approximately one storage tank of LNG, creating a process where one LNG storage tank is being filled with newly processed LNG while the second is being emptied to fill an LNG carrier. Delays associated with waiting for needed weather conditions would mean that

the LNG storage tanks are not emptied on schedule (as they are filled) and natural gas liquefaction processing would have to be slowed for a period equal to the LNG carrier delay. This condition would not allow the project to achieve export an average of 7.5Mtpa thus the NRI's are needed.

We do not have enough information to make a determination on this issue.

Department Response: Please address how elements of the project became fixed. Without proper justification of need for the project, this alternatives analysis is incomplete.

Jordan Cove's Response: As we discussed during our meetings in September and November and in our previous responses, it is not within the Department's legal purview to second-guess an applicant's business case behind its application. Indeed, the Department's rules and guidance nowhere provide such authority.⁸

The assertion above that the Department lacks sufficient information to make a determination regarding the need for the project contradicts or at least appears to contradict what the Department has stated at the top of page 3 of its November 12th letter, which states the Department does have enough information to consider whether Jordan Cove has demonstrated public need. More importantly, DSL has no basis for its statement that it needs to know who the customers would be for the LNG. We provided DSL with a copy of our public filing supporting the 11 mtpa, which should be sufficient for DSL given the significant penalties associated with filing false statements with a federal agency and in particular the Securities and Exchange Commission. The Department's statement above "No justification is provided on how or why the production capacity is fixed?" has no basis. Both of our responses provided information to justify the production capacity and in particular, our August 30th response provided detailed information as to how Jordan Cove determined the design capacity for the LNG Terminal as well as the Pipeline.⁹

It is unclear what the Department seeks regarding "how elements of the project became fixed." It appears from our discussions with the Department on November 14th that this issue can be addressed by providing the Department with a list of customers for the difference between the 3 mtpa indicated in our application with FERC and the 11 mtpa set out in our corporate statement on December 10, 2018. We are exploring whether this confidential information can be provided to the Department and to the extent we are able to determine doing so will not violate any of our agreements and the Department can maintain the confidentiality of this information, we will provide it. Based on our meeting, it is our understanding that should Jordan Cove provide this

⁸ See, e.g., OAR 141-085-0550; A Guide to the Removal Fill Permit Process, pp. 5.18, 6.11-6.14 (applicable rules and associated guidance that define the Department's role in evaluating purpose and need).

⁹ August 30th response at 56 – 59.

information, the remainder of the Department's concerns with respect to alternatives will be addressed. Even in the absence of this information, as stated above, we believe Jordan Cove has provided the Department with more than enough information to make this determination.

Public Comment: Slip and Access Channel

Department response: We currently do not have adequate information relating to the purpose and need to make a determination on this issue.

Jordan Cove Response: The public commenters questioned the need for the slip and access channel as currently designed. In our May 9th response, we provided a general response to this comment and referenced portions of the JPA to support our position as to why the slip and access channel was needed focusing on the size of the slip and access channel.¹⁰ In our August 30th response, we provided a significantly expanded analysis of the basis for the slip and access channel design discussing current and future LNG carrier dimensions, safety and security requirements, and potential water quality impacts.¹¹ We believe this information fully supports the need for the slip and access channel as designed.

Public comment - APCO DMD Site

Department response: Comment responses indicate that the APCO site has adequate capacity for the project and does not include maintenance dredging. Final engineering and designs will be reviewed/approved prior to construction as condition of the FERC authorization according to the comment response. Applicant relies heavily on the federal siting rules and regulations which are the sole responsibility of FERC to ensure public health and safety, yet no FERC decision has been made on this project. Final engineered designs and advanced geotechnical reports are required by FERC prior to construction but future development and implementation does not adequately address public safety concerns. We currently do not have adequate information to make a determination on this issue.

Jordan Cove Response: Comments on this topic centered on the ability of the APCO DMD site to safely handle the amount of material proposed to be placed on this site. Our May 9th response stated that the site can handle the material to be placed there referencing both geotechnical investigations Jordan Cove completed to address this issue along with a general description of the procedures that would be taken to ensure

¹⁰ May 9th response at 21.

¹¹ August 30th response at 79 -88.

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the material remains in place.¹² Our August 30th response expanded upon this information summarizing information from the geotechnical report, the joint permit application and the post construction stormwater management plans.¹³ To further support the statements in both responses, we are providing here the following additional information. All capital dredged material from the NRIs is proposed to be placed at APCO 2. Dredged material will be placed within containment berms between elevations 26.00 and 70.00 feet NAVD88 (44 feet depth) (refer to APCO ESCP Sheet C-202, attached here as Attachment A). The area of dredged material placement is 20.6 acres (refer to APCO ESCP Sheet C-201 attached here as Attachment B), which provides 850,000 cubic yards of storage capacity, well exceeding the required capital dredge capacity of 590,000 cubic yards.

Public comment - The project does not conform with existing land use laws.

Department response: *The September 4th response indicates that for any previously submitted inconsistent LUCS, the applicants will provide revised LUCS that list the approvals that are required. Jordan Cove anticipates submitting the revised LUCS on or about October 15th, 2019. Only Jackson County LUCS was received.*

Updated Land Use Consistency statements for the project should be submitted to the Department prior to our decision.

Jordan Cove Response: Attached here as Attachment C is a table providing the current status of each of the required land use compatibility statements. As we have previously conveyed to the Department during our meetings, we anticipate receipt of the last LUCS required for the removal/fill permit on January 7th and will provide it to the Department as soon as we receive it. Given that the Department need only confirm the requisite LUCS have been obtained, this should not pose an issue for the Department with respect to a timely decision on our application.

Public comment - Insufficient Mitigation-Eelgrass CWM Site.

Department response: *This comment has not been addressed. ODFW comments that this proposal is inconsistent with the habitat mitigation policy. The areas proposed for impacts are habitat type 2 (both eelgrass and mudflats) and they raised the issue of the site not being in kind or in proximity mitigation. Jordan Cove was to submit an eelgrass functional assessment to start the discussion on impact avoidance and minimization by September 20th, 2019 but has not submitted that information to date.*

¹² May 9th Response at 33 -34.

¹³ August 30th Response at 94 – 95.

The correct habitat classification needs to be established in agreement with ODFW and then work through the mitigation policy consistency issues for the proposed eelgrass mitigation site. Alternative sites and or concepts may need to be explored. The Department is requesting confirmation from ODFW that their comments have been resolved and that the mitigation as proposed is now consistent with the habitat mitigation policy prior to a decision on the application.

Jordan Cove Response: The Department appears to have failed to take into account Jordan Cove’s response to this comment in our August 30th response. In our response, we noted we are working with ODFW to address its concerns with respect to the proposed eelgrass mitigation being in-kind and in proximity.¹⁴ In addition, we have submitted the functional assessment to ODFW and will continue to work with ODFW and the Department to fully address this concern.

Public comment - Insufficient Mitigation-Stream Impacts.

Department response: *Temporary impacts mitigation is insufficient and inconsistent with the ODFW Habitat Mitigation Policy for streams crossed by the pipeline. The Department understands that discussions between the applicant and ODFW on this issue are ongoing. The Department recommends that the applicant provide DSL with ODFW’s final recommendations.*

Jordan Cove Response: The Department’s response does not relate to the initial comments on this point, which focused on assertions that the Project would impact “...waterways’ beneficial uses, water quantity and quality will be further impaired from construction of this project.” The remainder of the concerns related to water temperature, dissolved oxygen, turbidity and other potential impacts to water quality. Our August 30th response details all of the measures Jordan Cove proposes to take to address potential impacts to streams. The Department’s response here raises a new issue asserting the proposed mitigation is insufficient and inconsistent with the ODFW Habitat Mitigation Policy. As noted above and in our previous responses, we have been and will continue to work with ODFW to address any applicable concerns with respect to Jordan Cove’s mitigation and its compliance with applicable state regulations.

Public comment - ODFW Habitat Mitigation Policy Inconsistencies.

Department response: *The applicants should work with ODFW to appropriately categorize each wetland and waterway impact from start to end along the proposed pipeline route. Once the appropriate habitat category has been assigned in agreement*

¹⁴ August 30th response at 105.

with ODFW, appropriate mitigation can be discussed based on resources impacted. Currently, temporary impacts mitigation is insufficient and inconsistent with the ODFW Habitat Mitigation Policy for streams and wetlands crossed by the pipeline. The Department is requesting confirmation from ODFW that their comments have been resolved and that the mitigation as proposed is now consistent with the habitat mitigation policy prior to a decision on the application.

Jordan Cove Response: As clearly stated in our August 30th response, we have been working with ODFW to categorize wetlands/water and habitat. As stated, we provided updated habitat categorization to ODFW in June of 2018. We have requested ODFW's review of this submittal with our latest request submitted to ODFW on August 28, 2019. In additional our response details the meetings Jordan Cove has had with ODFW, clearly demonstrating the fact that we are working with ODFW to resolve any concerns ODFW may have on this point.

Public comment - Fish Passage-Coastal Zone Management Act (CZMA) and Non-CZMA Streams.

Department response. *Fish passage applications for streams within the Coastal Zone Management Act (CZMA) areas have been submitted to ODFW for review and approval. The streams in the non-CZMA portion of the pipeline have not been submitted that the Department is aware. These applications should be submitted for processing by ODFW. The Department may require as a condition of approval that all fish passage approvals within the CZMA and non CZMA streams, and other fish passage applications relative to the Kentuck mitigation project, be submitted to ODFW and approved prior to construction.*

Jordan Cove's Response: As clearly stated in our August 30th response, "Fish passage plans for the Pipeline and roads outside of the Coastal Zone are currently in preparation and will be submitted to ODFW for review and approval prior to construction, as agreed upon between ODSL and Applicant."¹⁵ Based on the Department's response above, it appears this issue has been resolved.

Public comment - Wetland Delineations/Concurrence.

Department response: *WD2019-0338 concurrence is required prior to issuance if removal or fill occurs within this delineated area. Please confirm concurrence has been received.*

¹⁵ August 30th response at 112.

Jordan Cove Response: Given that the Department is the agency charged with reviewing and providing concurrence on our wetland delineations, this comment is a little confusing. Our August 30th response details the current status of the delineations. In addition, we provided the following information to the Department subsequent to our August 30th response: On October 25, 2019, we provided the following information to the Department:

- Attachment 1: Response to ODSL July 16, 2019 Additional Information Request
- Attachment 2: Wetlands and Other Waters Tables
- Attachment 3: Wetland Determination Data Forms (new and revised forms)
- Attachment 4: Stream Data Forms (new forms)
- Attachment 5: Photo Log
- Attachment 6: Wetland Delineation Maps
- Attachment 7: GIS Shapefiles
- Attachment 8: Precipitation Analysis for the September 2019 field work
- Attachment 9: Tables H-1, H-5, and Updated Concurrence Table 4 in Excel file format

In addition, on October 28, 2019, we emailed the Department providing additional information that had been inadvertently omitted from the above-listed filings.

Additional Information Requested by the Department

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

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

Department response: The final data request (#5 above) for the properties where access has been obtained is yet to be addressed by the applicant. Jordan Cove estimated that all required and requested materials relative to the pipeline delineation review will be submitted on or about October 20th, 2019.

The Department cannot issue a permit until there are delineation concurrences for properties where access has been obtained.

Jordan Cove Response: Our August 30th response noted both the fact that the Department had been delayed in reviewing wetland delineation provided to the Department noting that the Department did not provide review comments until July 16, 2019 for material submitted to the Department on April 30, 2019. We stated that we intended to provide the Department with all requested data by October 20, 2019 after completing fieldwork requested by the Department. Although we did not submit the information by October 20th, it was submitted to the Department prior to the issuance of the Department's November 12th letter, which the Department fails to acknowledge. It was submitted on October 25, 2019 with additional information provided on October 28, 2019.

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

Department response: Comment not addressed. Applicants state they are prepared to issue a performance bond that is consistent with OAR 141-085-0700 prior to permit decision. Amount of bonding required still to be negotiated.

Jordan Cove Response: Not only have we made it clear we are prepared to issue a performance bond as required by the regulations, we included a draft in our JPA. In addition, we provided another draft for the Department's review on September 9, 2019 and again on November 11, 2019 at the request of the Department's counsel, who had not yet reviewed the information provided on September 9th. We are awaiting any comments from the Department on this form in order to finalize the form, recognizing that the amount of the bond has yet to be negotiated.

Summary of Department comments; Administrative Protections Required for Eelgrass and Kentuck CWM projects: *Administrative protection instruments need to demonstrate consistency with OAR 141-085-0695.*

Department response: Comment not addressed, the applicants are currently identifying a third-party long-term steward and will provide draft deed restrictions to the Department on or about October 15th, 2019.

Jordan Cove Response: This comment has been addressed by Jordan Cove. Our August 30th response included the following: “The Applicants are currently identifying a third-party long-term steward and will provide draft deed restrictions by October 15, unless another approach is agreed to with ODSL in accordance with applicable regulations.”¹⁶ In addition, the Department’s response fails to acknowledge the fact that Jordan Cove provided the Department with a draft deed restriction on October 15, 2019. Please see the letter attached as Attachment D. Further, as discussed in our meeting with the Department on November 14, 2019, it appears Jordan Cove may not need to provide a long-term steward.

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

Department response: Applicants must have the required authorizations in hand before construction on each state-owned parcel. The Department may require as a condition of approval that all proprietary authorizations be obtained prior to construction.

Jordan Cove Response: As noted in our August 30th response, we are working with the Department to obtain the necessary proprietary authorizations. Moreover, it should be noted that we have been informed by the Department that it will not issue the proprietary authorizations until after the Department issues a removal/fill permit. In an email dated March 4, 2019, copy attached as Attachment E, the Department states:

- Once all applications are submitted, and an affirmative decision on the RF permit issued, DSL will put the group of applications out for 30-day Public Review Process, which will include the Jordan Cove interest list.

As is clear from our communications with the Department on this issue, we fully understand the need to obtain propriety authorizations prior to conducting any actions under a removal/fill permit.

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

¹⁶ August 30th Response at 115.

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

Department response: The May 9th response did not address these comments. The September 4th response provided a summarized guide to the comment response locations throughout all the submitted documents and reports instead of responding to the comments individually as we requested for ease of review. The Department requests the applicant respond to each of the requested commenters extensive comments for the Departments consideration.

Jordan Cove Response: As we have clearly stated in both our May 9th response and our August 30th response, we will not be responding to each of the commenters individually. We have provided the Department with a spreadsheet clearly stating how and where each substantive comment was addressed in both our May 9th and August 30th response. DSL’s rules require the Department to “review and consider [only] substantive comments.”¹⁷ Moreover, the rules do not mandate that the applicant provide responses to comments, only that DSL forward the applicant all comments received, to which the applicant, “at his or her discretion,” can elect to respond. As noted, we have responded to all substantive comments received and done so in a format that is far more practicable and accessible than individual letter responses to the multitude of commenters. This issue has been repeatedly discussed with the Department starting with meetings in May of 2019 subsequent to our May 9th response. In addition, we discussed submitting a detailed spreadsheet demonstrating that all

¹⁷ OAR 141-085-0560(4).

comments had been addressed with the Department on August 20, 2019. Finally, when presenting our August 30th response to the Department in our meeting on September 4, 2019, we walked through examples of how the comments were addressed and the spreadsheet. It now appears the Department has altered its opinion with respect to the adequacy of this approach, which was previously agreed upon. Moreover, as we explained during meetings in May and September this is a standard approach used by federal agencies to address numerous comments raising identical issues. Given that the Department has no obligation to respond to comments, it is difficult to understand the basis for the Department's request that we do.

New information provided by JCEP- Modified Pipeline Routes requested by FERC. The applicant provided information in the September 4th response that indicates FERC is likely to select certain routes as the preferred route in the FEIS. Jordan Cove presents the Pacific Crest Trail and the East Fork Cow Creek modified route information. Updates to the application will be necessary if this is the selected pipeline route.

Jordan Cove Response: Our August 30th response provided the Department with the information necessary to supplement our application with respect to these routes, and we will provide the Department with an updated application including this information after discussing the contents with the Department at our meeting November 12, 2019. However, the Department currently has the information before it to address these route changes.

ODFW comments to truncate the In-Water Work Period for Coos Bay. ODFW recommended the truncation of the in-water work period for Coos Bay to limit impacts to herring spawning in the lower bay to October 1-February 1 instead of the 15th of February. JCEP needs to incorporate this information into project timelines, tables, and descriptions throughout the application where estuary removal fill work will occur as that timing would likely be conditionally authorized to follow ODFW recommendations for this truncated in water timing.

Jordan Cove Response: Although ODFW has made this request, we decline to incorporate it into our project timelines. Similar requests were made by ODFW during land use hearings for the Navigation Reliability Improvements. Jordan Cove submitted a technical memorandum, copy attached here Attachment F, refuting ODFW's request to truncate the in-water work window. The applicable decisions did not accept ODFW's recommendations. Therefore, were we to include the abbreviated timeline here, it would be at odds with the applicable land use decisions.

We appreciate the time and effort the Department has expended in reviewing our application and look forward to working with you on our Removal/Fill application.

Should you have any questions, please contact me at neades@pembina.com or via phone at (971) 940-7834.

Regards,

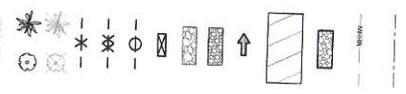
A handwritten signature in black ink that reads "Natalie Eades". The signature is written in a cursive, flowing style.

Natalie Eades, Manager
Environment & Regulatory

Attachment A

LEGEND:

- EXISTING GROUND CONTOUR (5 FT)
- EXISTING GROUND CONTOUR (25 FT)
- EXISTING TREE TO REMAIN
- EXISTING TREE TO BE REMOVED
- SEDIMENT FENCE (PERIMETER)
- SEDIMENT BARRIER (INTERIOR)
- ORANGE CONSTRUCTION FENCE
- SEDIMENT TRAP
- CONTRACTOR STORAGE AREA
- CONSTRUCTION ENTRANCE
- DRAINAGE FLOW DIRECTION
- MULCH / GEOTEXTILE / SEEDING
- DIVERSION SWALE (ROCK-LINED)
- MEAN HIGHER HIGH WATER (MHHW) = 7.62 FEET (DATUM, MLLW = 0 FEET)
- LIMITS OF WETLANDS



Botanical Name	Common Name	Lbs per Acre
<i>Hordium brochyrachetum</i>	Meadow Brome	43.60
<i>Bromus ciliaris</i>	California Brome	26.16
<i>Festuca idahoensis</i>	Idaho Fescue	6.98
<i>Dioclella calycina</i>	Yellow Brome	1.31
<i>Agrostis exaristata</i>	Slender Brome	0.87
<i>Trifolium fragiferum</i>	Strawberry Clover	4.80
<i>Clarkia amara</i>	Parwall 15. Spring	1.74
<i>Conoclinium holoseriale</i>	Hood's Evening Primrose	1.74
TOTAL (Lbs per Acre):		87.20

* Summink Native Salt Tolerant Mix, or similar



NO.	DATE	BY	APPD.	REVISION AND RECORD OF ISSUE
1	02/22/2019	WA	REV'D	ISSUED FOR USE
2	03/19/2019	WA	REV'D	REVISION AND RECORD OF ISSUE

DOC. CONTROL NO.: JI-650-QV-PPM-DEA-00001-01 Rev 0: ISSUED FOR USE

**JORDAN COVE ENERGY PROJECT
APCO 2 SITE
EROSION AND SEDIMENT CONTROL PLAN**

COOS COUNTY
Designer: P. UELIN
Reviewer: M. TIC
Drafter: D. CORCORAN
Checker: W. GERWIN

SITE PLAN
SHEET NO. C-201



SEE SHEET C-203 FOR EROSION AND SEDIMENT CONTROL ASSOCIATED WITH THE PROPOSED APCO ACCESS BRIDGE

Attachment B

Attachment C

**JORDAN COVE ENERGY PROJECT/PACIFIC CONNECTOR GAS PIPELINE
 LAND USE PERMITTING TIMING UPDATE
 DATE: 12.2.2019**

PERMIT NAME	DECISION-MAKER	DATE BY APPLICANT FILED	DATE DECISION MAKER DEEMED COMPLETE	STATUTORY TIMELINE	COMMITTED DATE OF COMPLETION
Intersection Improvements (TPP/Hwy 101)	Coos County	11.5.2018	Approx. 12.5.2018	None	COMPLETE
PCGP Early Works Route	Coos County	11.26.2018	Approx. 12.26.2018	None	12.17.2019
PCGP Early Works Route	City of North Bend	12.28.2018	2.22.2019	120 days + open record periods	COMPLETE
Channel Modifications (3 NRIs)	Coos County	11.26.2018	Approx. 12.26.2018	None	12.17.2019
Channel Modifications (1 NRIs)	City of Coos Bay	11.26.2018	2.11.2019	None	01.07.2020
PCGP Coastal Zone Route	Douglas County	4.5.2019	8.22.2019	150 days + open record periods	12.13.2019

**JORDAN COVE ENERGY PROJECT/PACIFIC CONNECTOR GAS PIPELINE
 LAND USE PERMITTING TIMING UPDATE
 DATE: 12.2.2019**

LNG Terminal, Port Slip, Etc. (After Remand)	Coos County	3.15.2019	Approx. 4.14.2019	120 days	COMPLETE
New LNG Terminal, Etc. in 2018 FERC Application	Coos County	4.12.2019	8.29.2019	150 days + open record periods	12.19.2019
Dredge Material Disposal & APCO Staging	City of North Bend	4.9.2019	5.9.2019	120 days + open record periods	COMPLETE
Eelgrass Mitigation Permit	City of Coos Bay	5.11.2019	8.15.2019	120 days + open record periods	COMPLETE

Attachment D



Jordan Cove LNG
111 SW 5th Ave Suite 1100
Portland OR 97204
T 971.940.7800

www.jordancovelng.com



October 15, 2019

Mr. Bob Lobdell, Aquatic Resource Coordinator
Oregon Department of State Lands
775 Summer St. NE, Suite 100
Salem, OR 97301-1279

**Re: Jordan Cove Energy Project L.P. and Pacific Connector Gas Pipeline,
LP Removal/Fill Application – Revised LUCS and Deed Restriction**

Dear Mr. Lobdell:

As promised in our August 31, 2019 response to comments, we have attached the revised land use compatibility statement for Jackson County.

Per our records, four LUCS that require plan amendments are outstanding, we anticipate receipt of the plan amendments and revised LUCS by the middle of December 2019 and will submit them to the DSL as soon as they are available.

Also as promised, we have attached a draft deed restriction for the Kentuck mitigation site for your review; this was previously provided as conservation easement language. The Eelgrass mitigation site and portions of the Kentuck site within historic tidelands will be located on state-owned land. Legal protection will be provided via an easement for conservation purposes through the ODSL; as such, we have not provided protection language for these areas.

Jordan Cove appreciates ODSL's review efforts to date and looks forward to continued work together on the Removal/Fill authorization. Should you have any questions, please contact Natalie Eades at neades@pembina.com or 971-940-7800.

Sincerely,

/s/ Natalie Eades

Natalie Eades
Manager, Environment and Regulatory
Jordan Cove Energy Project L.P.
Pacific Connector Gas Pipeline, LP

cc: Eric Metz – ODSL

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

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

- This project is not regulated by the comprehensive plan and land use regulations
- This project is consistent with the comprehensive plan and land use regulations
- This project is consistent with the comprehensive plan and land use regulations with the following:
 - Conditional Use Approval
 - Development Permit
 - Other Permit (explain in comment section below)
- This project is not currently consistent with the comprehensive plan and land use regulations. To be consistent requires:
 - Plan Amendment
 - Zone Change
 - Other Approval or Review (explain in comment section below)

An application or variance request has has not been filed for approvals required above

Local planning official name (print) Charles Bennett	Title Planner III	City / County Jackson County
Signature <i>Charles Bennett</i>	Date 3/7/19	
Comments: Pursuant to the Jackson County Comprehensive Plan, Public Facilities and Services Element, specifically Goal 17, the pipeline is not subject to the land development standards of the Land Development Ordinance of Jackson County because the project is federally authorized by the Federal Energy Regulatory Commission. Notwithstanding pressure regulating stations and other site specific facilities developed in conjunction with such systems which may require review depending upon the proposed use and the zoning designation of the subject property. A permit is required from this agency where the applicant states in the application, " the applicant will comply with local regulations", the applicant shall obtain all necessary permits from the local agency".		

(12) COASTAL ZONE CERTIFICATION

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

CERTIFICATION STATEMENT

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

Print /Type Applicant Name	Title
Applicant Signature	Date

After recording, return to:

JORDAN COVE ENERGY PROJECT L.P. AND PACIFIC CONNECTOR GAS PIPELINE, LP
111 SW 5TH AVE, SUITE 1100
PORTLAND, OR 97204

**DECLARATION OF COVENANTS AND RESTRICTIONS and
ACCESS EASEMENT
FOR THE
Jordan Cove Energy Project L.P. and Pacific Connector Gas Pipeline, LP
Kentuck Mitigation Site, Corps permit # NWP-2017-41, DSL permit # 60697-RF**

THIS DECLARATION is made by Fort Chicago Holdings II U.S. LLC, a Delaware limited liability company ("Declarant").

RECITALS

1. WHEREAS, Declarant is the owner of the real property described in Exhibit "A," attached hereto and by this reference incorporated herein (the "Property"), and has designated the Property as a compensatory mitigation site in accordance with Removal-Fill Permit # 60697-RF (the "DSL Permit") approved by the Oregon Department of State Lands ("Department"), and the Department of the Army permit #NWP-2017-41 ("Corps permit") approved by the US Army Corps of Engineers ("Corps").
2. WHEREAS, Declarant desires and intends to provide for the perpetual protection and conservation of the wetland and waterway functions and values of the Property and for the management of the Property and improvements thereon, and to this end desires to subject the Property to the covenants, restrictions, easements and other encumbrances hereinafter set forth, each and all of which is and are for the benefit of the Property;

3. WHEREAS, The Department has accepted the mitigation plan for the Property under ORS 196.800 et seq, and the Corps has likewise accepted the mitigation plan under Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act.

ARTICLE 1

DEFINITIONS

1.1 “Declaration” shall mean the covenants, restrictions, easement, and all other provisions set forth in the Declaration of Covenants and Restrictions.

1.2 “Declarant” shall mean and refer to Fort Chicago Holdings II U.S. LLC, a Delaware limited liability company, the owner of the Property, and the owner’s heirs, successors, and assigns.

1.3 “DSL permit” shall mean the final document approved by the Department that includes the mitigation plan and which formally establishes the mitigation site and stipulates the terms and conditions of its construction, operation and long-term management. A copy of the DSL permit may be obtained at the Department of State Lands, 775 Summer St. NE, Salem, OR 97301; phone 503-986-5200.

1.4 “Corps permit” shall mean the final document approved and issued by the Corps which includes the mitigation plan describing where and how the compensatory mitigation will be completed, monitored, managed, and maintained. A copy of the Corps permit associated with this Declaration may be obtained at the office of the US Army Corps of Engineers, Regulatory Branch, 333 SW First Ave., Portland, OR 97208; Phone 503-808-4373.

1.5 “Property” shall mean and refer to all real property subject to this Declaration, as more particularly set forth in Exhibit “A.”

ARTICLE 2

PROPERTY SUBJECT TO THIS DECLARATION

The Property described in Exhibit A is and shall be held, transferred, sold, conveyed and occupied subject to this Declaration.

ARTICLE 3
DECLARANT REPRESENTATIONS

Declarant represents and warrants that after reasonable investigation, and to the best of its knowledge, that no hazardous materials or contaminants are present that conflict with the conservation purposes intended; that the Property is in compliance with all federal, state, and local laws, regulations, and permits; that there is no pending litigation affecting, involving, or relating to the Property that would conflict with the intended conservation use; and that, except as specified herein, the Property is free and clear of any and all liens, claims, restrictions, easements and encumbrances that would interfere with the ability to protect and conserve the Property.

ARTICLE 4
GENERAL DECLARATION

Declarant, in order to discharge in part its obligations under the DSL permit and the Corps permit, declares that the Property shall be held, transferred, sold, conveyed and occupied subject to the covenants, restrictions, easements and other encumbrances in this Declaration, in order that it shall remain substantially in its restored, enhanced, preserved, open and natural condition, in perpetuity. The terms and conditions of this Declaration shall be both implicitly and explicitly included in any subsequent transfer, conveyance, or encumbrance affecting all or any part of the Property. No modification or release of this Declaration will be effective unless authorized in writing by the Department and by the Corps. Any amendments must be signed by the Department and must be recorded in the official records of the county in which the Property is located.

ARTICLE 5
USE RESTRICTIONS, MANAGEMENT RESPONSIBILITIES,
AND RESERVED RIGHTS

Declarant and all users of the Property are subject to any and all easements, covenants and restrictions of record affecting the Property.

A. USE RESTRICTIONS. Except as necessary to conduct, remediate or maintain the Property consistent with the DSL permit and the Corps permit, the actions prohibited by this covenant include:

1. There shall be no removal, destruction, cutting, trimming, mowing, alteration or spraying with biocides of any native vegetation in the Property, nor any disturbance or change in the natural habitat of the Property unless it is consistent with the approved permits and promotes the mitigation goals and objectives established for the Property. Hazard trees that pose a specific threat to existing structures including fences or pedestrian trails may be felled and left on site. Dry grass only may be mowed after July 1 to abate fire hazard.
2. There shall be no agricultural, commercial, or industrial activity undertaken or allowed in the Property; nor shall any right of passage across or upon the Property be allowed or granted if that right of passage is used in conjunction with agricultural, commercial or industrial activity.
3. No domestic animals shall be allowed to graze or dwell on the Property.
4. There shall be no filling, excavating, dredging, mining or drilling; no removal of topsoil, sand, gravel, rock minerals or other materials, nor any storage nor dumping of ashes, trash, garbage, or of any other material, and no changing of the topography of the land of the Property in any manner once the wetlands are constructed unless approved in writing by the Department and by the Corps.
5. There shall be no construction or placing of buildings, mobile homes, advertising signs, billboards or other advertising material, vehicles or other structures on the Property.
6. There shall be no legal or de facto division, subdivision or partitioning of the protected Property.
7. Use of motorized off-road vehicles is prohibited except on existing roadways.
8. Public hunting and fishing are prohibited.
9. Public motorized and non-motorized boat access is prohibited.

B. MANAGEMENT RESPONSIBILITIES. Declarant shall take all reasonable action to prevent the unlawful entry and trespass by persons whose activities may degrade or harm the mitigation purposes of the Property or that are otherwise inconsistent with this Declaration.

C. RESERVED RIGHTS. Declarant reserves all other rights accruing from Declarant's ownership of the Property including but not limited to the exclusive possession of the Property, the right to transfer or assign Declarant's interest in the same; the right to take action necessary to prevent erosion on the Property, to protect the Property from losing its wetland or waterway functions and values, or to protect public health or safety; and the right to use the Property in any manner not prohibited by this Declaration and which would not defeat or diminish the conservation purpose of this Declaration.

The Declarant specifically reserves the right to use the Property and for the following purposes, which reserved rights are deemed to be consistent with the purposes enumerated in the permit and are not subject to the Use Restrictions in 5(A) above:

1. All other purposes set forth in the Right of Way and Easement Agreement granted in favor of Pacific Connector Gas Pipeline, LP, and its successors and assigns, Coos County recording no. _____ ("Easement"), and all subsequent amendments to the Easement.
2. Declarant and its successor and assigns performing any functions necessary to implement the Compensatory Wetland Mitigation Plan.

ARTICLE 6

EASEMENT (RIGHT OF ENTRY)

Declarant hereby grants to the Department an easement and right of entry on the Property for the purpose of physically accessing the Property at all reasonable times to inspect the Property in order to monitor and to ascertain whether there has been compliance with this Declaration and the DSL permit. The Declarant hereby grants to the Corps a right of entry to ascertain compliance with the Corps permit and this Declaration.

ARTICLE 7

GENERAL PROVISIONS

A. NOTICE. The Department and the Corps shall be provided with a 60-day advance written notice of any legal action concerning this Declaration, or of any action to extinguish, void or modify this Declaration, in whole or in part. This Declaration, and the covenants, restrictions, easements and other encumbrances contained herein, are intended to survive foreclosure, tax sales, bankruptcy proceedings, zoning changes, adverse possession,

abandonment, condemnation and similar doctrines or judgments affecting the Property. A copy of this recorded Declaration shall accompany said notice.

B. VALIDITY. If any provision of this Declaration, or the application thereof to any person or circumstance, is found to be invalid, the remainder of the provisions of this Declaration, or the application of such provisions to persons or circumstances other than those as to which it is found to be invalid, as the case may be, shall not be affected thereby.

IN WITNESS WHEREOF, the undersigned being Declarant herein, has executed this instrument this _____ day of _____, 20_____.

Fort Chicago Holdings II U.S. LLC
_____ (county, state)

By: _____
Title: _____

STATE OF _____)
County of _____)

ss:

This instrument was acknowledged before me on _____ (date) by _____ (name of person) as _____ (title) of Fort Chicago Holdings II U.S. LLC _____ (county, state).

Signature of Notarial Officer
My Commission Expires: _____

GRANTEE: The State of Oregon, Department of State Lands, approves Declarant's conveyance of an easement in favor of the Department.

By: _____
Title: _____
Date: _____

GRANTEE: Department of the Army, US Army Corps of Engineers, approves Declarant's conveyance of an easement in favor of the Corps.

By: _____
Title: _____
Date: _____

Attachment:
Exhibit A, legal description and labeled map of the Property

Attachment E

From: HUTSON Gerry <gerry.hutson@state.or.us>
Date: March 4, 2019 at 10:11:32 AM PST
To: Meagan Masten <MMasten@pembina.com>, Sarah Washburn <Sarah.Washburn@pacificallawgroup.com>, Derik Vowels <DVowels@pembina.com>, Mike Koski <MKoski@pembina.com>
Cc: METZ Eric <eric.metz@state.or.us>, JARVIE Kirk <kirk.jarvie@state.or.us>
Subject: [EXT] update on proprietary issues for JCEP

Hi All,

I've attached the updated proprietary authorizations workplan.

Some of the issues discussed and their outcomes:

- DSL will use the *final* LUCS (Land Use Compatibility Statements) from the Removal-Fill permit # 60697RF
- DSL will accept the proprietary applications as they are submitted. We will do the internal background work, but hold for Public Review Process until all are submitted per county. Currently that would just be Coos county applications. DSL would appreciate that the applications are submitted as completed, and not all at once.
- Once all applications are submitted, and an affirmative decision on the RF permit issued, DSL will put the group of applications out for 30-day Public Review Process, which will include the Jordan Cove interest list.
- Possible hearings in Coos Bay to be determined.

I think that's as much as I have for now. If you have any questions or concerns, please let me know so they can be addressed.

Gerry

Gerry Hutson
Proprietary Coordinator-Aquatic Resource Management
Southwest Counties and Columbia County
Oregon Dept. of State Lands
775 Summer St NE Suite 100
Salem OR 97301
Phone – 503-986-5291
Cell – 503-302-6094

Attachment F



**Response to Comments – Land Use Application #187-18-000153 – ODFW
Recommendation to Restrict In-water Work Window to February 1**

A	10/31/19	Issued for Review	J. Stutes	J. Starks	J. Stutes		
REV	DATE	DESCRIPTION	BY	CHKD	APPVD	COMPANY APPROVAL	
IP SECURITY	<input type="checkbox"/> Confidential		Total amount of pages including coversheet:				28
FOR CONTRACTOR DOCUMENTS	Contract No.		Contractor Document No.				Contractor Rev.
	DEA-041, SO 1030		576				0
JCL DOCUMENT NUMBER	Proj. Code	Unit / Location	Discipline	Doc. Type	Orig. Code	Sequence No.	Sheet No.
	J1	000	TEC	TNT	DEA	00055	00

	Response to Comments – Land Use Application #187-18-000153 – ODFW Recommendation to Restrict In-water Work Window to February 1		  <small>DAVID EVANS AND ASSOCIATES INC.</small>
	Document Number: J1-000-TEC-TNT-DEA-00055-00		
	Rev. A	Rev. Date: October 31, 2019	

TECHNICAL MEMORANDUM

DATE: October 31, 2019

ATTENTION: Jay Lorenz and Kristen Currens

COMPANY: Jordan Cove LNG

ADDRESS: 111 SW 5th Ave., Suite 1100 Portland, OR 97204

FROM: Jim Starkes, DEA, and Jason Stutes, GeoEngineers

SUBJECT: Response to Comments – Land Use Application #187-18-000153 – ODFW
Recommendation to Restrict In-water Work Window to February 1

DEA PROJECT NAME: Jordan Cove LNG

DEA PROJECT NO: JLNG0000-0003

DOCUMENT # J1-000-TEC-TNT-DEA-00055-00

COPIES TO: DEA File

INTRODUCTION

Jordan Cove Energy Project, L.P. (JCEP) is seeking approval of City of Coos Bay Land Use Application #187-18-000153 – Jordan Cove Energy Project - Navigation Reliability Improvements (hereafter “Application”). The Application seeks approval of a zone change of approximately 3.3 acres of submerged land in Coos Bay from 52-NA to DDNC-DA zoning and permits to dredge a “Navigation Reliability Improvement” intended to facilitate more efficient navigation of vessels transiting Coos Bay.

On October 22, 2019, JCEP received a communique from the Oregon Department of Fish and Wildlife (ODFW) (Sarah Reif, Energy Coordinator, Wildlife Division), reporting that that the agency will recommend truncating the previously established ODFW In-Water Work Window in Coos Bay (IWWW) from February 15 to February 1.¹ The stated reason for reducing the IWWW was for the protection of spawning and pre-spawn staging herring within Coos Bay. As scientific rationale for its recommendation, ODFW provided data on herring spawn timing from Yaquina Bay and several papers from the scientific literature on the behavioral responses of herring to noise.

JCEP prepared this Technical Memorandum in response to ODFW’s recommended truncation of the IWWW. As discussed herein, the data and studies that ODFW included in its communique do not provide

¹ The ODFW “In-Water Work Window” (IWWW) for Coos Bay (and other Oregon waterbodies) is established via a formal ODFW document titled “*Guidelines for Timing of In-Water Work to Protect Fish and Wildlife Resources (June 2008)*.” Attached. This guidance sets the IWWW dates for various waterbodies and stream segments throughout Oregon based on ODFW fish biologist recommendations taking into consideration protection of multiple fish species. As of the date of the Application, the official ODFW IWWW for Coos Bay remains set for all members of the public at October 1 through February 15.

	Response to Comments – Land Use Application #187-18-000153 – ODFW Recommendation to Restrict In-water Work Window to February 1		  <small>DAVID EVANS AND ASSOCIATES INC.</small>
	Document Number: J1-000-TEC-TNT-DEA-00055-00		
	Rev. A	Rev. Date: October 31, 2019	

sufficient scientific rationale or evidentiary support for moving the IWWW from February 15 to February 1 in Coos Bay. For the reasons described below, dredging of Navigation Reliability Improvement Area 4 (NRI #4) within the February 15 IWWW established by ODFW will not adversely impact spawning or staging stocks of herring within Coos Bay. The scientific rationale for maintaining the current IWWW closing on February 15 are presented below.

1. **PACIFIC HERRING SPAWN TIMING**

1.1 **ODFW HERRING SPAWN DATA – YAQUINA BAY**

ODFW proposes to use herring data from Yaquina Bay, Oregon (which is located approximately 100 miles north of Coos Bay) to justify shortening the IWWW for the Application. ODFW conducts annual herring spawn surveys in Yaquina Bay, and found that between 2002 and 2016 the average herring spawn date was on February 21, based on spawn deposition surveys. The average earliest spawn deposition was on February 9. Hydroacoustic surveys that measure herring biomass found that the average date of pre-spawn staging fish was on February 3, with the earliest observations on January 24. These surveys thus indicate that pre-spawn staging occurs approximately between 10 and 18 days ahead of spawn deposition (ODFW 2019).

1.2 **COOS BAY HERRING SPAWN DATA**

JCEP contends that Yaquina Bay data does not provide sufficient scientific rationale to shorten the IWWW in Coos Bay. Assuming that the average spawn deposition date of February 21 in Yaquina Bay represents a mean peak spawning day (i.e., an approximate annual peak spawning period of 14 days on either side of February 21), this confirms that the Yaquina Bay herring stock spawns earlier than the Coos Bay stock. Miller and McRae (1978), in a study of the *Coos Bay* herring stock, found that peak spawning occurs from February 16 to March 21 over a broad geographic range. During this period, the three largest estimates of spawn deposition were made—26.0 tons, 19.8 tons, and 73.5 tons—and the largest occurred on March 21. Further, the two peak spawning estimates in February were collected in the lower bay between River Mile (RM) 1.5 and RM 4.5. The March spawn deposition estimate was at approximate RM 7.5. Miller and McRae hypothesized that heavy rains and runoff during the winter placed the salt wedge in Coos Bay closer to the mouth. Less precipitation during early spring permits higher salinity conditions farther up the bay, allowing herring to spawn farther upstream. The study found that spawning behavior/locations coincided with this freshwater influence pattern.

The data for Coos Bay indicates that early spawning occurs on large spawning flats at Fossil Point and the lower North Spit, which are a minimum of 1.9 miles from NRI #4. Later spawning farther upstream and closer to NRI #4 occurs after mid-March, which is after the IWWW closes. Further, a February 15 IWWW would also protect pre-spawn staging fish, which would aggregate in the areas near NRI #4 in early to mid-March.

	Response to Comments – Land Use Application #187-18-000153 – ODFW Recommendation to Restrict In-water Work Window to February 1		  <small>DAVID EVANS AND ASSOCIATES INC.</small>
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If ODFW desires to adjust the IWWW, they need to provide direct scientific evidence from Coos Bay that a shortened window will be more protective of spawning and staging fish in *Coos Bay* in the same manner in which such evidence was relied upon to establish the current window. ODFW’s use of Yaquina Bay spawning data is not directly correlative to Coos Bay and, therefore does not provide sufficient scientific basis for amending the IWWW. Indeed, spawn timing of Pacific herring can vary based on a variety of environmental parameters (e.g., temperature, salinity, migrational patterns) and can differ significantly even in the same region. For example, within Puget Sound, Washington, there are 20 discrete spawning stocks of herring, and the Washington Department of Fish and Wildlife (WDFW) has published the results of annual spawning surveys from the mid-1970s to 2016. Figure 1 shows the documented peak spawning periods of the Puget Sound spawning stocks, which range from mid-January to May (Sandell et al. 2019).

To illustrate further the effects of the different spawn timing of separate stocks, the Coos Bay spawning data show a median peak spawning date of February 27, which is roughly similar to the aggregate of Puget Sound data (see Figure 1). Spawning and egg deposition from only 4 of the 20 Puget Sound stocks would be exposed to in-water work activities that occurred between February 1 and February 15. Based on a two-week pre-spawn staging of fish prior to spawning, roughly half of the stocks would have staging fish exposed to in-water work activities. Accordingly, the U.S. Army Corps of Engineers has established multiple in-water work windows for spawning herring in Puget Sound that are specific to 10 Tidal Reference Areas within the sound (USACE 2014). The appropriate in-water work window is required when a project is within a defined spawning or staging area. ODFW has not collected or analyzed sufficient data to provide a similar area-specific work window for the dredging of NRI #4.

Herring Stock	Period					
	Jan	Feb	March	April	May	June
Squaxin Pass						
Purdy						
Wollochet						
Quatermaster Harbor						
Port Orchard						
S. Hood Canal						
Quilcene						
Port Gamble						
Kilusut						
Port Susan						
Holmes Harbor						
Skagit						
Fidalgo						
Samish						
Interior San Juans						
NW San Juans						
Semiahmoo						
Cherry Point						
Discovery Bay						
Dungeness						

	Response to Comments – Land Use Application #187-18-000153 – ODFW Recommendation to Restrict In-water Work Window to February 1		  <small>DAVID EVANS AND ASSOCIATES INC.</small>
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Figure 1. Peak spawning periods of Puget Sound herring stocks (Sandell et al. 2019)

ODFW will need to conduct additional direct study within Coos Bay of spawn timing, spawning locations, and staging locations before a scientifically-based decision can be made to modify the IWWW either in this particular instance or programmatically. The current IWWW within Coos Bay has been in place for over 10 years and is protective of valuable herring stocks.

2. HERRING RESPONSES TO UNDERWATER NOISE

In its October 22 communique, ODFW cited three studies (Wilson and Dill 2002; Schwarz and Greer 1984; and Blaxter et al. 1981) that measured the behavioral responses of Pacific herring to underwater noise as a rationale for ending the IWWW by February 1. Each study found that Pacific herring responded to underwater noise introduced into the test chamber or net pen. Each of the studies, however, also reported significant habituation to the noise after a short period. That is, after the underwater noise did not materialize into an actual threat to the survival or fitness of the fish, a return to normal behavior was observed. This finding is inconsistent with ODFW’s argument that in-water work will cause a spatial redistribution of herring into sub-optimal spawning habitats.

The following sections discuss the three studies in more detail.

Study 1. Wilson, B. and L.M. Dill. 2002. Pacific herring respond to simulated odontocete echolocation sources. Canadian Journal of Fisheries and Aquatic Sciences. Volume 59, pages 542-553.

The most recent study provided by ODFW exposed Pacific herring in a tank or net pen to noises specific to odontocete whales using echolocation (echolocation vocalizations that whales use to identify and prey upon forage fish and other prey organisms). Findings indicate that upon exposure to these sounds, feeding of Pacific herring was inhibited and protective schooling and avoidance occurred. Typically, changes in behaviors did not last for the length of the sound exposure (usually 15 minutes). Further, the study reported that changes in behavior (e.g., changing swim speed or moving deeper) were unlikely to require significant energetic expenditure, but fish still returned to normal levels of behavior during longer exposures. The study report suggested either habituation or simply the gradual abandonment of the response despite continued stimulation. In addition, there was an absence of fast-start escape responses, fountain effects (a predator-evasion response shown by schooling fish), or bubble emissions from the fish (a sign of stress), all of which suggests that the herring did not perceive sound exposures as a sign of imminent danger.

The study also conducted control experiments that exposed fish to elevated sounds not associated with odontocete predators—a flat waveform composed of incidental continuous noise and exposure to a “pinger,” which produces underwater noise meant to elicit an avoidance response by marine mammals (used in commercial fisheries to avoid interactions with marine mammals). Neither of these exposures elicited behavioral responses from herring.

	Response to Comments – Land Use Application #187-18-000153 – ODFW Recommendation to Restrict In-water Work Window to February 1		  <small>DAVID EVANS AND ASSOCIATES INC.</small>
	Document Number: J1-000-TEC-TNT-DEA-00055-00		
	Rev. A	Rev. Date: October 31, 2019	

*Study 2. Schwarz, A.L. and G.L. Greer. 1984. Responses of Pacific herring, *Clupea harengus pallasii*, to some underwater sounds. Canadian Journal of Fisheries and Aquatic Sciences. Volume 41, pages 1183-1192.*

ODFW presented a study by Schwarz and Greer (1984), which exposed Pacific herring within an experimental study net pen to noises associated with commercial fishing vessels, such as moving and idling vessels, sonar, echo sounder, and deck gear. As controls, natural sounds such as rain on the water surface, gull cries, killer whale vocalizations, sea lion barks, and sounds made by the herring themselves were also introduced. Findings indicated that the main response of herring to exposure to vessel sonographs was directional avoidance of the sound. Startle responses, signified by a sudden reflexive movement of the fish, but no avoidance reaction, were occasionally observed at the beginning of exposures. Alarm responses (intense rapid movement, followed by polarized tight schooling and fleeing from the sound source) were not observed with exposure to vessel sounds. Avoidance typically ended within 10 seconds of exposure to diminishing vessel sounds, signifying a vessel departing the area. Irregular pulses of sound elicited responses by the herring more so than regular pulses or continuous tones.

The study showed that sonographs of smaller vessels elicited much lower responses by herring. Herring did not visibly respond to sonar, echo sounder, or any sounds of natural origin. Notably, herring did not respond to actual vessels moving through the area within 0.2 kilometer of the experimental study net pen. Herring also did not react to the sounds of small boats traveling between the net pens, even when the small boats were within 15 meters. The study reported that this likely indicated habituation to the acoustic environment.

Schwarz and Greer (1984) also provided acoustic measurements of the recorded sounds, which measured from 105 decibels (dB) to 112 dB at the hydrophone. Comparing these levels to existing background noises in developed estuarine areas can illustrate the response (or lack thereof) of herring populations to anthropogenic noise. The background noise levels measured near nine ferry terminals located throughout Puget Sound, Washington, were higher than those introduced by Schwarz and Greer (1984), ranging from 106 dB to 130 dB (three consecutive 24-hour periods of continuous recording at approximately 0.5 mile from each terminal) (Laughlin 2015). The ferry terminals included in the study are located throughout the sound in north, central, and south portions on the west side, as well as a terminal in Admiralty Inlet on the east side of Puget Sound.

The discrete herring stocks presented in Figure 1 are also present in all portions of the sound. WDFW, analyzing herring stock abundance over time, found that populations have mostly been increasing or are considered healthy. As is typical when evaluating different fish populations, some stocks have increased and others have decreased over time; some stocks are healthy, while others are depressed. WDFW analyzed populations of each discrete stock in four-year abundance estimates from 1988 to 2016, in order to determine sound-wide trends over time. Findings indicated that sound-wide populations were considered to be either increasing or healthy in all but one of these four-year mean abundance periods

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(Sandell et al. 2019). Assuming that underwater noise has remained at similar levels since 1988, it is apparent that this environmental variable has not negatively impacted herring populations within Puget Sound.

Study 3. Blaxter, J.H.S., J.A.B. Gray, and E.J. Denton. 1981. Sound and startle responses in herring shoals. Journal of the Marine Biological Association of the United Kingdom. Volume 61. Pages 851-869.

ODFW also presented a study by Blaxter et al. (1981), which exposed juvenile Pacific herring (12 centimeters and about 15 to 18 months of age) in a large tank to various well-defined sounds. The sounds introduced to fish were generated by an oscillator providing a single complete cycle, a burst of approximately 10 complete cycles, and a burst in which the wave train was made to reach its final amplitude at different rates (a ramp-up stimulus). When sound exposures were progressively increased, the first response in the school was that one or two fish began accelerating in the direction they were already swimming. As exposure was increased, more and more fish turned abruptly away from the source and accelerated. If the oscillator was left running at a constant frequency at high amplitude, the fish began to ignore the stimulus, even though intensity had been increased, indicating habituation. The length of responses during or after exposure, or the period of time in which habituation behavior occurred, was not measured in the study. In addition, the use of juvenile herring in this study may make it less applicable to adult (spawning and pre-spawn staging) fish.

3. SYNTHESIS

All three studies cited by ODFW found that, upon initiation of underwater sound, Pacific herring avoided noise, whether it was the sounds of cetacean predators, sounds of vessels associated with herring fishing fleets, or elevated sounds that typically would not occur in the environment. However, in all cases, habituation to these sounds occurred, and a return to normal behavior was observed once this habituation occurred. This finding likely indicates an adaptive response to incidental perturbations in the environment—once such an occurrence is encountered, fish initially undertake a safety response and then abandon that behavior once a true threat does not materialize. In this way, the fish can continue the normal behavior that enhances its fitness, whether that be feeding, migrating, staging, or spawning. The ODFW statement that pre-spawn staging or spawning herring would be displaced from optimal spawning habitats is unsupported and inconsistent with the data presented in the studies, as well as with the established IWWW.

In summary, the data and studies indicate that ODFW’s recommendation to truncate the IWWW from February 15 to February 1 is unfounded for the following specific reasons:

3.1 DATA SUFFICIENCY

- Studies (not addressed by ODFW) of the Coos Bay herring stock indicate that spawning during the current IWWW occurs in the lowest reaches of the bay, approximately two miles from NRI

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#4. It has been well documented that different regional herring stocks spawn over different periods at different locations; data from Yaquina Bay is not sufficient to conclude that the current IWWW is not protective in Coos Bay.

- ODFW has not identified any data indicating herring populations in Coos Bay are in decline with the current IWWW in place. A modification of an IWWW within a developed estuary should be made when data show that herring populations are decreasing or are depressed, particularly when limited data show that exposure may be minimal.

3.2 HERRING BEHAVIORAL RESPONSES TO NOISE

- Habituation to underwater sound is a theme of all three cited studies; in most cases a return to normal behavior occurred *before* the sound stimulus ended.
- While Wilson and Dill (2002) found that avoidance of predator echolocation sounds occurred, behavior returned to normal after a true threat did not materialize. Further, elevated continuous sounds garnered no response from herring, nor did exposing fish to sounds that are used to deter marine mammals from commercial fishery areas.
- Schwarz and Greer (1984) found avoidance of sounds associated with an additional threat to herring—sounds of commercial herring fisheries, including vessel noise, skiffs, winches, and net drums in operation. Habituation to all of these sounds occurred, strongly suggesting that fish would not be driven away from these sounds alone, if there is no actual threat to fish fitness. This study also found no behavioral effects to exposure to sonar and echo sounder machinery.
- Findings from the above two studies strongly suggest that herring will habituate to underwater noise generated from hydraulic dredge operations. Hydraulic dredge noise is continuous and has minimal changes in amplitude during operations. Vessel movements will not be substantial; they will principally occur during the start and end of dredge operations. Dredging at NRI #4 will occur at the deepest portion of Coos Bay immediately adjacent to the Federal Navigation Channel, and vessel travel will be limited to areas of the navigation channel—not nearshore potential spawning and staging areas.
- Schwarz and Greer (1984) also presented acoustic data on the noises that fish were exposed to; these noises, though they elicited a response from caged fish (followed by habituation), were considerably lower than those baseline existing conditions found in other developed estuaries that have stable herring populations.

3.3 REGULATORY CONSIDERATIONS

- The current IWWW has been in place for over 10 years as the applicable work window (for wide range of projects) in Coos Bay. ODFW has not conducted additional studies in Coos Bay (or provided a public input process) to justify modification of the current IWWW.
- As reported, hydraulic dredging does not have any specific operational components that generate substantial amounts of underwater noise. Agency-approved Best Management Practices (BMPs) will also be in place as binding Terms and Conditions within any issued permits.

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- U.S. Army Corps of Engineers (USACE). 2014. Approved work windows for fish protection in all marine/estuarine areas, excluding the mouth of the Columbia River (Baker Bay) by Tidal Reference Area.
- Wilson, B. and L. M. Dill. 2002. Pacific herring respond to simulated odontocete echolocation sources. *Can. J. Fish. Aquat. Sci.* 59:542-553 (2002).

Attachments/Enclosures:

- ODFW Guidelines for Timing of In-Water Work to Protect Fish and Wildlife Resources (June 2008)
- Jason Stutes, PhD resume; Jim Starkes resume



OREGON GUIDELINES
FOR
TIMING OF IN-WATER WORK
TO PROTECT FISH AND WILDLIFE RESOURCES

June, 2008

Purpose of Guidelines - The Oregon Department of Fish and Wildlife, (ODFW), under its authority to manage Oregon's fish and wildlife resources has updated the following guidelines for timing of in-water work. The guidelines are to assist the public in minimizing potential impacts to important fish, wildlife and habitat resources.

"The guidelines are to assist the public in minimizing potential impacts..."

Developing the Guidelines - The guidelines are based on ODFW district fish biologists' recommendations. Primary considerations were given to important fish species including anadromous and other game fish and threatened, endangered, or sensitive species (coded list of species included in the guidelines). Time periods were established to avoid the vulnerable life stages of these fish including migration, spawning and rearing. The preferred work period applies to the listed streams, unlisted upstream tributaries, and associated reservoirs and lakes.

"The guidelines are based on ODFW district fish biologists' recommendations"

Using the Guidelines - These guidelines provide the public a way of planning in-water work during periods of time that would have the least impact on important fish, wildlife, and habitat resources. ODFW will use the guidelines as a basis for commenting on planning and regulatory processes. There are some circumstances where it may be appropriate to perform in-water work outside of the preferred work period indicated in the guidelines. ODFW, on a project by project basis, may consider variations in climate, location, and category of work that would allow more specific in-water work timing recommendations. These more specific timing recommendations will be made by the appropriate ODFW district office through the established planning and regulatory processes.

"These guidelines provide the public a way of planning in-water work during periods of time that would have the least impact on important fish, wildlife and habitat resources"

Modification of Guidelines - There may be limited situations where minor modification of the timing guidelines is warranted. ODFW may consider new information, the need for greater detail, or other factors that would generally improve the quality and usefulness of these guidelines. ODFW through the appropriate district office may modify or clarify timing guidelines within the district as needed. Statewide updates to guidelines will occur on a periodic basis.

"ODFW through the appropriate district office may modify or clarify timing guidelines within the district as needed"

Public Comments - A limited technical public review of these updated guidelines was conducted. A few responses provided specific biological information and recommendations for changing in-water work periods. Applicable ODFW districts reevaluated their timing recommendations based on this public response. Other comments concerned format and application of the timing guidelines. Some responses stated that different types of in-water activities should have different timing guidelines. ODFW recognizes there will be occasions that more specific timing guidelines may need to be established for specific activities. The established planning and regulatory processes can accommodate that need.

"A limited technical public review of these updated guidelines was conducted"

Northwest Region

WATERWAY

North Coast Watershed District

PREFERRED WORK PERIOD¹

Columbia River Management (971) 673-6000

Columbia River Estuary (Mouth to Tongue Pt.)

Columbia River (Tongue Pt. to Bonneville Dam)

November 1 – February 28
(MAR,SHL,CHF,CHS,SS,CO,STW,STS,CT*)
November 1 – February 28
(CHF,CHS,SS,CO,STW,CS,CHR,CT,STS*)

Northwest Region

North Coast Watershed District

Tillamook Office - (503) 842-2741

Pacific

Columbia River (See Columbia River Management)

Youngs River

Young's Bay Tributaries

Wallooskee River

Other Columbia R. Est. Tribs. (Mouth to Tongue Pt.)

Other Columbia R. Est. Tribs (Tongue Pt. to Hunt Creek)

Necanicum

Necanicum River & tributaries

Necanicum and Neawanna Estuary

Ecola Creek and Tributaries

Nehalem

Nehalem Estuary

Lower Nehalem River (below Hwy 26 at Elsie)

N. Fk. Nehalem River

Cook Creek

Salmonberry River

Other Lower Nehalem River Tributaries

Upper Nehalem River and Tribs. (above Hwy 26 at Elsie)

July 15 - September 30 (CO,STW *)

July 1 – September 15 (CO,CT,STW)

June 1 - September 30 (CO,CT*)

July 1 - September 15 (CHF,STW*)

July 15 - September 15 (CHF, STW*)

July 1 - September 15 (CO,CHF,STW*)

November 1-February 15

(MAR,SHL,CO,CHF,STW)

July 1-September 15 (CO,CT,STW)

November 1 - February 15

(MAR,SHL,CHS,CHF,CO,STW,*)

July 1 - September 15 (CHF*)

July 1 - September 15 (CHF,STW*)

July 1 - September 15 (CHF,STW*)

August 15 - September 15 (CHS,STW*)

July 1 - September 15 (CHF,CO,STW*)

July 1 - August 31 (CHS,STW*)

Tillamook

Tillamook Estuary

Miami,Kilchis,Wilson,Trask,Tillamook Rivers & Tribs.

Other Tillamook Bay Tributaries

Netarts Bay

Sand Lake

Nestucca

Nestucca Estuary

November 1 - February 15

(MAR,SHL,CHF,CHS,STW,CO,CS*)

July 1 - September 15

(CHF,CHS,STW,CO,CS*)

July 1 – September 15 (CO,CT)

November 1 - February 15

(MAR,SHL,CHF,STW,CO,CS*)

November 1 - February 15

(MAR,SHL,CHF,STW,CO,CS*)

November 1 - February 15

(MAR,SHL,CHF,CHS,STW,CO,CS*)

¹ Work period is established for named stream, all upstream tributaries, and associated lakes within the watershed unless otherwise indicated.

WATERWAYPREFERRED WORK PERIOD¹

Nestucca River & Tributaries	July 1 - September 15 (CO, CHS, CHF, CS, STW*)
Little Nestucca River & Tributaries	July 1 - September 15 (CO, CHS, CHF, CS, STW)
Neskowin Creek and Tributaries	July 1 - September 15 (CO, CS, STW*)
Other North Coastal Tributaries (Columbia River to Neskowin Cr.)	July 1 - September 15 (CO, CT)
Coastal Lakes	October 1 - February 15 (CT)
Coastal lake Tributaries	July 1 - September 15 (CT)
<u>Newport Office - (541)-867-4741</u>	
<u>Pacific</u>	
Salmon	
Salmon River Estuary	November 1 - February 15 (MAR, SHL*)
Salmon River	July 1 - September 15 (CHF, CO, CS, STW, CT*)
Siletz	
Siletz River Estuary	November 1 - February 15 (MAR, SHL*)
Siletz River	July 1 - August 31 (CHF, CHS, CO, CS, STW, STS, CT*)
Yaquina	
Yaquina River Estuary	November 1 - February 15 (MAR, SHL*)
Yaquina River	July 1 - September 15 (CHF, CO, STW, CT*)
Alsea	
Alsea River Estuary	November 1 - February 15 (MAR, SHL*)
Alsea River	July 1 - August 31 (CHF, CHS, CO, STW, CT*)
Yachats River	July 1 - September 15 (CHF, CO, STW, CT*)
Siuslaw	
Siuslaw River Estuary	November 1 - February 15 (MAR, SHL, CHF, CO, STW, CT*)
Siuslaw River	July 1 - September 15 (CHF, CO, STW, CT*)
Other Coastal Tributaries	July 1 - September 15 (CO, STW, CT*)
Coastal Lakes	October 1 - February 15 (STW, CO, CT)
Coastal Lake Tributaries	July 1 - September 15 (STW, CO, CT)

North Willamette Watershed DistrictClackamas Office (971) 673-6000Columbia

Columbia River (Hunt Creek to Bonneville Dam) See Columbia River Management

Columbia River (Within District above Bonneville Dam)

November 15 - March 15

Columbia R. Tribs. (Hunt Creek to St. Helens)

(CHF, CHS, CHR, SS, CO, CS, STW, STS, CT*)

Clatskanie River

July 15 - September 15 (CHF, STW*)

July 15 - September 15 (CHF, STW*)

¹ Work period is established for named stream, all upstream tributaries, and associated lakes within the watershed unless otherwise indicated.

WATERWAY

PREFERRED WORK PERIOD¹

WATERWAY	PREFERRED WORK PERIOD ¹
Willamette	
Multnomah Channel (including Scappoose Bay)	July 1 - October 31 & December 1 - January 31 ² (CHF,CHS,CO,STW,STS,CT,WW*)
Milton Cr. & Scappoose Cr.	July 15 - August 31 (CO,STW,JUV,WW*)
Willamette River (mouth to Willamette Falls)	July 1 - October 31 & December 1 - January 31 ³ ,CHS,CO,STW,STS,CT,WW*)
Columbia Slough	June 15 - September 15 (JUV,WW*)
Johnson	
Johnson Creek	July 15 - August 31 (STW,CO,CT,CHF*)
Johnson Cr. Tribs.	July 15 - August 31 (CT,STW,CHF,CO*)
Kellogg Creek	July 15 - September 30 (STW,CO,CT*)
Tryon Creek	July 15 - September 30 (STW,CO,CT*)
Clackamas River	July 15 - August 31 (CHF,CHS,STW,CO,STS,CT*)
Abernethy Creek	July 15 - September 30 (CO,STW,CT*)
Other Willamette River tribs.	July 15 - September 30 (CT*)
Willamette River (Will. Falls to Newberg)	June 1 - October 31 & December 1 - January 31 (CHS,STW*)
Tualatin	
All Tualatin River Tributaries	July 15 - September 30 (CO,STW,CT,WW*)
Tualatin River (below Scoggins Cr.)	June 1 - September 30 (CO,STW,CT,WW*)
Tualatin River (above Scoggins Cr.)	July 15 - September 30 (CO,STW,CT,WW*)
Beaver Creek	July 15 - September 30 (CT*)
Molalla/Pudding River	
Molalla River (below Hwy 213)	June 1 - September 30 (STW,CT*)
Other Molalla River Tributaries (below Hwy 213)	July 15 - September 30 (CT*)
Molalla River (above Hwy 213)	July 15 - August 31 (CHS,STW,CT,RB*)
N. Fk & M. Fk Molalla	July 15 - August 31 (CHS,STW,CT,RB*)
Other Molalla River Tributaries (above Hwy 213)	July 15 - September 30 (STW,CT*)
Pudding River	June 1 - September 15 (CHS,STW,CT*)
Butte Creek	July 15 - September 30 (STW,CT*)
Abiqua Creek	July 15 - August 31 (CHS,STW,CT,RB*)
Silver Creek	July 15 - September 30 (STW,CT*)
Other Pudding River Tributaries	June 1 - September 30,STW,CT,RB*)
Other Willamette River tribs.	July 15 - October 15 (CT*)
Willamette River (Newberg to Yamhill River)	June 1 - September 30 (CHS,STW,CT,RB*)
Chehalem Creek	July 15 - September 30 (CT*)
Yamhill River	July 15 - September 30 (STW,CT*)
Other Willamette River tribs.	July 15 - September 30 (CT*)
Fairview Cr.,Arata Cr., Salmon Cr.	June 15 - September 15 (CT,WW*)
Sandy River	July 15 - August 31 (CHS,CHF,CO,STW*)
Tanner Creek	July 15 - August 15 (CHF,CHS,CO,STW*)
Columbia River Tributaries (St. Helens to Sandy River)	July 15 - August 31 (CHF,CO,STW,CT*)
Columbia River Tributaries (Sandy River to Herman Cr.)	July 15 - August 31 (CO,STW,STS,CT*)

¹ Work period is established for named stream, all upstream tributaries, and associated lakes within the watershed unless otherwise indicated.

² Winter window only for activities below -20' Columbia River Datum

³ Winter window only for activities below -20' National Geodetic Vertical Datum 1947

WATERWAYPREFERRED WORK PERIOD¹**South Willamette Watershed District****Corvallis Office - (541) 757-4186**

Willamette

Willamette River (Yamhill River to McKenzie River)	June 1 – October 15 (CHS,STW,CT,RB*)
Spring Valley Creek	July 1 - October 15 (CT*)
Glenn Creek	July 1 - October 15 (CT*)
Mill Creek	June 1 – October 15 (CT, RB*)
Rickreall Creek	July 1 – October 15 (STW,CT*)
Luckiamute River	July 1 - October 15 (STW,CT*)
Santiam River	June 1 – October 15 (CT*)
North Santiam River (below Big Cliff Dam)	July 15 - August 31 (CHS,STW,CT,RB*)
Stout Cr., Rock Cr., & Mad Cr.	July 15 - October 15 (STW,CT, RB*)
Lt. N. Fk. Santiam River	July 15 - August 31 (CHS,STW,CT, RB*)
Sinker, Elkhorn Cedar Creeks & tributaries	July 15 - October 15 (STW,CT, RB*)
Other Tributaries	June 1 - October 15 (CT*)
Other Santiam River Tributaries (below Big Cliff Dam)	June 1 - October 15 (CT*)
North Santiam River (above Detroit Dam)	June 1 - August 31 (CHS, K,CT, RB*)
Breitenbush River	June 1 - August 31 (CHS, K,CT, RB*)
South Santiam River (below Foster Dam)	July 15 - August 31 (CHS,STW,CT, RB*)
Crabtree Cr., Thomas Cr. & Wiley Cr.	July 15 - August 31 (CHS,STW,CT, RB*)
McDowell Cr.	July 15 - October 15 (STW,CT*)
Other South Santiam River Tributaries (below Foster Dam)	June 1 - October 15 (CT*)
South Santiam River (above Foster Dam)	July 15 - August 31 (CHS,STW,CT, RB*)
Middle Santiam River & Quartzville Creek	June 1 - October 15*(K,CT, RB*)
Marys River	July 1 - October 15 (CT*)
Long Tom River	July 1 - October 15(CT*)
Other West Bank Will. R. Tribs. (Will. Falls to McKenzie R.)	July 1 - October 15 (CT*)
Calapooia	
Calapooia River (below Holley)	June 1 - October 15 (CT*)
Calapooia River (above Holley)	July 15 - August 31 (CHS,STW,CT, RB*)
Other East Bank Will. R. Tribs. (Will. Falls to Harrisburg)	June 1 - October 15 (CT*)

Springfield Office - (541) 726-3515

Willamette

Willamette River (above McKenzie River)	June 1 - October 31(CHS, RB*)
McKenzie River Basin	
McKenzie River (below Leaburg Dam)	by specific arrangement (CHS,CT, RB, BUT, OC*)
Tributaries of McKenzie River (below Leaburg Dam)	June 1 - October 31 (CT, RB, OC*)
McKenzie River (above Leaburg Dam)	July 1 - August 15 (CHS, BUT, CT, RB*)
Blue River (above Blue River Dam)	June 1 - October 31 (CT, RB*)
Middle Fork Willamette River Basin	
Middle Fork Willamette River (Confluence with the	
Coast Fork Willamette to Dexter Dam)	by specific arrangement (CHS,STW,CT, RB, OC*)
Fall Creek & Little Fall Creek	July 1 - August 31 (CHS,STW,CT, RB*)
Lost Creek	July 1 - August 31 (CHS,STW,CT, RB*)
Rattlesnake Creek	by specific arrangement (STW,CT, RB, OC*)

¹ Work period is established for named stream, all upstream tributaries, and associated lakes within the watershed unless otherwise indicated.

WATERWAYPREFERRED WORK PERIOD¹

Other Middle Fork Willamette River tributaries (Confluence with the Coast Fork Willamette to Dexter Dam)	June 1 – October 31 (CT, RB*)
Middle Fork Willamette River Basin (Dexter Dam to Hills Creek Dam)	by specific arrangement (CHS, CT, RB, OC*)
North Fork Middle Fork Willamette River	July 1 – August 31 (CHS, CT, RB*)
Salmon Creek	July 1 – August 31 (CHS, CT, RB*)
Salt Creek	July 1 – August 31 (CHS, CT, RB, OC*)
Middle Fork Willamette River (above Hills Creek Dam)	July 1 - August 15 (CHS, BUT, CT, RB*)
Coast Fork Willamette River Basin	
Coast Fork Willamette River (Confluence with the Middle Fork Willamette to Cottage Grove Dam)	by specific arrangement (CHS, RB, OC*)
Coast Fork Willamette River (above Cottage Grove Dam)	May 15 – November 30 (CT*)
Row River (below Dorena Dam)	June 1 - October 31 (CHS, CT, RB*)
Row River (above Dorena Dam)	May 15 – November 30 (CT*)

Southwest Region**Umpqua Watershed District**

Roseburg Office - (541) 440-3353

Pacific

Umpqua River Umpqua River Estuary & Smith Est.	November 1 – January 31 (MAR, SHL, CHS, CHF, CO, STW, STS, CT*)
Umpqua River (Scottsburg and above)	July 1 - August 31 (CHS, CHF, CO, STW, STS, CT*)
Umpqua River Tribs.	July 1 - September 15 (CHF, CO, STW, CT*)
North Umpqua North Umpqua River (below Soda Springs Dam)	by specific arrangement (CHF, CHS, CO, STW, STS, CT*)
Tribs. North Umpqua (below Soda Springs)	July 1 - September 15 (CHS, CO, STW, STS, CT*)
North Umpqua River (above Soda Springs Dam)	June 15 - October 15 (RB, BT, BR*)
South Umpqua South Umpqua River	July 1 - August 31 (CHF, CHS, CO, STW, CT*)
South Umpqua Tribs.	July 1 - September 15 (CHF, CO, STW, CT*)

Charleston Office - (541) 888-5515

PacificCoos

Coos Bay Estuary and River (to Millicoma R./S. Coos R. confluence)	October 1 - February 15 (MAR, SHL, JUV, CHF, CO, STW, CT*)
Millicoma River, S. Coos R. and tribs.	July 1 – September 15 (CHF, CO, STW, CT, MD*)

Coquille

Coquille River Estuary (Mouth to Bear Creek)	October 1 – February 15 (MAR, SHL, JUV, CHF, CO, STW, CT*)
Coquille River and tribs. (Bear Creek and above)	July 1 - September 15 (CHF, CO, STW, CT*)
Other Coastal Tributaries	July 1 - September 15 (CHF, CO, STW, CT*)
Coastal Lakes	July 1 – September 15 (CO, STW, CT*)
Coastal Lake Tributaries	July 1 - September 15 (CO, STW, CT*)

¹ Work period is established for named stream, all upstream tributaries, and associated lakes within the watershed unless otherwise indicated.

WATERWAYPREFERRED WORK PERIOD¹**Rogue Watershed District****Gold Beach Field Office – (541) 247-7605**

Pacific

New

New River	October 1- May 31 (JUV CHF*)
New River Tributaries	July 15 - September 30 (CO,STW,CT*)
Floras Creek Estuary	October 1- May 31 (JUV CHF*)
Floras Creek (above Hwy 101 bridge)	July 15 - September 30 (CHF,CO,STW,CT*)

Sixes

Sixes River Estuary	October 1- May 31 (JUV CHF*)
Sixes River (above Hwy 101 bridge)	July 15 - September 30 (CHF,CO,STW,CT*)

Elk

Elk River Estuary	October 1- May 31 (JUV CHF*)
Elk River (above Hwy 101 bridge)	July 15 - September 30 (CHF,CO,STW,CT*)

Euchre/Coastal Tributaries

Euchre Creek Estuary	November 1 - May 31 (JUV CHF*)
Euchre Creek (above County bridge)	July 15 - September 30 (CHF,CO,STW,CT*)
Hubbard Cr., Brush Cr.	July 15 - September 30 (CO,STW,CT*)
Mussel Cr.	July 15 - October 31 (STW,CT*)

Rogue

Rogue River Estuary	October 1 - May 31 (JUV CHF*)
Rogue River (Elephant Rock to Marial)	May 1 - September 30 (CHF*)
Rogue River Tributaries (below Marial)	July 15 - September 30 (CHF,CO,STW,CT*)

Hunter

Hunter Creek Estuary	November 1 - May 31 (JUV CHF*)
Hunter Creek (above County bridge)	July 15 - September 30 (CHF,CO,STW,CT*)

Pistol

Pistol River Estuary	November 1 - May 31 (JUV CHF*)
Pistol River (above County bridge)	July 15 - September 30 (CHF,CO,STW,CT*)

Chetco/Coastal Tributaries

Chetco River Estuary	October 1 - May 31 (JUV CHF*)
Chetco River (above Tide Rock)	July 15 - September 30 (CHF,CO,STW,CT*)
Meyers Cr., Thomas Cr., Whalehead Cr.	July 15 - October 31 (STW,CT*)

Winchuck

Winchuck River Estuary	October 1 - May 31 (JUV CHF*)
Winchuck River (above South Fork)	July 15 - September 30 (CHF,CO,STW,CT*)
Other Coastal Tributaries	July 15 - October 31 (CT*)

Central Point Office (541) 826-8774

Rogue

Rogue River (Marial to William Jess Dam)	June 15 - August 31 (CHS,STW*)
Illinois River	June 15 - September 15 (CHF,STW*)
Applegate River	July 1 - September 15 (CHF,STW*)
Other Rogue River Tributaries (above Marial).	June 15 - September 15 (CHS,STW*)
Rogue River (above William Jess Dam)	June 15 - September 15 (BT,CT*)

¹ Work period is established for named stream, all upstream tributaries, and associated lakes within the watershed unless otherwise indicated.

WATERWAYPREFERRED WORK PERIODHigh Desert RegionDeschutes Watershed DistrictThe Dalles Office - (541) 296-4628

Columbia

Columbia River (Within District Bonneville to John Day Dam)

November 15 - March 15

(CHF,CHS,SS,CO,STW,STS*)

Columbia River Tributaries

July 15 - September 30 (STW,CO,RB*)

Fifteenmile Creek

July 15 - October 31 (STW,RB*)

Hood River

Hood River

July 15 - August 31 (CHF,CHS,CO,STS,STW*)

East Fork Hood River & Tribs.

July 15 - August 31 (CHF,CO,STS,STW*)

Middle Fork Hood River & Tribs.

July 15 - August 15 (STW,CHS,BUT*)

West Fork Hood River & Tribs.

July 15 - August 15 (CHS,STS,STW*)

Deschutes

Deschutes River (below Pelton Dam)

February 1 - March 15 (CHF,STS,RB*)

White River July

1 - October 31 (RB*)

Buckhollow Cr. July

1 - October 31 (STS,RB*)

Bakeoven Cr. July

1 - October 31 (STS,RB*)

Trout Cr. July

1 - October 31 (STS,RB*)

Bend Office - (541) 388-6363

Deschutes

Metolius

Metolius River

by specific arrangement (K,RB,BR,BUT*)

Spring Creek

by specific arrangement(K,RB*,BUT)

Lake Creek

by specific arrangement (K,RB)

Deschutes River (Pelton Dam through Lake Billy Chinook)

July 1 - September 30 (RB,BR*)

Crooked River

Crooked River (below Prineville Dam)

July 1 - October 31 (RT*)

Prineville Reservoir Ju

July 1 - October 31 (RT*)

Crooked River (above Prineville Dam)

July 1 - October 31 (RT*)

N.Fk. Crooked River (above Big Summit Prairie)

July 1 - September 30 (RT*)

Deschutes River (Lake Billy Chinook to Bend)

July 1 - September 30 (RB,BR,BUT,K*)

Whycus Creek

July 1 - October 15 (RB,BR,BUT*)

Tumalo

July 1 - October 15 (RB,BR*)

Deschutes River (Bend-North Canal Dam to Benham Falls)

July 1 - October 15 (RB,BR*)

Deschutes River (Benham Falls to Wickiup Dam)

July 1 - October 15 (RB,BR*)

Little Deschutes River

July 1 - October 15 (RB,BR*)

Fall River

July 1 - October 15 (RB,BR*)

Deschutes River(Wickiup Reservoir to Crane Prairie Dam)

July 1 - August 31 (RB,BR,K*)

Deschutes River (Crane Prairie Reservoir to Little Lava Lake)

July 1 - August 31 (RB,BT,K*)

Odell/Davis Lake and Tributaries

by specific arrangement (K,RB,BUT*)

Klamath Watershed DistrictKlamath Falls Office - (541) 883-5732

Klamath

Klamath River (below Keno)

July 1 - September 30 (RB*,SUSP,RT)

Cottonwood Creek

July 1 - September 30 (STW*)

Jenny Creek

July 1 - January 31 (SCRT,JCS*)

Klamath River (above Keno)

July 1 - January 31 (SNS,BCHUB,RT*)

Lost River above Bonanza

July 1 - January 31 (RT,SNS)

Lost River below Bonanza

July 1 - March 31 (RT*)

Williamson River

August 1 - September 30 (BT,BR,RT,SNS,LRS,KLS*)

¹ Work period is established for named stream, all upstream tributaries, and associated lakes within the watershed unless otherwise indicated.

<u>WATERWAY</u>	<u>PREFERRED WORK PERIOD</u> ¹
Klamath River (above Keno)	July 1 – January 31 (SNS,BCHUB,RT*)
Lost River above Bonanza	July 1 – January 31 (RT,SNS*)
Lost River below Bonanza	July 1 - March 31 (RT*)
Williamson River	August 1 - September 30 (BT,BR,RT,SNS,LRS,KLS*)
Sprague River	August 1 - September 30 (BUT,LRS,SNS,RT,BT,BR *)
Sycan River	August 1 - September 30 (RT,BT,BR,BUT,LRS,SNS*)
Wood River A	August 1 - September 30 (RT,BR,BUT,SNS*)
Sevenmile Creek	August 1 - September 30 (RT,BR*)
Klamath Lake and Agency Lake	July 1 - January 31 (RT,LRS,SNS,BCHUB*)
Silver Lake tributaries Jul	July 15 - September 30 (RT,BT*)
Summer Lake and tributaries	July 15 - September 30 (TCHUB,RT *)
Chewaucan River Jul	July 15 - September 30 (RT*)
Goose Lake tributaries	July 15 - September 30 (GRT,GLAM,SSUC,GCB,PRCH,PSCL,MSUC*)
Warner Valley tributaries Ju	July 15 - September 30 (WSUC,FD,RT*)

Malheur Watershed DistrictHines Office - (541) 573-6582

Columbia	
Snake	
Snake River (Malheur County)	Open
Malheur	
Malheur River (below Namorf Dam)	Open
Willow Cr. (below Malheur Res.)	Open
Willow Cr. (above Malheur Res.)	October 1 - March 31 (RB,RT*)
Cottonwood, Cr., Squaw Cr	October 1 - March 31 (RB,RT*)
Other Tributaries	October 1 - March 31 (RB,RT*)
Malheur River (Namorf Dam to Wolf Creek)	November 1 - March 31 (RT*)
North Fork Malheur (mouth to Beulah Res.)	November 1 - March 31 (RT,RT*)
North Fork Malheur (above Beulah Res.)	July 1 - August 31 (BUT,RT,BT*)
South Fork Malheur	October 1 - March 31 (RT*)
Malheur River (Including Wolf Creek and above)	July 1 - August 31 (BUT,RT,BT*)
Owyhee River	
Owyhee River (below dam)	November 1 - March 31 (RB,BT*)
Owyhee River (above dam)	October 1 - March 31 (RB,RT*)
Succor Creek	October 1 - March 31 (RT*)
Silvies River (above 5mi dam)	October 1 - March 31 (RT,*)
Silver Creek (above Hwy 45)	October 1 - March 31 (RT*)
Donner Blitzen River (Steen Mtns)	October 1 - March 31 (RT*)
Alvord Basin	October 1 - March 31 (LCT,AC*)
Catlow Valley tributaries	October 1 - March 31 (LCT,CTC,RT*)
Trout Creek Mountains streams	October 1 - March 31 (LCT,AC,RT,CT*)
Quinn River	October 1 - March 31 (LCT,RT,CT*)

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WATERWAY

PREFERRED WORK PERIOD ¹**Northeast Region****John Day Watershed District**

John Day Office - (541) 575-1167

Columbia River

Lower John Day

John Day River (below John Day) July 15 - August 31 (STS,RT*)

Rock Creek

Rock Creek (Gilliam Co.) July 15 - September 30 (STS,RT*)

North Fork John Day

North Fork John Day River (below U.S. 395) July 15 - August 31 (STS,RT*)

Middle Fork John Day

Middle Fork John Day River (below US 395) July 15 - August 31 (STS,RT*)

Middle Fork John Day River (above US 395) July 15 - August 15 (CHS,STS,RT,BUT*)

North Fork John Day River (above U.S. 395) July 15 - August 15 (CHS,STS,BUT*)

Upper John Day

South Fork John Day River

South Fork John Day River July 15 - August 31 (STS,RT*)

John Day River (above John Day)

John Day River (above John Day) July 15 - August 15 (CHS,STS,BUT,RT,CT*)

Canyon Creek

Canyon Creek July 15 - August 31 (STS,RT,CT*)

Pendleton Office - (541) 276-2344

Columbia

Columbia River (John Day Dam upstream)

Columbia River (John Day Dam upstream) December 1 - March 31 (CHF,CHS,CO,STS*)

Willow Creek

Willow Creek July 1 - December 31 (RT, STS*)

Umatilla

Umatilla River (below Cayuse)

Umatilla River (below Cayuse) July 15 - September 30 (CHF,CHS,CO,STS,RT, BUT*)

Butter Creek

Butter Creek July 1 - December 31 (RT*)

Birch Creek

Birch Creek July 1 - October 31 (STS,RT*)

McKay Creek

McKay Creek (below reservoir)

McKay Creek (below reservoir) December 1 - March 31 (CHF,CHS,CO,STS,RT,BUT*)

McKay Creek (above reservoir)

McKay Creek (above reservoir) July 1 - December 31 (RT*)

Wildhorse Creek

Wildhorse Creek July 1 - October 31 (CHF,CHS,CO,STS,RT*)

Umatilla River (above Cayuse)

Umatilla River (above Cayuse) July 1 - August 15 (CHS,CHF,STS,RT,CO,BUT,WF*)

Meacham Creek

Meacham Creek (below north fork)

Meacham Creek (below north fork) July 1 - August 15 (CHS,STS,RT,BUT, WF*)

Meacham Creek (above north fork)

Meacham Creek (above north fork) July 1 - October 31 (STS,RT,BUT,WF*)

Cold Spring Creek

Cold Spring Creek June 1 - December 31

Walla Walla

Walla Walla River (below forks)

Walla Walla River (below forks) July 1 - September 30 (CHS,STS,RT,BUT,WF*)

Pine Creek

Pine Creek July 1 - October 31 (STS,RT*)

Little Walla Walla Distributary System

Little Walla Walla (above Ferndale Rd)

Little Walla Walla (above Ferndale Rd) December 1 - March 31 (STS,RT,BUT*)

Little Walla Walla (below Ferndale Rd)

Little Walla Walla (below Ferndale Rd) July 1 - October 31 (STS,RT,BUT*)

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WATERWAYPREFERRED WORK PERIOD¹

Mill Creek	July 1 - August 15 (CHS,STS,RT,BUT,WF*)
Cottonwood Creek	July 1 - October 31 (STS,RT*)
Birch Creek	July 1 - October 31 (STS,RT*)
Couse Creek	July 1 - October 31 (STS,RT*)
South Fork Walla Walla River	July 1 - August 15 (CHS,STS,RT,BUT,WF*)
North Fork Walla Walla River	
NF Walla Walla River (below Little Meadows Cyn)	July 15 - September 30 (STS,RT,BUT,WF)
NF Walla Walla River (above Little Meadows Cyn)	July 1 - August 31 (STS,RT,BUT,WF)

Grande Ronde Watershed DistrictEnterprise Office - (541) 426-3279

Columbia

Snake River (state line to Hells Canyon Dam)	July 1 - October 15 (CHF,CHS,SS,STS*)
Grande Ronde Grande Ronde River (below Wallowa River)	July 1 - September 15 (CHF,STS*)
Wenaha River Ju	July 1 - August 15 (CHS,STS,BUT*)
Joseph Creek Jul	July 1 - March 31 (STS*)
Wallowa River Ju	July 15 - August 15 (CHS,STS,RB,BT,BUT*)
Imnaha River (above Big Sheep Creek)	July 15 - August 15 (CHS,STS,BUT*)
Imnaha River (below Big Sheep Creek)	July 1 - October 15 (CHF,STS*)

La Grande Office - (541) 963-2138

Columbia

Snake

Grande Ronde

Grande Ronde River (Wallowa River to Highway 244 Bridge)	July 1 - October 15 (CHS,STS,RB,BUT*)
Minam River	July 1 - August 15 (CHS,STS,RB,BUT*)
Lookingglass Creek	July 1 - August 15 (CHS,STS,RB,BUT*)
Catherine Creek	
Catherine Creek (to, and including Little Creek)	July 1 - October 15 (CHS,STS,RB,BUT*)
Catherine Creek (above Little Creek)	July 1 - August 15 (CHS,STS,RB,BUT*)
Grande Ronde River (above highway 244 bridge)	July 1 - July 31 (CHS,STS,RB,BUT*)
Snake River Reservoir	July 1 - November 30 (WW*)
Snake River Reservoir Tributaries	July 1 - October 31 (RB*)
Burnt River	July 1 - October 31 (RB,BT*)
Pine Creek	July 1 - August 31 (RB,BUT*)
Powder River (mouth to Phillips Reservoir)	July 1 - October 31 (RB*)
Anthony Creek	July 1 - August 31 (RB,BUT*)
North Powder R. (above Dutch Flat Cr.)	July 1 - August 31 (RB,BUT*)
Wolf Creek (above Wolf Creek Res.)	July 1 - August 31 (RB,BUT*)
Big Muddy Creek (above Foothill Rd.)	July 1 - August 31 (RB,BUT*)
Pine Creek (above North Fork Pine Cr.)	July 1 - August 31 (RB,BUT*)
Salmon Creek (above Pocahontas Road)	July 1 - August 31 (RB,BUT*)
Powder River (above Phillips Reservoir)	July 1 - August 31 (RB,BUT*)
Deer Creek (above Phillips Reservoir)	July 1 - August 31 (RB,BUT*)

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*Coded fish species defined below provide the primary basis for timing guidelines. The species list should be considered general information and is not necessarily comprehensive nor accurate.

AC - Alford chub	LCT - Lahontan cutthroat trout
BCHUB – blue chub	LRS – Lost River sucker
BR - brown trout	MAR - various marine species of fish
BT - brook trout	MD – Millicoma dace
BUT - bull trout	MMS - Malheur mottled sculpin
CR – crappie	MSUC – Modoc sucker
CHF - Chinook salmon, fall	OC – Oregon sucker
CHR - Chinook salmon, summer	PRCH - pit roach
CHS - Chinook salmon, spring	PSCL - pit sculpin
CO - coho salmon	RB - rainbow trout
CS - chum salmon	RT - red band trout
CT - cutthroat trout (includes sea run)	SHL - various marine shell fish
CTC - Catlow tui chub	SNS shortnose sucker
GCB - goose lake chub	SS - sockeye salmon
FD – Foscett speckled dace	SSUC – Sacramento sucker
GLAM - Goose Lake lamprey	STS - steelhead summer
GSUC - Goose Lake sucker	STW - steelhead winter
JCRT – Jenny Creek red band trout	SUSP – sucker species
JCS – Jenny Creek sucker	TCHUB – tui chub
JUV - juvenile salmonids	WF – mountain white fish
K – kokanee	WSUC – Warner sucker
KLS – Klamath largescale sucker	WW - various warm water game fish

¹ Work period is established for named stream, all upstream tributaries, and associated lakes within the watershed unless otherwise indicated.

JASON STUTES, PhD, SENIOR MARINE ECOLOGIST

EDUCATION

PhD, Marine Sciences, University of South Alabama, 2006
M.S., Marine Sciences, University of South Alabama, 2000
B.S., Aquatic and Fisheries Biology, University of Louisiana at Lafayette, 1996

EXPERTISE

Marine Permitting
Benthic Ecology
ESA Consultation
Seagrass Expert

AFFILIATIONS

Pacific Estuarine Research Society (President 2016-Current)
Coastal and Estuarine Research Federations (Board member 2017-Current)
World Seagrass Association

EXPERIENCE

Jason Stutes is a marine ecologist with more than 18 years of experience in evaluating and restoring nearshore habitats and permitting nearshore projects. His primary expertise is in benthic ecology, particularly with PNW eelgrass/macroalgal communities. Jason has assisted in permitting dozens of nearshore projects in Puget Sound and the Pacific Northwest, evaluating project-related impacts, developing mitigation strategies, determining Endangered Species Act-listed species use, assessing restoration potential, and identifying potential contaminant threats. He has participated in several EIS efforts and several NEPA independent review processes where evaluating benthic and nearshore habitat resources were driving factors in alternative evaluation. As a nearshore benthic ecologist, Jason is able to inform the habitat restoration process on issues related to habitat function and ecosystem services bringing maximum ecological value to the overall restoration project. In general, Jason has spent his career becoming well versed in nearshore/marine habitats with particular emphasis on their function and ecosystem services. He is a recognized expert in seagrass and benthic ecology and reviews articles annually for international journals.

RELAVENT PROJECT EXPERIENCE

Macrovegetation surveys, Various Areas of Puget Sound, WA

As part of the permitting process for nearshore marine projects in Puget Sound, a macrovegetation survey is required using Washington State Department of Fish and Wildlife protocols to determine the presence and extent of eelgrass and macroalgae that may be affected by the proposed project. Jason has performed over 40 of these surveys within Puget Sound and coastal bays of Washington as part of various nearshore permitting efforts over his career for a variety of projects for federal, state, municipalities, and private clients.



Jordan Cove LNG Terminal Dredge Permitting and Mitigation Planning; Coos Bay, OR

Jordan Cove Energy Project is planning to construct and operate a LNG Terminal located on the bay side of the North Spit of Coos Bay, Oregon. Because of project siting, several acres of eelgrass and marine wetlands will be dredged due to various project elements. Jason worked with the client, owner, and their multidisciplinary team to develop a comprehensive permitting strategy and mitigation plan to address impacts due to dredging elements. This included the **design of a large-scale eelgrass mitigation site**. In addition to this, Jason oversaw a comprehensive eelgrass mapping effort that surveyed over 7 acres of subtidal habitat to accurately delineate eelgrass resources potentially at risk from the project.

WDNR Submerged Vegetation Monitoring Program Eelgrass Restoration & Performance Monitoring Project, South Puget Sound, WA

As project manager, Jason worked with WDNR scientists to develop and implement the largest eelgrass transplant effort to date (2017) in Puget Sound to help achieve measurable increases in Puget Sound eelgrass area to address the Puget Sound Partnership's "20% More Eelgrass by 2020" goal. Jason helped screen likely donor sites centered on key biological factors, historical eelgrass coverage, and logistical constraints as well as develop a transplanting protocol that would maximize transplant success. Over the course of two years, **approximately 42,000 shoots were transplanted into several large beds** across South Puget Sound. Jason worked with WDNR to develop a sampling and statistical analysis procedure to verify transplant success over the next 5 years and detect potential effects on donor sites that were used for this project.

Former Custom Plywood Mill Interim Action Cleanup, Anacortes, WA.

The site is a priority cleanup site under the Puget Sound Initiative due to being severely impacted by wood waste that accumulated over 80 years of operations. As project manager, Jason directed the development of various habitat enhancement features such as a consolidated wetland, making beneficial use of an existing stormwater outfall on the site; a restored forage fish spawning beach (already in use), and restoration of a functioning juvenile salmonid migration corridor. He designed and implemented an **experimental thin-layer capping study to evaluate the tolerance of eelgrass beds to burial** by varying amounts of sand placed to enhance natural recovery of contaminated sediments. He also **designed an advanced eelgrass restoration area** to facilitate recovery and eelgrass colonization of remediated subtidal areas.

SEPA EIS and NPDES Permitting, Oyster Growers Association, Willapa Bay, WA

Jason and several colleagues worked for several years with a large oyster growers association to assess **impacts to water and sediment quality, fish, eelgrass habitat and invertebrate communities** from farming techniques associated with oyster aquaculture in Willapa Bay and Grays Harbor. Jason's work led to a draft NPDES permit and a SEPA EIS for Ecology that evaluated the purpose and need, environmental, and socioeconomic impacts from aquaculture activities and noxious species control in these embayments. He worked closely with the oyster growers and their counsel to modify the EIS analysis and text to satisfy the requirements set by the Washington State Department of Ecology, and also helped prepare materials for public scoping and DEIS comment meetings associated with the SEPA analysis.

Port of Everett, Mount Baker Terminal Monitoring and Nearshore Restoration, Mukilteo, WA

Jason worked with a multi-firm consultant team for the Port of Everett to expeditiously plan, design, and permit a new 600-foot, medium draft pier for transferring airplane components from barges to rail cars for delivery to Paine Field. As part of construction of a new offloading facility, monitoring and restoration of various nearshore habitats within the project site as well as current and shading analysis were required for permitting and mitigation. As nearshore ecologist, **Jason implemented cutting-edge restoration techniques for eelgrass** in proximity to an engineered artificial beach to provide habitat for juvenile salmonids and forage fish. After implementation, Jason tracked trophic level response and connectivity between the restoration actions to determine how well these actions were performing from an ecological perspective. After several years of monitoring, the **restoration is performing as well or better than reference areas** with minimal adaptive management.

US Navy, Wharf Design/Permitting Support and Environmental Monitoring, Naval Base Kitsap-Bangor, WA

Jason worked on a multidisciplinary team providing concept analysis, final design, and permitting for a new pier. Several designs of this new structure were evaluated for constructability, cost effectiveness, and overall environmental impact. Jason worked closely with the Navy and engineering team members to include **considerations for the impacts of shading and subsequent loss of eelgrass and benthic habitat** as well as the effects of noise during construction on surrounding sensitive/protected species of concern on design alternatives. Jason conducted several habitat surveys including the **most current eelgrass and macroalgae surveys** for the project as well as surveys of marine species surrounding the base property and in nearby Dabob Bay. Jason also helped develop a functional assessment tool to evaluate the ecological impact of this and other Navy projects in Hood Canal.

Post Point Alternative Outfall Project, Bellingham, WA

Jason, as project manager, led the replacement of a secondary wastewater outfall for the City of Bellingham, providing full design support including concept design and construction bid documents. As lead benthic ecologist, Jason managed and negotiated all state and federal permit applications for the project, which included mitigation for unavoidable construction impacts to the existing eelgrass bed within the impact area. He designed and **implemented the harvest and planting of 4,000 square feet of eelgrass habitat at two sites prior to construction**. This served as a demonstration project for the City of Bellingham showcasing stewardship by the city and state and providing public outreach through volunteer involvement. Jason instituted a comprehensive water quality program to document system integrity and to verify growing conditions were conducive to eelgrass health. A resounding success for its performance, permit compliance, and outreach, the project **received a commendation from the state legislature and a regional award from the ASCE**.

Thorndyke Resource Conveyor, Fred Hill Materials, Hood Canal, WA

As project manager, Jason directed the marine natural resources studies as part of the ongoing permitting of a conveyor system to transport aggregate materials from an existing sand and gravel site to a marine load out facility on the northwest shore of Hood Canal. To support the EIS process, **several natural resource surveys, including eelgrass** (both native and nonnative), geoduck, and nearshore fish, were initiated along with an extensive dissolved oxygen study at the project site. Jason designed and implemented many of the studies and is currently involved with designing appropriate mitigation alternatives for the project. This includes considerations for several proposed and listed ESA species endemic to Hood Canal.

Saltwater State Park Artificial Reef Replacement, Des Moines, WA

To replace and enhance benthic habitats in the vicinity of a pre-existing artificial reef at the state park, a new artificial reef was designed in conjunction with WDFW, Washington Divers Alliance, and Washington State Parks and Recreation. As lead benthic ecologist, Jason provided ecological input to the design team which optimized recruitment of encrusting organisms. He also led the permitting effort, **which included surveying for eelgrass and modifying initial designs to minimize impacts to the habitat** and associated resources. Upon final design, the reef not only provided a satisfying diving experience, but also enhanced the ecology of the area through coupling hard substrate reef habitat with shallower eelgrass habitat. This provided avenues for scientific study of reef fish/anadromous fish interactions through collaboration with the University of Washington and NOAA fisheries.

Deep-Water Navigation IEPR Feasibility Studies, Battelle/ US Army Corps of Engineers, Various, US

Jason has served as the environmental subject matter expert for several Independent External Peer Review (IEPR) panels for proposed deep-water navigation projects around the US. The purpose of this review process is to provide the Chief of Engineers with an independent assessment of the project or work product, including the panel's assessment of the adequacy and acceptability. Jason reviewed all supplied regulatory documents for consistency in effects determination under NEPA, ESA, MMPA, Rivers and Harbor Act, and other federal and state statutes and provided guidance for increasing the rigor of the environmental analysis.

Port Gamble Sediment RI/FS, Port Gamble, WA

This project was part of the interim cleanup action plan developed for the former Pope Mill site and the greater Port Gamble Bay under MTCA to remediate for severe wood waste contamination. Jason directed several analyses examining (1) the **feasibility of thin capping benthos with eelgrass** and geoduck habitats; and (2) the dynamics of harmful algal blooms and shellfish bed closures with respect to cleanup activities, human utilization of the nearshore, and El Niño Southern Oscillation (ENSO) events. These analyses compiled and utilized all available data from state, federal, and tribal resources specific to the bay and compared against academic literature in order to draw limited conclusions on several correlated events in Port Gamble bay. The analyses were included in both RI and FS documents in order to help evaluate likely remediation alternatives and their net benefit to the overall ecosystem.

Marine Electrical Cable Replacement, Anderson Island, WA

As part of the installation of a new marine electrical cable to replace the failing existing cable, Jason as lead nearshore ecologist directed the marine natural resources studies to document sensitive natural resources, especially eelgrass, that were on the proposed path. This **included surveys for eelgrass and geoducks according to WDFW protocols at several proposed cable crossing locations**. By achieving sub-meter accuracy on the occurrence of eelgrass within the project area, an alignment was selected to completely avoid any eelgrass impacts reducing overall nearshore impacts and compensatory mitigation requirements.

SELECT PUBLICATIONS

Eelgrass (*Zostera marina*) Restoration in the Pacific Northwest: Recommendations to Improve Project Success. Ronald Thom, Jeff Gaeckle, Amy Borde, Michael Anderson, Matthew Boyle, Cynthia Durance,

Michael Kyte, Paul Schlenger, Jason Stutes, Don Weitkamp, Sandy Wyllie-Echeverria, Steve Rumrill. WSDOT Publication 706.1, Nov. 2008. <http://www.wsdot.wa.gov/Research/Reports/700/706.1.htm>

Benthic metabolism across a gradient of anthropogenic impact in three shallow coastal lagoons in NW Florida. J Stutes, J Cebrian, AL Stutes, A Hunter, A Corcoran. Marine Ecology-progress Series - MAR ECOL-PROGR SER 01/2007; 348:55-70. DOI:10.3354/meps07036.

Effects of grazing and fertilization on epiphyte growth dynamics under moderately eutrophic conditions: Implications for grazing rate estimates. J Cebrian, J Stutes, B Christiaen. Marine Ecology Progress Series. 01/2013; 474:121-133.



DAVID EVANS
AND ASSOCIATES INC.

Jim Starkes

Project Manager II, Senior Scientist



Jim has over 28 years of experience as a marine scientist, evaluating the effects of anthropogenic activities on marine organisms and their habitats and the design of ecologically functional restoration alternatives. He has conducted numerous assessments to determine habitat limiting factors on juvenile salmon productivity and to optimize habitat conditions in restoration projects. One of his principal roles in habitat restoration is to work closely with design engineers to produce cost-effective and ecologically meaningful restorations and mitigation actions to offset the impacts of development.

Education

BS, Fisheries, University of Washington

Certifications

Eelgrass Delineation Certification, US Army Corps of Engineers, 2018

Sr. Author, WSDOT Biological Assessment Program, 2013

Marbled Murrelet Survey Certification, US Fish and Wildlife Service, 2018

Forage Fish Spawn Survey Certification, WA Dept. of Fish and Wildlife, 2016

Floodplain Habitat Assessment Training Workshop, NOAA/FEMA (2017)

Sea Level Rise Projections Training Workshop. WA Sea Grant/WA Dept. Ecology (2018)

Electrofishing Certificate, Smith Root, 2010

Transportation Worker Identification Credential

40 hr HAZWOPER Certification (1990), plus annual 8 hr. Refreshers

Project Management Training (2005)

Professional Affiliations
American Fisheries Society

Years of Experience
28

Jordan Cove Energy Project, Permitting and Mitigation Support, Coos Bay, OR

Mitigation lead for the design of a program to salvage 2.3 acres of eelgrass that currently occupies areas proposed for dredging, and transplanting it to nearby recipient sites. Managed eelgrass investigations to identify, select, and design an eelgrass mitigation site that will be graded to optimal elevations and planted with eelgrass. Conducted extensive eelgrass surveys to delineate eelgrass beds within the project area, identify donor and reference sites, and develop a 5-year post-construction monitoring and adaptive management program.

Womens Bay Eelgrass Site Delineation, Womens Bay, Kodiak, AK

Project manager conducting Tier 1 eelgrass surveys along the City of Kodiak waterfront. Eelgrass was delineated using intertidal foot surveys, and geo-referenced underwater video using US Army Corp of Engineers guidelines to characterize overall littoral habitats at a waterfront parcel. Both continuous and discontinuous eelgrass beds were mapped by GIS to determine aquatic valuation to meet aquatic deed transfer requirements to the State of Alaska.

Mt Baker Terminal Beach Restoration, Everett, WA.

Task and field Manager for design and environmental investigations of a 61,000 SF pier in Port Gardner, WA. Provided ecological function analyses for the design of an 800 foot beach and riparian zone as mitigation for the pier. Implemented a post-construction monitoring program investigating eelgrass colonization, beach substrate migration, juvenile salmon use, crab production, epibenthic recolonization, forage fish spawning, and saltmarsh/riparian growth. All performance criteria for the beach were met and a 20 year monitoring program was reduced to 10 years.

Custom Plywood Intertidal Habitat Restoration Feasibility Study, Anacortes, WA.

Task Manager for the permitting of functional habitats to offset losses from contaminated sediment removal. Habitats include consolidating 5 contaminated wetlands into an estuarine pocket beach. A unique beach spit was also designed to protect the estuarine pocket beach, replace upper intertidal forage fish spawn habitat lost to contaminant removal, and provide habitat for juvenile salmon. Managed a monitoring program evaluating eelgrass recolonization of restored intertidal habitats, juvenile salmon and overall fish community use, epibenthic colonization, marsh growth, and beach stability. All ecological performance criteria have been met.

Post Point Lagoon Pocket Beach Restoration Project, Bellingham, WA.

Task Manager for conducting the environmental permitting and design of the Post Point Lagoon restoration, a 3.2-acre pocket beach along the marine nearshore in north Puget Sound. Restoration goals were to improve pocket estuary habitat for juvenile salmon. The design excavated upland soils and graded new beaches to increase lagoon water volume and allow recolonization of high marsh vegetation. An existing eelgrass bed was expanded by transplants from a donor bed in the nearshore. Enhancement of the existing riparian zone was conducted to repair erosion damage from a former off-leash dog park.

Union Slough Restoration Site Field Monitoring, Port of Everett, WA.

Field Manager for biological monitoring of the Union Slough Restoration site, a 26-acre saltmarsh/mudflat complex created by breaching a dike on Union Slough, a distributary of the Snohomish River. Evaluated juvenile salmon use and abundance, epibenthic colonization, juvenile crab use, waterfowl use, and estuarine marsh colonization over a 5 year, post-construction period. Performance criteria for fish and wildlife were met for the entire monitoring period; marsh colonization performance criteria were met after year 3. The habitat continues to provide high functioning habitats to fish and wildlife while providing mitigation credits for the Port of Everett.

South Fork Skagit River Estuarine Off-Channel Habitat Design and Feasibility Study, Skagit County, WA

Project manager designing off-channel habitats to optimize juvenile salmon rearing within tidal reaches of the Skagit River. Final design analyses included use of carrying capacity models to optimize ecological functions for juvenile salmonids, hydrologic modeling and geotechnical analyses to optimize channel stability, maximizing channel inundation, grading for natural wetland colonization, and determining risks to adjacent agricultural lands.

Elliott Bay Seawall Replacement Project, Seattle Department of Transportation, Seattle, WA

Habitat Lead on the engineering team to replace the 7,000-foot Elliott Bay seawall along the Seattle waterfront. Responsible for the design of several habitat features including a pocket beach and a unique juvenile salmon habitat bench along the new seawall. Given the highly urban nature of the area, used ecological function models to prioritize design alternatives to maximize benefits to juvenile salmon production.

Livingston Bay Pocket Beach Restoration, Camano Island, WA

Task Manager providing design assistance and permitting to restore a 10-acre pocket beach for The Nature Conservancy. Designs were prepared for the restoration of a poorly functioning, low flushing pocket beach on Port Susan. The project restored tidal flow via dike breaching, improved access for juvenile salmonids, restored salt marsh habitats, and restored natural hydrologic and shoreline processes in a manner that was ecologically sustainable.

Sitka Airport Expansion EIS, Federal Highways Administration, Sitka AK

Task Manager assisting in the preparation of an Environmental Impact Statement for the Sitka Airport Expansion project. Project Manager for producing a Biological Assessment and Essential Fish Habitat Evaluation for the project. Evaluated the potential effects of airport expansion and vessel transit on ESA-listed Steller sea lions, humpback whales, and EFH managed marine species. Conducted analyses of above and underwater noise, vessel collision, contaminant and turbidity discharges, and nearshore habitat alterations. Also evaluated the potential impacts of the airport expansion to the Sitka Sound herring population as an indirect effect to feeding sea lions and humpback whales. Prepared both the BA and EFH evaluation as stand-alone documents.