



Coos County Planning Department

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NOTICE OF ADOPTION

March 14, 2012

Re: Coos County Planning Department File No. REM-11-01
Application for Pacific Connector Gas Pipeline (Remand of HBCU-10-01)
County Final Decision and Order No. 12-03-018PL

On March 13, 2012, the Coos County Board of Commissioners adopted the above-referenced Final Decision and Order No. 12-03-018PL attached to this notice.

The adoption of this final decision and order can be appealed to the Land Use Board of Appeals (LUBA), pursuant to ORS 197.830 to 197.845, by filing a Notice of Intent to Appeal within 21 days of the date of the final decision and order. For more information on this process, contact LUBA by telephone at 503-373-1265, or in writing at 550 Capitol St. NE, Suite 235, Salem, Oregon 97301-2552.

If you have any questions pertaining to this notice or the adopted ordinance, please contact the Planning Department by telephone at (541) 396-3121 or 756-2020, extension 210, or visit the Planning Department at 225 North Adams Street, Coquille, Oregon, Monday through Friday, 8:00 AM - 5:00 PM (closed Noon - 1:00 PM).

COOS COUNTY PLANNING DEPARTMENT



Jill Rolfe, Administrative Planner

CERTIFICATE OF MAILING

I hereby certify that on March 14, 2012, I deposited the attached NOTICE OF ADOPTION into the U.S. mail, in an envelope with first class postage affixed thereto to the parties listed on the attached pages.

Dated: March 14, 2012



Jill Rolfe, Administrative Planner

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BEFORE THE BOARD OF COMMISSIONERS
OF THE COUNTY OF COOS, OREGON

In the Matter of LUBA Remand of Pacific)
Connector Gas Pipeline, L.P. REM-10-01) FINAL DECISION AND ORDER
HBCU-10-01) NO. 12-03-018PL
)

Whereas on September 8, 2010, the Coos County Board of Commissioners adopted Final Decision and Order No. 10-08-045PL, approving Pacific Connector's application in county file #HBCU-10-01 to develop 49.72 miles of interstate natural gas pipeline and associated facilities connecting the Jordan Cove LNG terminal to the pipeline segment in adjacent Douglas County.

Whereas the opponents appealed the County's decision to the Land Use Board of Appeals ("LUBA"). On March 29, 2010, LUBA remanded the decision for further consideration of two issues: (1) a procedural issue related to property owner consents under LDO 5.0.150; and (2) potential impacts to Olympia oysters in Haynes Inlet under the two applicable CBEMP Management Objectives.

Whereas Pacific Connector submitted a written request for a remand hearing on May 12, 2011. On June 7, 2011, the Board concluded that no additional evidence was required to address the issue regarding property owner consents. However, the Board determined that the Olympia oyster issue could not be fully resolved without an evidentiary hearing, and appointed a hearings officer to hold a *de novo* evidentiary hearing on remand, with the scope of the hearing limited to the second issue identified by LUBA regarding potential impacts on Olympia oysters.

Whereas Hearings Officer Andrew Stamp conducted a public hearing on September 21, 2011, and held the record open for additional evidence and argument until December 15, 2011. The hearings officer issued his decision on January 30, 2010, recommending that the Board approve the application on remand with conditions, and rejecting the opponents' arguments that the applicable CBEMP Management Objectives were not satisfied.

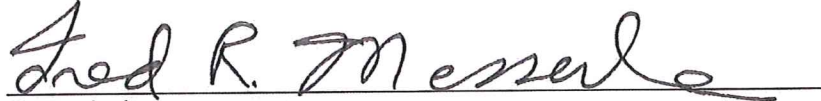
Whereas the County Planning Director provided the Board with a staff report dated February 15, 2012, which provides two substantive recommendations: (1) revised language for Condition of Approval #20 regarding property owner consents under LDO 5.0.150, as required by LUBA's opinion under Assignment of Error Two; and (2) proposed findings addressing a procedural issue identified by the hearings officer in his decision regarding authorization of witnesses to testify under LDO 5.7.300(4).


Whereas on March 13, 2012, the Board met to review the hearings officer's recommendation "on the record," without accepting additional evidence or argument from the parties, and to deliberate regarding: (1) whether to accept, reject, or modify the hearings officer's recommendation, and (2) whether to accept, reject, or modify the revised findings and conditions provided by staff.

1 WHEREAS, at the conclusion of the March 13, 2012 meeting the Board reached a
2 decision to adopt the hearings officer's recommendation, with the modifications provided in the
3 February 15, 2012 staff report regarding compliance with LDO 5.7.300(4). The Board finds that
4 the applicant has addressed the remand issues and that all applicable approval criteria are met
5 with the suggested new conditions of approval. The Board finds that staff's suggested revisions
6 to Condition 20 address Assignment of Error Two. The Board hereby adopts the hearings
7 officer's recommendation, as modified and attached as Attachment "A," as its own approval
8 findings, along with the attached conditions of approval. All other findings and conditions of
9 approval in Order No. 10-08-045PL adopted September 8, 2010, remain in full force and effect,
10 except as modified herein.

11 ADOPTED this 13th day of March, 2012.

12 BOARD OF COMMISSIONERS

13 
14 Commissioner

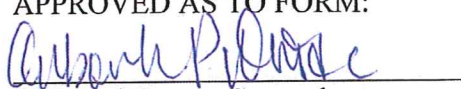
15 
16 Commissioner

17 
18 Commissioner

19 ATTEST:

20 
21 Recording Secretary

22 APPROVED AS TO FORM:

23 
24 Office of County Counsel

**FINDINGS OF FACT, CONCLUSIONS OF LAW, AND FINAL DECISION
OF THE COOS COUNTY BOARD OF COMMISSIONERS
ON REMAND FROM LUBA**

**PACIFIC CONNECTOR GAS PIPELINE PROPOSAL
COOS COUNTY, OREGON**

FILE NO. REM-10-01

I. BACKGROUND

A. Summary of the Remand Process and Due Process Afforded to the Participants.

On September 8, 2010, the Coos County Board of Commissioners (Board) adopted Final Decision and Order No. 10-08-045PL, approving Pacific Connector's application in county file #HBCU-10-01 to develop 49.72 miles of interstate natural gas pipeline and associated facilities connecting the Jordan Cove LNG terminal to the pipeline segment in adjacent Douglas County. Opponents appealed the Board's decision to the Land Use Board of Appeals ("LUBA").

The opponents appealed the County's decision to LUBA. On March 29, 2010, LUBA remanded the decision for further consideration of two issues: (1) procedural issue related to property owner consents under LDO 5.0.150; and (2) potential impacts to Olympia oysters. *Citizens Against LNG vs. Coos County*, ___ Or LUBA ___ (LUBA No. 2010-086, March 29, 2011). Neither party appealed LUBA's decision any further, and therefore LUBA's decision is final and governs this remand proceeding.

Pacific Connector submitted its written request for a remand hearing on May 12, 2011. On June 7, 2011, the Board expressly concluded that no additional evidence was required to address the issue regarding property owner consents. However, the Board determined that the Olympia oyster issue could not be fully resolved without an evidentiary hearing. The Board voted on June 7, 2011 to appoint a hearings officer to hold a *de novo* evidentiary hearing on remand, with the scope of the hearing limited to the second issue identified by LUBA regarding Olympia oysters. The evidentiary hearing on remand is intended to determine: (1) if Olympia oysters currently exist in Haynes Inlet, and if so, (2) determine whether applicant is proposing construction methods, best-management practices, protection efforts, and mitigation techniques that will adequately "protect" Olympia oysters in Haynes Inlet from impacts caused by construction of the pipeline.

The hearings officer instructed the parties that all evidence and testimony in this proceeding must be directed toward the standards set forth in the Notice of Hearing, and must relate exclusively to potential impacts on Olympia oysters.

The review timeline for this application is as follows:

March 29, 2011	Decision remanded by LUBA
May 11, 2011	Applicant initiates remand process.
September 21, 2011	Public Hearing held.
October 10, 2011	First Open Record Period Closed (rebuttal testimony only).
October 17, 2011	Second Open Record Period Closed (for surrebuttal testimony only)

After the initial two rebuttal periods, both parties indicated that they wished to invoke ORS 173.763(6) and submit further rebuttal evidence.¹ For this reason, on October 24, 2011, the hearings officer conducted a conference call with the parties and worked out a schedule for the submission of additional evidence. That schedule was subsequently modified at the parties' request, and ultimately resulted in the following deadlines:

November 14, 2011	Third Open Record Period Closed (for surrebuttal testimony only)
November 28, 2011	Fourth Open Record Period Closed (for surrebuttal testimony only)
December 15, 2011	Applicant's Final Argument
January 30, 2012	Hearings Officer's Recommendation.

B. Why Did LUBA Remand the County's 2010 Decision?

To recap, LUBA remanded the case for two reasons. For easement of reference, the hearings officer will refer to these two issues as the "property ownership" issue, and the "Olympia oyster" issue.

The property ownership issue was procedural in nature, and came about because the code requires all property owners to physically sign the land use application. That code provision created unintended consequences when the use at issue is a linear feature that traverses many properties, as such as a pipeline. The hearings officer essentially created a plan to defer evaluation of whether the application had sufficient signatures to a later stage in the approval process. Although the hearings officer had pointed out that this process may require additional public input *if* the issue of property ownership in any particular case resulted in the exercise of discretion, the County (subsequent to the time the hearings officer's recommendation was issued) argued to LUBA that the property ownership verification process was going to be a strictly ministerial (non-discretionary) process. LUBA agreed with the opponents that such a process might involve discretion, and therefore, *may* require a public hearing. Overall, that aspect of the case is fairly inconsequential and requires no further discussion.

The other remand issue concerned native oysters. In the initial land use proceeding, the opponents had placed into the record an article concerning the recent re-emergence of native Olympia oysters in the Coos Bay area. Specifically, the opponents relied upon an article published in 2009 in the Journal of Shellfish Research by Dr. Groth and Dr. Rumrill, which documented the discovery of Olympia oysters in certain portions of Coos Bay, including Haynes Inlet. Although the hearings officer (and, hence, the Board) adopted detailed findings regarding the absence of impacts from pipeline construction to *commercial* oyster populations in Haynes Inlet, the hearings officer did not specifically address native Olympic oysters. This was an

¹LUBA has limited the applicability of ORS 197.763(2), (3), (6), and (8) to the first evidentiary hearing in the initial proceedings, not to proceedings on remand.¹ *Collins v. Klamath County*, 28 Or LUBA 553 (1995) (ORS 197.763(2)(3) and (8)); *Citizens for Responsible Growth v. City of Seaside*, 26 Or LUBA 458, 462 (1994) (ORS 197.763(6)). Nonetheless, LUBA has stated that if a local government considers new evidence on remand, all parties must be given an opportunity to respond to that new evidence. *DLCD v. Umatilla County*, 39 Or LUBA 715, 733 (2001). The hearings officer determined that the processes set forth in ORS 197.763 set forth sufficient due process protection to defeat any process-related attack at LUBA, and therefore followed the framework set forth in the statute for this case.

oversight on the hearings officer's part, who had considered oysters in a more generic fashion, as opposed to adopting "species-specific" analysis.

For this reasons, LUBA correctly held that the findings did not adequately consider potential impacts on this particular species of native oyster:

Whether the county is obligated to address in its findings the specific issue of impacts on the Olympia oyster is a more difficult question. The 2009 article of course did not consider impacts of the pipeline on the Olympia oyster, and it may well be the case that the same measures and rationales Ellis relied upon to conclude that the pipeline would not significantly impact invertebrates in general and the commercial oyster beds apply equally to the Olympia oyster. However, we cannot tell from the findings and the record whether that is the case. The Ellis study assumed that no Olympia oysters were present in Haynes Inlet, something which is apparently no longer true. One of the specific measures suggested by Ellis was to route the pipeline away from the commercial oyster beds, presumably to reduce impacts to the non-native oysters that occupy the beds. That re-routing may take the pipeline directly through prime Olympia oyster habitat, for all we know. The Olympia oyster apparently depends upon the existence of a hard substrate. There may be no hard substrate on the pipeline route, or the dredging may not affect substrate, or the Olympia oyster may be no different in this regard from any other oyster or invertebrate, but again we do not know. Because the county's findings regarding protection of estuarine resources, including the adopted Ellis report, do not address these issues, which appear to be legitimate issues regarding compliance with applicable criteria, we agree with petitioners that remand is necessary for the county to adopt responsive findings addressing potential impacts on the Olympia oyster.

Citizens Against LNG, slip op 14-15. Thus, this proceeding is necessary to further consider whether the pipeline project will "protect" the existing population of native Olympia Oysters colonizing Haynes Inlet.

C. What Are the Key Issues on Remand?

The applicant's consultants had initially stated that they had not seen any Olympia oysters in the proposed pipeline right of way. As it turns out, additional investigation by the applicant confirmed that certain portions of the pipeline route is inhabited by Olympia oysters. Given that reality, there are ~~three~~ two fundamental questions before the hearings officer and the Board of Commissioners:

1. To what extent is Haynes Inlet populated by Olympia Oysters, and what factor(s) currently inhibit further increases in the population of these native oysters in Haynes Inlet?

Note: Because the parties submitted conflicting evidence on these two points, the Board is tasked with determining which party provided the better evidence regarding the number and location of Olympia oysters in Haynes Inlet.

2. Is there substantial evidence in the whole record to support a finding that the applicant's Oyster Protection Plan and Oyster Mitigation Plan will "protect" the resource productivity of existing Olympia oysters in Haynes Inlet?

Note: The question can be also framed in the following manner: Is there substantial evidence to support a finding that construction of the pipeline will not result in anything other than temporary, insignificant, and *de-minimus* impacts on the population of Olympia oysters due to causes such as loss of habitat / burial and/or loss of reproductive ability due to increased sedimentation?

This overarching question can be further expanded to include a set of more discrete questions:

- 2a. Will the applicant's "Protection Plan," which calls for the relocation of all oysters in the proposed pipeline right of way to a site a few hundred feet northwest of the right of way, "protect" the resource productivity of existing Olympia oysters?
- 2b. Will the applicant's "Mitigation Plan," which calls for the addition of 30 cubic yards of Pacific oyster shell to the mudflats (in the vicinity of MP 2.9-3.2), create additional hard substrate that will further enhance the recovery of Olympia oysters in Haynes Inlet?
- 2c. Will the dredging operations create sedimentation that will result in anything other than temporary, insignificant, and *de-minimis* impacts on the population of Olympia oysters in Haynes Inlet?

D. Scope of Review (Substantial Evidence)

1. Review of General Principles of Substantial Evidence

The outcome of this case turns on questions of substantial evidence; specifically, the question of which evidence the Board of Commissioners finds more credible and compelling. The term "substantial evidence" means "evidence that a reasonable person could accept as adequate to support a conclusion." *Constant Velocity Corp v. City of Aurora*, 136 Or App 81, 901 P2d 258 (1995). Stating the rule in the negative gives further insight into its meaning: "A finding lacks substantial evidence when the record contains credible evidence weighing overwhelmingly in favor of one finding and the agency finds another without giving a persuasive explanation." *Canvasser Services, Inc. v. Employment Dept.*, 163 Or App 270, 274, 987 P2d 652 (1999); *Armstrong v. Asten-Hill Co.*, 90 Or App 200, 752 P2d 312 (1988).

In a land use proceeding, the applicant has the burden of bringing forth substantial evidence in the whole record to demonstrate that all approval standards are met. When evidence

submitted by various parties conflicts, the County must review all of the evidence in the entire record to see if the undermining evidence outweighs the evidence on which the decision-maker seeks to rely on. *Younger v. City of Portland*, 305 Or 346, 357, 752 P2d 262 (1988).

The Board is allowed to draw inferences from the evidence presented by the parties. An inference has two parts: a primary fact and a logical deduction that arises from that primary fact. *See City of Roseburg v. Roseburg City Firefighters*, 292 Or 266, 271-72, 639 P2d 90 (1981). In many cases, the deduction may be obvious from common knowledge (such as a wet street indicating a recent rain event), but in other cases, the deduction may be less obvious. In the less obvious cases, the decision-maker should explain in the findings the basis for the deduction, so that a reviewing court can review the inference for substantial reason. *Id.*

As discussed in more detail below, the Board of Commissioners is afforded a great deal of authority to evaluate both the evidence presented by the parties, as well as the credibility of persons presenting that evidence. When faced with conflicting evidence, the decision maker is entitled to select which evidence to rely upon. That decision will not be second-guessed by LUBA or the courts, so long as it is evidence that a reasonable person would rely upon to support a conclusion. *See, e.g., Mazeski v. Wasco County*, 28 Or LUBA 178, 184 (1994), *aff'd* 133 Or App 258 (1995).²

If there is a complete absence of information on a particular point for which the applicant bears the burden of proof, the application must be denied. *Gray v. Clatsop County*, 18 Or. LUBA 561 (1989); *DLCD v. Curry County*, 33 Or LUBA 728 (1997)(local government must make appropriate findings based on substantive evidence, not an absence of findings, point a point that the applicant bears the burden of proof.). At the end of the day, however, the substantial evidence standard is a relatively low standard of proof. Courts consider the “substantial evidence” standard to be a less onerous standard than the “preponderance of the evidence” test and the “clear and convincing evidence” standards used in most civil lawsuits,

In this case, the hearings officer has determined that the applicant has provided the County with both expert and lay person testimony that a reasonable person could rely upon to reach the decision that the Oyster Protection Plan and Oyster Mitigation Plan will adequately protect Olympia oysters in Haynes Inlet. The only question is whether the opponents have provided rebuttal evidence that “so undermines” the applicant’s testimony that a reasonable person would no longer rely on it in light of the opponent’s testimony. *Angel v. City of Portland*, 22 Or LUBA 649, 659, *aff'd* 113 Or App 169, 831 P2d 77 (1992). The hearings officer does not

² In reviewing the evidence, LUBA and the Courts may not substitute their judgment for that of the local decision maker. Rather, LUBA must consider and weigh all the evidence in the record to which it has been directed, and determine whether, based on that evidence, a reasonable person would have relied on that evidence to draw the conclusion the local government arrived at. *Younger v. City of Portland*, 305 Or 346, 358-60, 752 P2d 262 (1988); *1000 Friends of Oregon v. Marion County*, 116 Or App 584, 588, 842 P2d 441 (1992). *See also Whitaker v. Fair Dismissal Appeals Board*, 25 Or App 569, 550 P2d 455 (1976) (pointing out that review of whole record for substantial evidence does not authorize a reviewing court to substitute its judgment for that of the agency as to whether an examination of all the evidence justifies the agency’s action).

believe that the opponent's evidence does so, but of course the Board is free to arrive at a different conclusion.

2. Expert testimony.

The substantial evidence questions faced in this case generally hinge on "expert" testimony. Expert testimony differs from lay person testimony because an expert is allowed to give his or "opinion" about whether a standard is met. LUBA has often stated that a local government may rely on the *opinion* of an expert in making a determination of whether a proposal satisfies an applicable standard. *Thormahlen v. City of Ashland*, 20 Or LUBA 218, 236 (1990). Additionally, LUBA has also stated that an expert witness is generally not required to explain the basis for assumptions underlying the expert's evidence, nor is evidence supporting those assumptions required to be included in the record. *Citizens for Resp. Growth v. City of Seaside*, 26 Or LUBA 458, 465 (1994); *Miller v. City of Ashland*, 17 Or LUBA 147, 170 (1988); *Hillsboro Neigh. Dev. Comm. v. City of Hillsboro*, 15 Or LUBA 426, 432 (1987).

Nonetheless, the more that an expert does to back up his opinion with facts and evidence, the more weight that a reasonable person will typically give to that opinion. *Chance v. Alexander*, 255 Or 136, 465 P.2d 226 (1970); *ODOT v. Clackamas County*, 27 Or. LUBA 141 (1994) ("Of course, we recognize that if sufficient evidence undermining an expert's assumptions is submitted during the local proceedings, it may be unreasonable for the local decision maker to rely on that expert's conclusions. In such instances, the local government's decision has a better chance of withstanding a substantial evidence challenge made in an appeal to LUBA if the record includes an explanation of, or evidence supporting, the expert's assumptions.").

An expert's *failure* to back up opinions with facts and evidence can result in his or her opinion being rejected by a decision-maker. An expert's mere conclusion, without and supporting facts or analysis to back it up, may not constitute substantial evidence in all cases. *Liberty Northwest Ins. Corp v. Verner*, 139 Or App 165, 168-69, 911 P2d 271 (1996). Stated another way, the expert's opinion should generally have some sort of clear foundation in order to be relied upon by a decision-maker. *1000 Friends of Oregon v. LCDC*, 83 Or App 278, 286, 731 P2d 457 (1987), *aff'd in part, rev'd in part on other grounds*, 305 Or 384, 752 P2d 271 (1988); ("[s]ubstantial evidence does not exist to support a conclusion if the only supporting evidence "consists of an opinion whose foundation is unclear or which is inconsistent with the information on which it is based."); *Dickas v. City of Beaverton*, 17 Or LUBA 574, 580-85 (1989) (Finding of adequate school capacity not supported by substantial evidence where report by school district's expert was contradicted by other evidence). For example, in *Worcester v. City of Cannon Beach*, 10 Or LUBA 307 (1983) LUBA held that when an expert witness does not offer any supporting documentation and does not state how he arrived at his conclusions, and does not explain how he is qualified to make conclusions of a scientific nature, LUBA will not find the testimony to be convincing. *Id.* at 310.

It is also important to note that lay-person testimony can, under the right set of facts, undermine contradictory expert testimony. See *Johns v. City of Lincoln City*, 35 Or LUBA 421, 428 (1999); *Johns v. City of Lincoln City*, 37 Or LUBA 1 (1999). For example, local residents may often have a better understanding of local conditions and patterns, and can use such information to undermine factual assumptions in the expert's analysis.

3. “Battle of the Experts.”

This case presents a classic “battle of the experts” situation: both parties have presented dueling expert testimony from scientists and other professionals. In a “battle of the experts” case, the decision-maker is tasked with the difficult decision of deciding which of two experts is presenting the more believable and substantial testimony. This involves a complex weighing process. There are no set rules for how conflicting evidence is to be weighed, and the question may boil down to which expert the decision-maker finds to be more believable. In *Westside Rock v. Clackamas County*, 51 Or. LUBA 264, 286-7 (2006), LUBA stated:

Finally, we note that we agree with petitioner that in a case like this one, the testimony of experts is likely to be critical. Boards of county commissioners can understand most of the fundamental concepts that are in play here, even if they are not trained as engineers or geologists. * * *

But while a board of county commissioners (or the Land Use Board of Appeals for that matter) may be able to grasp these fundamental concepts, it takes experts to collect and analyze data and draw scientific and engineering conclusions from that data. In such cases it frequently will come down to which of the experts the decision maker finds more believable.

Some factors that *may* give a decision-maker reason to choose one expert’s testimony over another include:

- Does one expert lack the correct qualifications to give an opinion on a particular topic? *Tipperman v. Union County*, 44 Or LUBA 98 (2003); *Westside Rock v. Clackamas County*, 51 Or. LUBA 264, 286-7 (2006).
- Are any of the expert’s key factual or legal assumptions incorrect, or cast in doubt by other evidence in the record? *Wal-Mart Stores, Inc. v. City of Bend*, 52 Or. LUBA 261 (2006); *Ekis v. Linn County*, 19 Or LUBA 15 (1990).
- Is there solid “foundation” evidence which the expert relies on to draw his or her conclusion? (For example, a conclusion based on one “study” may, in some cases, not be as reliable as a conclusion based on many studies. Conversely, a conclusion based on one study may be more substantial than opposing conclusions based on many other conflicting studies, if there is something that distinguishes that lone study, such as newer, more refined sampling technique, etc.). *1000 Friends of Oregon v. LCDL*, 83 Or App 278, 286, 731 P2d 457 (1987), *aff’d in part, rev’d in part on other grounds*, 305 Or 384, 752 P2d 271 (1988); *Bartels v. City of Portland*, 20 Or LUBA 303 (1990) (“[i]n view of the undisputed develop constraints present on this site, the largely unexplained expressions of confidence by [geologists] that the proposed residential development is feasible are not sufficient to comply with [the code.]”).

- Does the expert fail to consider alternatives? *Wal-Mart Stores v. City of Hillsboro*, 46 Or LUBA 680 (2004).
- Are there internal inconsistencies in the expert's testimony? *Concerned Citizens of the Upper Rogue and Don Carroll v. Jackson County*, 33 Or LUBA 70 (1997).

Finally, a decision-maker may take into account some less tangible factors as well:

- How confident and decisive is the expert in his or her assessments? Does the testimony contain significant qualifying language? Vague, waffling, or hair-splitting testimony may lead a decision-maker to question the expert's conclusions.
- Does the expert come across as non-credible for any reason?
- Is the expert's opinion entitled to less weight because of the fact that he or she has a track record of being wrong in the past?
- Is the expert someone who is particularly renowned in his or her field?
- Is the expert's opinion entitled to less weight because he or she is being paid, or because he or she is clearly aligned with a certain political philosophy, particular industry, or advocacy group, etc. Note: just because an expert is being paid or is associated with a particular policy perspective or "camp" does not necessarily make their testimony inherently unreliable or unsubstantial. However, these types of intangible factors are things that a decision-maker may take note of when undertaking the process of weighing conflicting testimony.

The above-list is not intended to be exhaustive. Rather, it is a non-exclusive list of the types of consideration that a decision-maker might reasonably take into account when weighing expert testimony.

If the County determines that either parties' expert testimony was credible and sufficiently substantial to support a conclusion, then the choice of which expert evidence to believe is up to the County. *Tigard Sand and Gravel v. Clackamas County*, 33 Or LUBA 124, 138, *aff'd* 149 Or App 417, 943 P2d 1106, *adhered to on recons* 151 Or App 16, 949 P2d 1225 (1997); *Molalla River Reserve v. Clackamas County*, 42 Or LUBA 251, 268-69 (2002); *Eugene Sand & Gravel v. Lane County*, 44 Or. LUBA 50 (2003).

4. The Opponent's Conundrum: Provide Direct Evidence of Non-Compliance, or Present Evidence Intended to Critique the Applicant's Evidence.

In its arguments to the hearings officer, the applicant repeatedly chastises the opponents for not coming up with much in the way of *direct* evidence of a failure to protect the oyster resource, but instead merely offering critiques of the applicant's evidence. The hearings officer does, in this opinion, express a certain degree of agreement with the applicant's sentiment in this regard. At the same time, the hearings officer recognizes that opponents often do not have the financial resources to commission their own independent studies. It is important to remember that the applicant has the burden of proof on issue of whether its construction will protect the

resource. The opponents' evidence should not be discounted, *in and of itself*, merely because it is a critique and not direct evidence of non-compliance.

In *Wal-Mart Stores, Inc. v. City of Bend*, 52 Or. LUBA 261 (2006), the hearings officer denied a conditional use permit for a Wal-Mart store. The hearings officer chose to believe the opponents' testimony over that provided by the applicant's experts. The applicant, Wal-Mart, appealed to LUBA, and argued that the opponents' testimony should have been discounted because it consisted solely of a critique of the Wal-Mart's evidence. LUBA rejected that argument, as follows:

Neither do we agree with petitioner's suggestion that the opponents' experts' testimony should be discounted significantly because it is largely a critical review of the work that petitioner's experts have done rather than an original effort by those experts to predict how the expected traffic will affect transportation facilities. As we have already noted, that difference in approaches is largely a function of, and dictated by, the fact that the applicant has the burden of proof and the opponents do not.

LUBA concluded by stating:

The critical issue for the local decision maker will generally be whether any expert or lay testimony offered by * * * opponents raises questions or issues that undermine or call into question the conclusions and supporting documentation that are presented by the applicant's experts and, if so, whether any such questions or issues are adequately rebutted by the applicant's experts.

Id. at 276. Thus, although an opponent's direct evidence will often be much more persuasive than a mere critique, an effective critique can be enough to put an expert's evidence into question. *See, e.g., Oregon Shores Conservation Coalition v. Coos County*, 55 Or LUBA 545 (2008), *aff'd w/o op.* 219 Or App 429, 182 P.3d 325 (2008).

5. Conclusion.

The hearings officer believes that the conclusions made herein would be affirmed if appealed. However, the Board of Commissioners does not have to accept the conclusions of the hearings officer. The Board has the authority to: (1) re-weigh the evidence, and (2) modify or overturn the hearings officer's conclusions. There are other conclusions that could be drawn from the evidence, as well as other plausible interpretations that could be adopted by the Board. As discussed above, the Board has fairly wide latitude under state law to draw its own conclusions about the evidence.

E. What are the Applicable Legal Standards?

On remand, there is only one core legal standard that the Board of Commissioners must apply. As a short-hand, the hearings officer will refer to this standard as the "protect" standard.

As relevant here, the “protect” standard is found in two places in the County’s zoning code: the management objectives for the two aquatic zoning districts at issue: 11-NA and 13A-NA.

1. Overview of the Management Objective Standards: Aquatic Zoning Districts 11-NA and 13A-NA.

Under LUBA's remand order, the two applicable substantive standards are the management objectives for the aquatic zoning districts 11-NA and 13A-NA. Zoning district 11-NA is located on the east side of the Highway 101 Bridge, and consists primarily of intertidal mud flat areas. Zoning district 13A-NA is generally located on the west side of the bridge, and consists primarily of sub-tidal areas. The management objective for zoning district 11-NA is set forth at Coos County Zoning and Land Development Ordinance (LDO) 4.5.405, and provides, in relevant part:

Management objective: This extensive intertidal/marsh district, which provides habitat for a wide variety of fish and wildlife species shall be managed to protect its resource productivity. (Emphasis added).

The management objective for zoning district 13A-NA is set forth at LDO 4.5.425, and provides, in relevant part:

Management objective: This district shall be managed to allow the continuance of shallow-draft navigation while protecting the productivity and natural character of the aquatic area. (Emphasis added).

These two standards are nearly identical – 11-NA requires the county to "protect" resource productivity, and 13A-NA requires the county to "protect" the productivity and natural character of the aquatic area. Under LUBA's remand order, the County is required to consider potential impacts of the pipeline on the Olympia oyster, and to evaluate the extent to which the applicant's proposal will "protect" such oysters under the two objectives quoted above. Thus, the scope of this proceeding is narrow.

2. LUBA Case Law Interpreting the “Protect” Standard.

LUBA discussed what is required to "protect" aquatic resources in its final opinion remanding this case:

Petitioners also argue that the obligation to 'protect' aquatic resources requires reducing harm to such a degree that there is at most a *de minimis* or insignificant impact on aquatic resources, including both commercial oyster beds and Olympia oysters, under the reasoning in *Columbia Riverkeeper v. Clatsop County*, ___ Or LUBA ___ (April 12, 2010), *aff'd* 238 Or App 439, 243 P3d 82 (2010), and that measures that simply reduce or mitigate impacts on estuarine resources are not sufficient to 'protect' those resources,

for purposes of local comprehensive plan provisions that implement Statewide Planning Goal 16 (Estuarine Resources).

Turning to the last argument first, intervenor argues that the county did not attempt to rely on measures that simply reduce or mitigate impacts, as was the case in *Columbia Riverkeeper*, but instead found, based on substantial evidence, that the impacts will be 'temporary and insignificant' and thus estuarine resources will be 'protected.' We agree with intervenor that the county did not misunderstand its obligation to 'protect' estuarine resources, and that findings that impacts will be 'temporary and insignificant' are focused on the correct legal standard for purposes of the comprehensive plan management district language that implements Goal 16.

Citizens Against LNG vs. Coos County, ___ Or LUBA ___ (LUBA No. 2010-086, March 29, 2011), slip op 13-14. Thus, LUBA concluded that Coos County's findings that impacts on Olympia oysters would be "temporary and insignificant" are sufficient to satisfy the "*de minimis*" standard of *Columbia Riverkeeper*.

The LUBA opinion in the *Columbia Riverkeeper* case is also instructive on the meaning of "protect" within the context of Goal 16. That case involved a proposed rezoning of 46 acres of submerged land from "Aquatic Conservation" to "Aquatic Development" in order to allow dredging of the river for a proposed LNG facility within the rezoned area. The submerged lands at issue would be permanently impacted by the proposal. The project proposed a new channel, turning basin and docking facility in a location identified as a "traditional fishing area" in the Columbia River. The county comprehensive plan included a requirement that traditional fishing areas "shall be protected when dredging, filling, pile driving or other potentially disruptive activities occur."

The county found that the resources could be adequately "protected" through use of very general minimization and mitigation measures designed to either reduce harm to general estuarine values or to attempt to reduce harm to the specified resources. One example of "protecting" the resource cited by the county was the fact that applicants designed the dredge footprint "to maximize efficient use of the current basin, minimize the amount of dredging and reduce impacts to fisheries, thereby reducing the area impacted and protecting the habitat as a whole." *Columbia Riverkeeper*, footnote 6. In other words, the applicant merely proposed to make the impacted area a little bit smaller.

LUBA noted that the word "protect" is defined in Goal 16 as "save or shield from loss, destruction, or injury or for future intended use," and that "the county's interpretation of the meaning of 'protect' appears to conclude that protection of specific resource can be accomplished through use of some measures that either reduce harm to general estuarine values or attempt to reduce harm to the specified resources." *Id.* at slip op 16. LUBA then discussed the meaning of the word "protect" within the context of Goal 16, and held:

Thus, the development that is to be allowed by the disputed rezone is not consistent with the Goal definition of 'protect' unless the measures proposed in seeking to rezone the property are sufficient to reduce harm to such a degree that there is at most a de- minimis or insignificant impact on the resources that those policies require to be protected."

Id. at slip op 18-19.

As discussed in more detail below, the applicant's proposal fits within the parameters of the type of measures described by LUBA that can "protect" resources within the meaning of Goal 16. Unlike the situation in *Columbia Riverkeeper*, where the proposal was just to *minimize* impacts on resources that would without question be permanently harmed by development, in the present case the evidence supports a finding that the Olympia oysters will - as a whole - not be impacted, either temporarily or permanently, by pipeline construction. Even the temporary impacts will be offset by the proposed mitigation plan, which will increase the population densities of Olympia oysters within Haynes Inlet.

In considering the question, the hearings officer notes that no party here argues that the "protect" standard is so strict that it absolutely precludes any individual oysters from being killed or harmed (*i.e.* "taken."). The fact that the Code allows development of utilities, bridge crossings, and aquaculture in the 11-NA zone precludes such a strict interpretation. The standard allows some individuals to be "taken" so long as the overall level of harm to the population is *de minimis* or insignificant.

a. The Meaning of "*De minimis*."

The hearings officer asked the parties to research Oregon case law to see if there is any useful guidance which would tend to give meaning to the phrase "*de minimis*." The hearings officer attempted some independent research on the issue as well. Neither the hearings officer or any other party was able to come up with any research that was particularly enlightening.

The phrase "*de minimis*" is defined as follows in Black's Law Dictionary, Sixth Edition:

"De minimis non curat lex. The law does not care for, or take notice of, very small or trifling matters. The law does not concern itself about trifles. Provision is made under certain criminal statutes for dismissing offenses which are "de minimis." *See, e.g.*, Model Penal Code §2.12."

The opponent's attorney, Ms. Corrine Sherton, cites to the Meriam Webster's On-Line Dictionary, which defines "*de minimis*" as "lacking significance or importance: so minor as to merit disregard. Along those same lines, the term "insignificance" is defined as "not worth considering, unimportant." Unfortunately, all of these are value-laden definitions that provide little in the way of concrete guidance.

Ms. Sherton has also points out that “temporary” impacts cannot be presumed, as a matter of law, to be “insignificant.” *See Hashem v. City of Portland*, 34 Or LUBA 629, 632 (1998). While *Hashem* does say exactly that, the context in which the statement arises in that case makes it weak precedent for this case. Nonetheless, the hearings officer does agree, to a certain extent, with the general thrust of the argument. It is possible that a temporary impact on a resource could potentially be substantial. For example, a one-time release of toxic chemicals that kills a large quantity of oysters, would be substantial even though it only happens one time. To Ms. Sherton’s point - excessive sedimentation could be the equivalent of a release of toxic chemicals in terms of its effects on the oyster population.

The applicant’s attorney, Mr. Roger Alfred, states that “a detailed analysis of what constitutes “*de minimis* or insignificant impacts” is not necessary in this proceeding.” According to the applicant:

The applicant has provided substantial evidence to support a finding that there will be *no* negative impacts on Olympia oysters resulting from construction of the pipeline. The applicant’s proposed relocation and mitigation plan will not merely *protect* existing oysters in Haynes Inlet, but will actually result in a significant increase in native oyster populations by expanding the amount of hard substrate habitat in the inlet.

In a letter dated October 10, 2011, Ms. Corrine Sherton agrees with Mr. Alfred that it is not important to parse out a precise definition of *de minimis*, but for diametrically opposed reasons. She believes that the evidence in the record leads to a clear finding of significant impact on the Olympia oysters and their habitat.

The hearings officer is not in agreement with the applicant that “that there will be *no* negative impacts on Olympia oysters resulting from construction of the pipeline.” Certainly, it stands to reason that some of the Oysters proposed for relocation will be missed and ultimately killed. It is possible, though unlikely, that others may not survive transport and relocation. Finally, there may be some overall disruption with the rate of recovery of the oyster population, resulting from sedimentation and other effects. For this reason, the hearings officer believes that the concept of “*de minimis*” harm is highly relevant here. Thus, the hearings officer seeks to ensure that the applicant’s plan is feasible and likely to “protect” the resource productivity of the Olympia oyster by demonstrating that the overall level of harm to the population is *de minimis* and insignificant.

II. LEGAL ANALYSIS

According to the applicant, there is a legitimate question as to whether the management objectives for both the 11-NA and 13A-NA zoning districts must be considered. Direct evidence provided by professional divers hired by the applicant indicates that there are *no* Olympia oysters, or suitable habitat, located within the pipeline right of way in the 13A-NA zoning district. However, there is evidence in the record of some Olympia oysters being located on the riprap along the southern edge of the Trans-Pacific Parkway, which is within the 13A-NA zoning district; therefore, the management objectives for both zoning districts should be applied.

A. Compliance with 11-NA Management Objective (Intertidal Mudflats East of Hwy 101).

The potentially applicable standards on which LUBA remanded are the management objectives for the 11-NA and 13A-NA aquatic zoning districts. The 11-NA zoning district is generally contiguous with the boundaries of Haynes Inlet, on the east side of the Highway 101 bridge, which is predominantly an intertidal mud flat area. The 13A-NA zoning district is located on the west side of the Highway 101 Bridge and to the south of Trans-Pacific Parkway, and includes more subtidal areas.

For purposes of this proceeding, the primary standard is the 11-NA management objective for Haynes Inlet. As noted in the Ellis Oyster Survey, Olympia oysters are typically most abundant in shallow subtidal areas but are also found on the lower elevation portions of subtidal flats. In Haynes Inlet, conditions appear to favor a portion of the intertidal mud flat habitat rather than subtidal habitat because no evidence of suitable substrate or Olympia oysters were found in the subtidal portion of the pipeline right of way. Figure 7 in the Ellis Oyster Survey depicts the grab sample locations in the subtidal areas of the 13A-NA zoning district, which did not reveal the presence of any Olympia oysters or the hard substrate that is required for their habitat.

1. Issues Related to the Density of Olympia Oysters Along the Pipeline Route.

a. Applicant's Initial Evidence on Remand: the "Ellis Oyster Survey."

In support of its application for approval by the Coos County Planning Department, PCGP submitted a report that was flawed with respect to how the proposed Pacific Connector Gas Pipeline might impact the Olympia oyster (*Ostrea lurida*) and the "resource productivity" of Haynes Inlet. Page 8 of the original 2010 report stated:

"The only native oysters to Coos Bay are Olympia oysters * * *. However, they are not known to inhabit the Project Action Area (ODLCD, 1998)"

The applicants now concede that that the above statement is incorrect inasmuch as it suggests that Olympia oysters are not present in the Project Action Area.³

³ Ms. McCaffree takes Dr. Ellis to task for this oversight, noting that Dr. Ellis and his team had previously opined that no Olympia oysters were found along the pipeline route. Ms. McCaffree challenges the credibility of Dr. Ellis based on a statement included in his March 2009 Wetland Mitigation Plan that no native oysters were observed on mudflat habitat or other habitat types along the pipeline route. This is addressed by Dr. Ellis in his letter dated October 17, 2011:

"The prior statement that no Olympia oysters were observed on mudflat habitat or other habitat types along the pipeline route was included in our March 2009 Wetland Mitigation Plan, and was based on observations made during the eelgrass survey of the pipeline right of way. The eelgrass survey was conducted primarily from a boat when water depth was sufficiently low to allow observation of eelgrass on the substrate. The primary focus of the survey was to

In response to the LUBA remand, the applicant again hired Ellis Ecological Services to undertake a more specific survey of the 11-NA and 13A-NA zoning districts to identify the locations of any Olympia oysters in or around the proposed pipeline route.

The applicant's biologist, Bob Ellis of Ellis Ecological Services, undertook a survey of the intertidal portions of Haynes Inlet east of the Highway 101 bridge on June 28-30, 2011. Mr. Ellis and his two-person team spent two long days traversing, on foot, the entirety of the intertidal portions of the 250-foot right of way, using GPS units to map their tracks and the specific locations where they found Olympia oysters.

After completing the survey, Ellis Ecological produced a technical memorandum dated September 13, 2011 entitled "Pacific Connector Gas Pipeline: Olympia Oyster Survey," ("Ellis Oyster Survey"). Sections 1 and 2 of the Oyster Survey provide introductory and background information regarding Olympia oysters in general and their presence in the Coos Bay area. Section 3 of the Ellis Oyster Survey provides a detailed description of the survey methods and results, with Figure 8 illustrating specific locations within the 250-foot pipeline right of way where Olympia oysters were found. Section 4 provides an analysis regarding the potential impacts from pipeline construction on Olympia oysters. Section 4.1 provides proposed protection methods that will protect existing oysters from any adverse impacts, and will ensure the continued viability of Olympia oysters in Haynes Inlet.

The Ellis Oyster Survey provides the following direct evidence regarding the number and location of Olympia oysters within the pipeline right of way:

- The vast majority of the Haynes Inlet intertidal areas are mudflats with no hard substrate habitat that would support Olympia oysters.
- There are, generally speaking, only very low densities of Olympia oysters within the 0.3-mile section of the pipeline route between mileposts 2.9 and 3.2. Specifically, the surveyors found 79 Olympia oysters within the 0.3-mile segment and only 10 Olympia oysters in the remaining 2.1 miles. Oyster Survey, Figure 8.

identify the location of eelgrass beds along the proposed pipeline crossing of Haynes Inlet. However, during the eelgrass survey no concentrations of substrate that would be suitable for Olympia oyster (*e.g.* Pacific oyster shells, large pieces of bark, rocks or gravel) and no Olympia oyster were observed. Observations made during the eelgrass survey provided the best available site-specific information at the time the previous testimony was submitted. The prior statement was accurate, because we observed no native oysters or their habitat in the mudflat areas during the eelgrass survey. Also, the statement is not inconsistent with our current survey because we encountered virtually no Olympia oyster or their habitat in the mudflat areas east of MP 3.2." Oct. 17 letter from Bob Ellis, page 2.

The applicant has provided direct and credible evidence regarding the amount and location of Olympia oysters in Haynes Inlet; meanwhile, the opponents have provided only estimates based largely on unsupported assumptions which are contradicted by their own evidence. The weight of the evidence strongly favors recognition that the applicant's Oyster Survey constitutes substantial evidence that can be relied upon by the County.

their work and found that Ellis' crew had under-reported oyster densities in any significant manner.⁵ This is particularly true since Ellis' prior reporting on the issue had been found to be inaccurate.

b. Discussion of Dr. Rumrill's Oyster Survey Relied on By the Opponents.

On June 29th and June 30th, 2011, a team led by Dr. Steven Rumrill, Research Program Coordinator, South Slough National Estuarine Research Reserve Estuarine and Coastal Science Laboratory in Charleston, Oregon undertook a survey of Olympia oysters at nine sites within Haynes Inlet. It does not appear that the Rumrill survey was undertaken for the specific purpose of rebutting the applicant's evidence. Rather, the Rumrill survey appears to have undertaken independent of the PCGP case, and seems to merely be aimed at confirming the presence and densities of Olympia Oysters at selected locations within Haynes Inlet. That fact gives the Rumrill survey a high degree of reliability as evidence, as far as it goes, but it severely limits its usefulness in answering the key questions presented in this case.

Dr. Rumrill and his team chose nine (9) locations in which to look for Olympia Oysters. The locations selected for their search seems to be based on ease of access to those locations. Four of the nine locations were on the riprap along the sides of the Highway 101 bridge and the Trans-Pacific Parkway (opponents' locations numbered 1-4). High populations of adult and juvenile Olympia oysters (up to 28 individuals per a ~10" by 10" square) were found in the riprap. Another four of the nine locations were on rocky shorelines. Patchy populations of adults and juveniles were found at these four other sites. At one site, a mudflat the opponents call "site number 9," Olympia oysters were not found. That site is the only location that is actually within the pipeline's right of way. Dr. Ellis and his team found one Olympia oyster in that general vicinity.

Thus, the overall conclusion of the 2011 Rumrill survey is that the Olympia oysters in Haynes Inlet show a clear preference for rip-rap, and, presumably, other large rocky outcroppings. This is consistent with the findings of the article by Kerstin Wasson entitled *Informing Olympia Oyster Restoration: Evaluation of Factors that Limit Populations in a California Estuary, Wetlands*, 4 May 2010, at p. 455, 457.

Inexplicably, the opponents did not commission a targeted survey that searched for oysters along the proposed pipeline's actual route. Rather, the opponents cite to the Rumrill survey and state:

Abundant adults and juveniles were found at four of the nine sites, including one site (Site 3) that is directly in the path of the proposed route of the Pacific Connector Gas Pipeline. At this site, the density of Olympia oyster was 448 individuals per square meter.

⁵ In this regard, this case differs from the typical land use case because opponents have equal access to the site. In most land use cases, opponents cannot gather evidence on the applicant's site without running the risk of being found guilty of criminal and/or civil trespass.

at those locations. However, the hearings officer specifically rejects any effort to estimate the total population of Olympia oysters in Haynes Inlet or in the pipeline route based off of the 2011 Rumrill Survey, the 2006 survey, or any other survey. It seems rather obvious that locations that feature similar habitat to that identified in the Rumrill survey will potentially have similar densities of oysters, all other environmental factors being equal. However, estimates of oyster densities on rip-rap or rocky shorelines says little about the population densities of oysters living in the mudflats or in the sandy subtidal areas of Haynes Inlet.

If the opponents really wanted to credibly challenge the Ellis Oyster Survey, it was incumbent upon them to conduct a survey of their own *along the pipeline route*. At the very least, the opponents should have spot-checked the Ellis Oyster Survey. Any evidence of underreporting in the Ellis study would have been highly damning evidence. However, the opponents never generated such direct evidence. At the hearing, the hearings officer went out of his way to indicate the need for such evidence, and gave both parties enough time to develop this sort of evidence.

The opponents' failure to present direct evidence about the density of Olympia oysters in the proposed pipeline route severely undermines their approach to this case. The opponents seek to use the Rumrill survey as evidence of overall population densities, but that would only work if the habitat along the route were both (1) fairly uniform, and (2) similar to the areas in the Rumrill study where oysters were found. The hearings officer is reminded about the old joke about the guy who looked for his keys at night in an area where the light was plentiful, even though he knew he lost his keys in a different location.⁸ A similar analogy occurs here: the opponents point to high populations of Olympia Oysters in the rip-rap next to the causeway, and yet seem to have been unwilling or unable to look for Olympia oysters along the actual pipeline route.

Jody McCaffree states that the hearings officer should believe the opponent's experts over PCGP's "hired gun" experts: "It would seem more reasonable and reliable to have the word of an Olympia Oyster expert over someone who is paid by the very industry wanting to do to the development, particularly since it would be in the best interest of the Pacific Connector Gas Pipeline to find that there were no Olympia oysters or very few that would have to be dealt with." See McCaffree letter dated Oct. 10, 2011.

In the abstract, the hearings officer is sympathetic with the sentiment set forth in Ms. McCaffree's statement quoted above. After all, it can be expected that all experts hired by

⁸The joke goes as follows:

A drunk was crawling about on the sidewalk under a lamppost at night.
A police officer came up to him and inquired, "What are you doing?"
The drunk replied, "I'm looking for my car keys."
The officer looked around in the lamplight, then asked the drunk, "I don't see any car keys. Are you sure you lost them here?"
The drunk replied, "No, I lost them over there", and pointed to an area of the sidewalk deep in shadow.
The policeman then asked, "Well, if you lost them over there, why are you looking over here?"
The drunk looked at him and said, "Because the light is better over here."

advocates to a land use proceeding are going to present evidence in a light favorable to their clients, at least to the extent that they can credibly do so. However, the hearings officer must make a decision based on the evidence in the record, while keeping in mind that the applicant bears the burden of proof. In this case, there are only two pieces of direct evidence that provide information about the presence of Olympia oysters along the pipeline route: the Ellis Oyster Survey and the portion of the 2011 Rumrill study addressing "Site 9." There has been no "Olympia Oyster expert" that has actually walked the proposed right of way. None of the opponent's "critique evidence" sufficiently undermines the direct evidence set forth in either of the two surveys mentioned above. As Dr. Ellis correctly notes, "it is interesting that * * * the opponents prefer to criticize the methodology of the [Ellis] survey and challenge its results, rather than simply conducting their own survey of the pipeline right of way." See Ellis letter dated Oct. 17, 2011. Moreover, while it seems true that Dr. Rumrill is very credible expert on Olympia oysters, he specifically does not provide his "word" (opinion) regarding the presence of Olympia oysters along the pipeline route.

Again, had the opponents actually provided evidence that proved that the PCGP scientists had actually missed significant quantities of oysters in their survey, then the Ellis Oyster Survey would not constitute substantial evidence. However, merely providing evidence that oysters are abundant in the nearby rip-rap and rocky shoreline, combined with evidence that Olympia oysters are hard to visually locate and identify on the mudflats, is not sufficient to undermine the Ellis Oyster Survey to the point where it can be said that a reasonable person would not rely on the Ellis Oyster Survey to support a conclusion regarding the rough number of oysters in the pipeline right of way. The applicant has met its burden of proof to demonstrate that the amount of oysters in the actual pipeline route is so low as to be insignificant to the overall productivity of the resource.

To some extent, the Rumrill survey actually supports the applicant's case. First, the fact that the Rumrill survey found no Olympia oysters in the single mudflat location they surveyed supports a finding that the mudflat areas do not typically provide hard substrate habitat, and therefore do not contain significant numbers of Olympia oysters. Indeed, the fact that the Ellis Oyster Survey actually found an oyster in that same general location lends further credibility to the Ellis Survey.

Second, the presence of relatively large number of adult Olympia oysters in the rip-rap, indicates that these mature oysters will be able provide an ample supply of larvae to populate the Pacific oyster shells that will be deposited over the pipeline route by PCGP after the construction is complete. The hearings officer finds, in this regard, that it is the lack of hard substrate that is the primary factor that is inhibiting the expansion of Olympia oyster habitat in Haynes Inlet. See Groth & Rumrill (2009), at p. 57 ("Our field observations indicate that the availability of suitable substrate is likely a key limiting factor that hinders further recovery [of Olympia oysters] in Coos Bay."); Chernaik Leteter dated Oct. 10, 2011, at p. 7 (Quoting USACE study). There is no evidence of other limiting factors, such as predation by snails or flatworms, competition from other space occupants, water pollution, or disease. See *Factors Preventing the Recovery of Historically Overexploited Shellfish Species Ostrea Lurida*, (Trimble 2009). In this regard, the oft-repeated real estate adage "built it, and they will come," seems to be particularly instructive: if the goal is to increase the density of Olympia oysters in Haynes Inlet, the solution is more hard substrate. See Groth email dated Nov. 10, 2011. Compare Wasson, *Informing Olympia Oyster*

Restoration: Evaluation of Factors that Limit Populations in a California Estuary, Wetlands, 4 May 2010, at p. 457 (noting that the *presence* of hard substrates in a California estuary did not guarantee the presence of oysters, the *absence* of hard substrate in the same estuary did guarantee the absence of oysters).

2. Issues Related to the Applicant's Oyster Protection/Relocation Plan (11CA Zone)

a. Relocation of Olympia Oysters who Currently Live in the Pipeline's Proposed Right of Way

In order to avoid impacts from pipeline construction, the applicant is proposing to protect the Olympia oysters by collecting all live oysters within the 250-foot wide pipeline right of way and relocating them by hand to adjacent mud flat areas to the northwest of the pipeline route. Because Olympia oysters typically attach themselves to hard substrate such as rocks, shells, and metal, the applicant's proposal essentially involves moving all of the hard substrate in the route which harbor oysters.

The applicant's three-person team found 89 Olympia Oysters along the pipeline route over a two-day period (not including the 1400 s.f. "hotspot" caused by the man-made introduction of hard substrate in the form of discarded Pacific oyster shells). At the hearings, Dr. Ellis estimated the number of oysters that would need to be relocated as a "bucketful." Even if Dr. Ellis's team found only 10% to 25% of the Olympia oysters in the right of way, it still seems feasible for a larger team to capture most, if not all, of the oysters in one or two days.

i. The Applicant Can Feasibly Train a Team to Locate Oysters.

The opponents do not believe that the applicant's relocation plan is feasible. The opponents argue that Dr. Ellis and his team of workers will miss too many oysters during the removal process, because they may have an insufficient level of training in locating and identifying oysters. The hearings officer agrees that it would be inappropriate to use untrained day laborers to conduct this task. However, with a reasonable amount of training and supervision, a team of college undergraduate or graduate-level biology students or other similar personnel could easily master the task. In the case of the Glenbrook Nickel site, the oyster removal was conducted by personnel from ODFW and the South Slough National Estuarine Reserve (SSNERR). It is not clear from the record whether these personnel had any specialized training in oyster location / identification.

The opponents take great pains to explain that oysters can be hard to detect and identify. In a letter dated October 8, 2011, Dr. Danielle Zacherl points out that "[o]ysters are notoriously morphologically plastic, difficult to identify, and in the case of the species of the genus *Ostrea*, cryptic in appearance." She further states that Olympic oysters have additional features that make them hard to spot, including: small size, heavily fouled shells, muddy habitat, and their preference for the underside of hard substrates. Dr. Chernaik uses Dr. Zacherl's statement to cast doubt on Bob Ellis' team's ability to locate oysters.

Dr. Ellis responds to in his letter dated October 17, 2011, where he acknowledges that it could be difficult to locate and identify Olympia oysters in Dr. Zacherl's study sites in Newport Bay, California. The Newport Bay site varied between 48% and 85% hard substrates. Compare photograph of Newport Bay, CA site, Figure 1 of Ellis Letter dated Oct, 17, 2011. However, Dr. Ellis notes that "this is a much different situation than Haynes Inlet, which is essentially a vast mudflat that contains little or no rocks, shells or other substrates, as illustrated in Figures 2 through 5." Dr. Ellis's argument seems intuitively correct to the hearings officer.

Dr. Zacherl rebuts Dr. Ellis's comments with the following discussion excerpted from her letter dated November 14, 2011:

If the conditions are as the expert of PCGP contends ("essentially a vast mudflat that contains little or no rocks, shells, or other substrates"), then significant training would be even more essential for finding and identifying Olympia oysters in Haynes Inlet. The visual profiles of Olympia oysters can be more difficult to discern in mudflats, where individuals can be partially submerged, or otherwise obscured by the muddy floor of the intertidal zone, than in areas with large amounts of hard substrate. When we survey for oysters, the easiest locations to survey are those containing hard substrate, particularly vertically oriented substrate where mud deposition is much reduced. (Emphasis in Original)

See Zacherl Letter dated Nov. 14, 2011, at p.2. This last statement lacks credibility, in part because Dr. Zacherl has not visited Haynes Inlet and is not familiar with the conditions at that site. All of the previous testimony from both parties' experts was universally consistent in stating that the oysters generally *required* hard substrate to settle on and grow, and were only rarely found lying directly on the mud. See e.g., Wasson, *Informing Olympia Oyster Restoration: Evaluation of Factors that Limit Populations in a California Estuary*, Wetlands, 4 May 2010, at p. 457 (noting that the *presence* of hard substrates in a California estuary did not guarantee the presence of oysters, the *absence* of hard substrate did guarantee the absence of oysters). Hard substrate, whether it is rocks, shells, or scrap metal, is particularly easy to spot on the mudflats in Haynes Inlet, in part because of color differences, but also because the water traveling around the objects creates long indentations in the sand and mud that are easy to spot.

Dr. Zacherl's comment, quoted above, seems to imply that Olympia oysters can routinely grow *without* the presence of hard substrate. If this is indeed the correct interpretation of the above quoted language, then the conclusion is rejected as being inconsistent with all of the other expert testimony in the record, including the Wasson article cited above. If, on the other hand, the suggestion is that both the oyster itself as well as the hard substrate to which it is attached can be concealed by the mud, that suggestion is contradicted by the photographic evidence in the record. In particular, the photographs included with the Ellis Oyster Survey seem to provide convincing evidence that the Olympic Oysters in Haynes Inlet are relatively easy to spot on the mudflat.

In this regard, Dr. Ellis's ultimate point on this issue is well-taken: even if the Olympic oyster it itself hard to identify, the hard substrate that it lives on is certainly not hard to identify.

Indeed, the photos included in the Ellis letter Dated Oct. 17, 2011 depict a large flat expanse of mud with no rocks or other obvious hard substrate. *See Id.* at Figure 2-5. In layman's terms, the primary job of the Ellis team in conducting its survey was to look for anything sticking out of the mud and turn it over. As more scientifically stated by Dr. Ellis, "the surveyors examined both the upper and lower sides of all hard substrates that were encountered, and hard substrates were exceedingly rare." Oct. 17 letter from Bob Ellis, page 4.

If Dr. Chernaik, Dr. Zacherl, Dr. Trimble, or any of the other experts had taken the time to physically photograph an example of one of these hard-to-spot oysters on the mudflat, then the hearings officer's opinion might be different. However, all the hearings officer can base his opinion on is the evidence in the record. In this case, the two PhD-level scientists who actually walked the same portion of right of way (*i.e.* site 9), did not find any significant quantities of Olympia oysters. The hearings officer is not prepared to find that a California biologist with no known experience in Haynes Inlet is somehow better at finding these oysters than the two Oregon biologists with specific experience in Haynes Inlet (*i.e.* Dr. Rumrill and Dr. Ellis).

In conclusion on this issue, the hearings officer finds the opponents' concerns about "hard to find" oysters is somewhat overblown. The hearings officer finds that the credibility of the opponent's argument is lessened due to the fact that none of the opponent's experts actually traversed the actual right of way in question. While Dr. Rumrill's team did search site 9, they found no oysters at that location. It's one thing to say that oysters in a rocky intertidal area in Southern California are difficult to survey, but that does not lead to the conclusion that oysters on an Oregon mudflat lacking hard substrate are difficult to spot. As Dr. Trimble notes, "locations are different." *See* Trimble letter dated October 5, 2011, at p. 2.

Dr. Chernaik's attempt to discredit the Ellis survey team is further hampered by the fact that, at site 9, the Rumrill survey found no Olympia oysters, whereas the Ellis team located and identified several Olympia oysters on two Pacific oyster shells. *See* Ellis letter dated Nov. 23 2011, at p. 2.

The hearings officer also finds that it is feasible for the applicant to train a team of workers to identify and collect all of the oysters along the pipeline right of way between milepost 4.1 and 2.8, and then relocate those oysters to the proposed relocation site. If nothing else, the team can be trained to pick up all hard substrate which might support Olympia oysters. Granted, it is going to take more than a three-person team to do a thorough job. The hearings officer would anticipate that a 10-15 person team is needed if the job is going to get done correctly in one or two sets of negative tides.

ii. The Relocation Plan is Feasible.

The next issue concerns the issue of whether the relocation area is a suitable environment for the survival of the displaced Olympia oysters. The Ellis Oyster Survey notes that the mud flats to the northwest of the pipeline, on the east side of Highway 101 are a good area for relocation due to the similarity to the right of way site:

[The relocation site] is indistinguishable in terms of habitat from those areas within the right of way, and were observed by EES staff to contain

Olympia oysters in densities at least as high as those within the right of way. Therefore, the proposed relocation area provides habitat that is known to support a population of Olympia oysters and is a viable relocation area. The occurrence of Olympia oysters in this area suggests that oysters relocated from the construction zone would have a high probability of survival.

Ellis Oyster Survey, at p. 21. A proposed relocation area is shown in the shaded area of Figure 19 in the Oyster Survey. That area is in close proximity to existing Olympia oyster colonies inhabiting the Highway 101 riprap area.

Dr. Chernaik contends that the area proposed for relocation is at a higher elevation than the oyster's current location in the right of way, which will preclude their survival. Opponents cite to alleged discrepancies in the elevations shown on figures provided by Coast & Harbor Engineering and Ellis Ecological.

Again, the opponents seem to grasping at straws with this testimony, which undermines their credibility. First, and most fundamentally, there is direct evidence in the Mitigation Plan describing the on-site observations of Dr. Ellis's team regarding the relocation area:

The mud flats that are adjacent to the northwest of the pipeline right of way, on the east side of Highway 101, are indistinguishable in terms of habitat from those areas within the right of way. These adjacent areas were observed by EES staff to contain Olympia oysters in densities at least as high as those within the right of way. Therefore, the proposed relocation area provides habitat that is known to support a population of Olympia oysters and is a viable relocation area. The occurrence of Olympia oysters in this area suggests that oysters relocated from the construction zone would have a high probability of survival.

Mitigation Plan, at p. 4. This evidence, based on direct observation, constitutes substantial evidence which is not sufficiently undermined by the opponents' conjecture about elevations based on various unrelated maps and figures in the record.

But perhaps even more importantly, Olympia oysters *are currently living in the relocation area*. Even Dr. Trimble admits that “[t]he most informative measure of local and historical conditions as they relate to *Ostrea lurida* is the presence / absence of adults.” Trimble letter dated Oct. 53, 2011, p. 5. Dr. Trimble goes on to say that “[i]t is ecologically safe to say that locations containing oysters are different than locations that don’t.” *Id.* Thus, a reasonable person would find that the presence of live Olympia oysters is a very strong indicator that Olympia oysters can live in that area.

The hearings officer finds that Dr. Chernaik's arguments to the contrary lack credibility. His arguments are particularly weak given that neither Dr. Chernaik or any other person testifying on behalf of the opponents personally conducted a site visit of the proposed re-location area. After all, if Dr. Chernaik has not physically visited the relocation site, why would anyone

believe his opinion testimony concerning that site over that of Dr. Ellis, who specifically walked the relocation site? Were the relocation site somehow physically off limits to the opponent's experts, the hearings officer might be less critical of their failure to conduct a site visit. But when the site is open to the public, it seems inexcusable for the opponents' experts not to have physically traversed the right of way prior to opining on the density of oysters in that location.

Also, the fact that the elevation in the pipeline right of way is virtually identical to the elevation in the adjacent relocation area is photographically depicted in the aerial photo included in the letter from Dr. Ellis dated October 17, 2011. On page 13 of that letter (Figure 7), Dr. Ellis includes an aerial photo of Haynes Inlet during the early stages on an incoming tide. That aerial photo includes overlays showing the location of the pipeline route, existing Olympia oysters, and the proposed relocation area. The relative depth of the mudflat area is readily discernible because the deeper areas are darker and the higher areas are lighter. As shown on that photo, several Olympia oysters were found by the Ellis team at the far end of the pipeline route in areas that are significantly higher than the relocation area (and therefore not yet touched by water when the photo was taken). That fact directly contradicts the opponents' assertion that the relocation area is too high for Olympia oysters to survive. Dr. Ellis states:

The edge of the incoming water is visible and extends beyond the relocation area and the area where Olympia oysters were found in the pipeline right of way. Note that both areas are under water at this early stage in the incoming tide, and that the relocation area appears to be slightly deeper than the adjacent pipeline right of way. Therefore, the photographic documentation is in agreement with our observations in the field. As discussed in the mitigation plan, oysters removed from the right of way would be placed toward the southern end of the relocation area, which is slightly lower in elevation than the northern end. However, the entire area within the relocation area presently supports adult Olympia oyster and would be suitable habitat for relocation of oysters from the right of way.

See Ellis Letter dated Oct. 17, 2011, at p. 12.

Dr. Chernaik's argument premised on one piece of data that is originally cited at page 11 of his October 10, 2011 submittal; however, the significance of this data as it relates to the proposed relocation plan is never explained:

At three sites, more than half of the tiles at +0.3 m MLLW had lost 90% of their oysters by the time photographs were taken in October 2002. In any case, juvenile oysters fare poorly when exposed to air for even short periods of time ([out of water] 2-10% [of the time], Fig. 8), with survival dropping by half or more.

See Chernaik letter dated Oct. 10, 2011, at p. 11. These facts lead to the following conclusions:
(1) 90% of half of the oysters located at a certain elevation died within some unidentified time

frame, and (2) survival of juvenile oysters drops by half or more when they are out of the water 2-10% of the time. However, as the applicant points out:

[A]t no point does Dr. Chernaik attempt to explain how this applies to the relocation area, *e.g.*, would the oysters proposed for relocation be anywhere near the elevation cited in the study? Or would the oysters being relocated (which are likely not juveniles as in the study) *actually be* out of water between 2 and 10% of the time based on their new elevations? Based on the evidence provided, there is no way to know how or why the results of this study would actually apply to the applicant's proposal. Dr. Chernaik's entire argument is flawed because he fails to connect the dots between the cited study and the proposed relocation area. His entire line of evidence and argument fails to undermine the direct evidence submitted by Ellis Ecological on the issue of the viability of the relocation plan.

The hearings officer agrees with the applicant's analysis on this point.

Moving on, Dr. Chernaik's memorandum dated November 28, 2011 leads off with the following statement: "There is no evidence in the record that relocating oysters is a successful mitigation measure." The hearings officer disagrees.

There is substantial evidence in the record that relocating existing oysters will be successful. First, Dr. Chernaik previously pointed out that the Olympia oysters in Coos Bay were extinct until they were accidentally reintroduced in the 1950s as hitch-hikers during commercial transport of Pacific oysters from Willapa Bay. It stands to reason that transport from Willapa Bay would be more stressful to those oysters than a move of a few hundred feet.

Second, the evidence shows that the state of Oregon thinks re-introduction techniques can be successful, as the South Slough NERR has "re-introduced about 4,000,000 juvenile oysters to the Slough." *See* Native Shellfish Recovery, at p. 1. It stands to reason that the reintroduction techniques used by South Slough NERR cause more trauma to individual oysters than by simple moving adult oysters and their hard substrate a few hundred feet.

Even more important than the evidence discussed above, however, is the fact that native oysters are currently found at the relocation site. This evidence is sufficient to draw an inference that the relocation site is suitable Olympia oyster habitat. Furthermore, there is no evidence in the record that suggest that the oysters are too fragile to survive the short relocation process,⁹ or that they will otherwise die in transport. There is also no evidence to suggest that oysters need to

⁹ Dr. Trimble briefly mentions that "moving oysters (and other organisms) increases mortality; hundreds of millions of *Ostrea lurida* adults have been moved within and between estuaries since the 1850s * * * with the vast majority of events resulting in massive mortalities." *See* Trimble letter dated Oct. 5, 2011 at p. 3. The hearings officer does not find Dr. Trimble's comments to constitute substantial evidence to support a conclusion that oysters would not survive a move of a few hundred feet to similar habitat in Haynes Inlet. Dr. Trimble's comments are simply too vague and too unspecific to give a clear understanding of the context of the transportation-related mass mortalities he refers to. An expert's opinion does not constitute substantial evidence if the foundation for the opinion is not provided, or if it is contradicted by other facts in the record. *1000 Friends of Oregon v. LCDC*, 83 Or App at 286 .

be oriented in any particular way. Obviously, it would not be advisable to place an oyster “face down” or buried in the mud, but presumably Dr Ellis can train the relocation team on the proper way to orient the oysters in their new home, to the extent there is a “proper” way. Indeed, Dr Ellis has testified that “oysters will be picked up by hand, and placed “in the same orientation within the substrate as they had in their original location.” Mitigation Plan at 4. Additional evidence includes:

- There are undoubtedly no more than a few bucketfuls of oysters that require relocation.
- The contour map recently provided by Dr. Ellis shows that, at most, there is an approximate 1.5-foot difference in the elevation of the relocation area, and less than a foot difference in the area where most of the oysters would be placed. Nov. 23 letter from Bob Ellis, page 3 (Figure 1).
- The relocation area is directly adjacent to the oysters' existing location, and is “indistinguishable habitat” where there are currently Olympia oysters in densities at least as high as those within the right of way . Mitigation Plan at 4.
- As stated by Dr. Ellis, “the occurrence of adult oysters in the proposed relocation zone indicates that an appropriate microclimate is present” and relocated oysters would therefore have a high probability of survival. Oct. 17 letter from Bob Ellis, page 11; *Id.*.
- Rex Miller testimony: “In my opinion, based on my experience with growing native Olympia oysters in the Coos Bay area, any oysters that exist along the pipeline route can be easily protected by relocating them to nearby portions of Haynes Inlet.” Sept. 9 letter from Rex Miller, page 2.

In addition to Rex Miller's project, the record contains evidence regarding two other successful oyster restoration projects that have recently occurred in Coos Bay: the Glenbrook Nickel site and the Isthmus Slough bridge. These projects provide evidence that native Olympia oysters can thrive in Coos Bay under restoration plans that are properly designed and managed.

Dr. Chernaik relies heavily on a statement from Dr. Alan Trimble in support of his argument that oysters cannot possibly survive relocation; however, Dr. Chernaik has quoted very selectively from Dr. Trimble's response. Dr. Chernaik has repeatedly quoted the following portion of Dr. Trimble's letter:

While it is trivial to suggest that moving existing oysters from locations where they currently exist to locations where they don't is sufficient to preserve them, this isn't a fact based on solid evidence.

See Chernaik letter dated Oct. 10, 2011, at p. 10. However, as noted by Dr. Ellis in his response, the applicant's proposal is *not* to relocate Olympia oysters *to a place where they do not exist*; rather, the proposal is to move them to a nearby location that is currently inhabited by adult and juvenile Olympia oysters. As discussed earlier, Dr. Trimble does cite to two studies conducted in 1892 and 1896 for the proposition that transportation of oysters increases their mortality, but does nothing to explain the context of those studies or explain why the facts in this case are

similar. Dr. Trimble's letter does not constitute substantial evidence to support the conclusion that the relocation plan is not feasible, because an adequate foundation for Dr. Trimble's comments and opinion has not been provided.

The opponents also attempt to argue that, by the time construction of the pipeline commences in 2014, there will be substantially more Olympia oysters than currently exist. However, as explained by Dr. Ellis, there is no firm evidentiary basis for opponents' assertion that there will be an exponential increase in the number of Olympia oysters in the mudflat in that timeframe. Dr. Chernaik's assertions are based on the fact that a 2006 survey revealed many more oysters than were found in a 1996 survey. However, the primary impediment to oyster population increases in the right of way portion of Haynes Inlet, as the applicant correctly points out, is that there is very little hard substrate habitat in the mudflats. Thus, as explained by Dr. Ellis, even if there were an increase in the numbers of Olympia oysters in the next two years, any such increase would be limited to existing substrates: "In other words, there would simply be larger clumps of oysters on the existing substrates," which would not result in much more effort to relocate. See Ellis letter dated Oct. 17, 2011, at p. 11.

Finally, it is worth noting that even if the applicant's protection / relocation plan were to completely fail, it does not appear that the overall resource productivity of the oysters in Haynes Inlet would suffer. With the exception of the one 1400 s.f. hot spot, the applicant has identified only 89 oysters in the pipeline right of way. Even if those 89 oysters were killed, that would be inconsequential to the overall population of Olympia oysters in Haynes Inlet. Given that predators such as sea otters, sharks, rays, crabs, native snails (small whelks and moon snails) could predate 89 oysters in a few days, it does not seem like the loss of 89 oysters (or even a few thousand oysters, for that matter) would be significant.

3. The Applicant's Oyster Mitigation Plan.

a. The Applicant's Plan is Feasible.

At the time of the public hearing, the applicant initially proposed an "Oyster Protection Plan," which was intended to meet, but not exceed, the requirements of the applicable management objective requirements by *protecting* the existing Olympia oysters within the pipeline right of way. The applicant proposed to simply relocate every single Olympia oyster within the pipeline right of way to similar habitat adjacent to the construction area, which is also currently populated with Olympia oysters. Because the relocated oysters would be protected from the direct impacts of construction, and because the evidence from Coast & Harbor Engineering indicates a lack of impacts from sedimentation, the applicant's original relocation plan would have been sufficient to "protect" the resource under applicable standards.

However, after the public hearing the applicant decided to go beyond "protecting" the resource. Rather, the applicant decided to make an attempt to assist in the overall recovery of the Olympia oyster. During the public hearing, the hearings officer asked a significant question of the opponents' primary witness, Mark Chernaik. The hearings officer asked Dr. Chernaik if the opponents would support the pipeline application if the applicant could provide additional habitat that would hypothetically triple or quadruple the amount of Olympia oysters in Haynes Inlet. The hearings officer was primarily interested in assessing the credibility of the witness,

and was trying to solicit a response that would indicate whether Dr. Chernaik's focus was on protecting oysters or simply stopping the PCGP project. Although Dr. Chernaik protested the premise behind the question, he ultimately agreed that if the applicant could provide habitat that would ensure such a population increase, that he would, in theory, support the application.

The applicant took note of Dr. Chernaik's response, and in light of other suggestions from the hearings officer, the applicant submitted a revised plan dated October 7, 2011, which is entitled Olympia Oyster Mitigation Plan (the "Mitigation Plan"). The Mitigation Plan goes beyond the protection of existing Olympia oysters and their habitat by providing mitigation in the form of new additional habitat within the pipeline right of way that will result in a significant *increase* in the numbers of Olympia oysters in Haynes Inlet. Specifically, in addition to relocating existing oysters prior to pipeline construction, the Mitigation Plan calls for the placement of 30 cubic yards of Pacific oyster shell in the area of existing oyster colonization between MP 2.9 to 3.4. Mitigation Plan, at p. 4. The proposed placement of new hard substrate for recruitment of oyster larvae would necessarily occur *after* pipeline construction is complete.

The hearings officer finds that there is substantial evidence in the record to support the conclusion that the applicant's Mitigation Plan will, at a minimum, "protect" the resource productivity of Olympia oysters in Haynes Inlet.

b. Responses to arguments raised by opponents regarding the mitigation component of the Mitigation Plan.

The opponents have raised numerous arguments challenging the likelihood of success of the mitigation component of the plan. None of the evidence submitted by the opponents on this topic is sufficient to compel a conclusion that the applicant's testimony would not be relied upon by a reasonable person.

i. "Recruitment sink"

Dr. Chernaik argues that placing Pacific oyster shells in the pipeline right of way to provide new habitat could result in a "recruitment sink" that actually harms Olympia oyster recovery efforts. *See* Chernaik letters dated October 10 and Oct 17, 2011, (discussing Trimble letter dated Oct. 5, 2011.). Dr. Chernaik first suggests that evidence shows that Olympia Oysters growing on Pacific oyster shells are less vital than if those Olympic oysters were instead to grow on Olympia oyster shells. He states that "there are several reasons for these observations one being greater competition from 'fouling organisms' that preferentially cover Pacific Oyster shells." *See* Chernaik letter dated Oct. 10, 2011. However, the photos of the oysters in the Ellis Oyster Survey do not appear to have any attached "fouling organisms" that would impede the growth of Olympic oysters. Without any direct evidence indicating that fouling organisms are an issue in Haynes Inlet, the hearings officer is inclined to discount the significance of this issue. Again, the only direct evidence in the record is that there is a colony of Olympia oysters colonizing discarded Pacific oyster shells at MP 2.9. That evidence strongly suggests that the habitat is good for the continued survival of the Olympia oyster at this particular location.

The remainder of Dr. Chernaik's "recruitment sink" argument is based on data from an out-of-state study (Willapa Bay, WA) which concluded that native oyster larvae were attracted

to Pacific oyster shells in the higher elevation intertidal areas, rather than lower subtidal areas where their survival rates were higher. *See* Chernaik letter dated Oct. 10, 2011, at p. 12. Dr. Chernaik attempts to rely on this study to argue that the applicant's proposed placement of Pacific oyster shells as new habitat could similarly "fool" juvenile oysters to settle in poor habitat where they are ultimately less likely to survive. *Id.*

As the applicant notes, Dr. Chernaik loses credibility when he contradicts himself via the "recruitment sink" argument. For example, Dr. Chernaik originally claimed that (a) there are an estimated 1.5 million Olympia oysters *along the pipeline route*, and (b) Olympia oysters can expect "exponential" population growth in Haynes Inlet in the next three years. In direct contrast to that argument,¹⁰ his "recruitment sink" argument is based on a completely different premise: that the intertidal portions of Haynes Inlet are actually *poor* habitat for Olympia oysters as compared to other nearby habitat in the rip-rap and rocky outcroppings found in sites 1-8 because they are too high in elevation. He argues that placing more Pacific oyster shells in the mud-flat area will basically lure native oyster larvae to that location where they will ultimately experience a pre-mature death due to being frozen, or being out of the water too long, etc.

If that were indeed the case, then the hearings officer questions why the County would even be undertaking this entire exercise. Taking the recruitment sink argument to its logical conclusion, the applicant would presumably help protect the Olympia oysters by destroying all of the hard substrate in that portion of the pipeline route. Indeed, this entire hearings officer recommendation goes into great detail on the various issues raised in this case based on a core assumption to the contrary: that the pipeline route traverses good (or at least potentially good) Olympia oyster habitat from approximately milepost 4.1 to milepost 2.8. That core assumption is based entirely on the presence of a relatively small quantity of Olympia oysters found within the pipeline route. If the hearings officer were to buy in to the "recruitment sink" argument in tandem with Mr. Chernaik's 1.5 million oyster population estimate, then the logical conclusion would be that the death of a few thousand oysters out of a potential population of millions in Haynes Inlet is a *de minimis* loss, and that the pipeline ideally should destroy the marginal oyster habitat in its route in order to prevent further recruitment sinks on the mud-flats. The hearings officer does not accept the premise behind this argument. For this reason, the hearings officer firmly rejects the entire "recruitment sink" argument.

The "recruitment sink" issue is more thoroughly repudiated by Dr. Ellis in his October 17, 2011 letter at pages 13-14. Also, the November 10, 2011 email message from Scott Groth of ODFW explains that "all uses of [Pacific oyster] shell to attract [Olympia oyster] larvae in Coos Bay have been successful, numerous projects show this." The hearings officer adopts the discussion concerning recruitment sinks and Pacific oyster shells contained in those two sources as additional findings, and incorporates those discussions herein by reference.

To close on this issue, it appears, based on the evidence in the record, that the only real "recruitment sink" occurring in Haynes Inlet is the commercial culturing and harvesting of

¹⁰ Lawyers are, of course, allowed to make what are seemingly contradictory *legal* arguments "in the alternative." Scientists are not afforded that same luxury. When a scientist makes contradictory *fact-based* arguments, he or she simply loses their credibility.

Pacific oysters, particularly to the extent that live Pacific oysters are actually present and growing in the Inlet during the Olympic oyster's spawning season. *See, e.g.* Chernaik letter dated Sept. 21, 2011, at p. 11; Trimble, *Factors Preventing the Recovery of a Historically Overexploited Shellfish Species, Ostrea Lurida Carpenter 1864*. *Journal of Shellfish Research*, Vol 28, No. 1 (2009), at p. 105 (identifying commercial harvest of Pacific oyster as a recruitment sink). When these commercial oysters are harvested, any native oysters that have selected the harvested oyster as a host will necessarily be killed. Based on the studies conducted in Willapa Bay, it appears that commercial oyster farming is much more harmful to the recovery of native oyster stocks than the construction of a gas pipeline. In comparison, the placement of Pacific oyster shells (or any other suitable hard substrate) in the right of way portion of the Haynes Inlet mudflats will surely result in viable colonies of Olympia oysters.

ii. Placement of Pacific Oyster Shells.

Dr. Chernaik contends that "there is no evidence in the record that evenly distributing 30 cubic yards of Pacific oyster shell over 15 acres of recently disturbed sediment would be a successful mitigation measure." *See* Chernaik Letter dated Nov. 28, 2011, at p. 2. Dr. Chernaik contends, in part, that the proposed distribution is not sufficiently deep to provide locations on the underside of the new substrate for Olympia oysters to attach. Dr. Chernaik is incorrect.

Most notably, the fact that Dr. Ellis and his team found a 1,400 s.f. bed of live Olympia oysters at milepost 2.9 which had colonized a pile of discarded Pacific oyster shells is proof that Olympia oyster larvae in Haynes Inlet will use discarded Pacific oyster shells as recruitment sites.

In addition, there is evidence in the form of the November 10, 2011 email message from Scott Groth stating that, based on Mr. Groth's review of the proposed Mitigation Plan (including the expressly stated proposal to spread 30 cubic yards of shells over 15 acres), that plan will "certainly achieve" an increase in the density of native oysters at the project site. Curiously, Dr. Chernaik does not attempt to explain his failure to recognize Mr. Groth's unequivocal statement as evidence, despite the fact that he directly quotes this same portion of the email from Mr. Groth later in his argument.

Moreover, the hearings officer has read Dr. Chernaik's rebuttal dated Nov 28, 2011, as well as the exhibits accompanying that submittal, and finds that none of the information presented therein alters the hearings officer's conclusions in any way.

Dr Zarchel's research conducted in Newport Bay, California, does indicate that Olympic oysters survive at a higher rate if they can attach to the underside of hard substrate. *See* Zercherl comments quoted on page 3 of Dr. Chernaik's November 28, 2001 letter. The applicant seems to concede this fact. However, that fact does not mean that Olympia oysters will not attach to the tops of hard substrate. The best evidence in the record as to whether Olympic oysters will attach and grow on discarded Pacific oyster shells comes the Ellis Oyster Survey. As mentioned above, the Ellis Oyster survey found a 1400 s.f. hot spot of Olympia oyster attached to discarded Pacific oyster shells. There is no evidence to suggest that the 1400 s.f. pile of discarded shells at MP 2.9 created high degrees of vertical habitat. Based on the fact that those Pacific oyster shells were discarded at random, there does not appear to have been any effort made to maximize the

made to maximize the potential for larval recruitment. Moreover, too much "vertical" habitat at this location might simply result in oysters that are out of the water for longer durations, which Dr. Chernaik admits will result in increased mortality rates.

The opponents also assert that the Pacific oyster shells will sink in the sediment above the pipeline. This argument is highly speculative and is not supported by any substantial evidence. In a letter dated November 3, 2011, Pacific Connector Project Manager Randy Miller rebuts the opponents' testimony:

The trench will be excavated into unconsolidated sandy sediments washed into Haynes Inlet from the various streams that deposit their sediment-laden runoff into the Inlet. Following laying of the pipeline into the trench, the trench will be backfilled by excavation equipment that picks up the spoil mound material and places it back into the trench. The backfill technique includes the use of the excavator bucket to put compaction pressure on the material to assure that the pipe is completely covered and the trench backfilled in a stable condition. This backfilling technique will result in trench materials placed in a more compacted state than that existing prior to excavation.

Ms. McCaffree's suggestion that Pacific oyster shells will sink in the mud is nothing more than imaginative speculation based on unrelated testimony. At the prior public hearing, Lili Claussen stated that the Haynes Inlet mudflats are like "quicksand" that are difficult to walk in. This is a true statement – it is difficult for a person to walk on the mudflats without special shoes like the ones worn by Bob Ellis and his team when they conducted their oyster survey. Based solely on this prior statement, Ms. McCaffree now suggests that Pacific oyster shells would also sink in the mud in the same manner as people. One does not need to be a physicist to understand that just because a 160-pound person might sink above their ankles in mudflats does not mean that a two-ounce oyster shell would also sink. Further, the present existence of significant numbers of Pacific oyster shells on the bed of Haynes Inlet indicates that Ms. McCaffree's alleged concerns are without basis.

"Further, even if there were an evidentiary basis for Ms. McCaffree's suggestion that the backfilled area will become so unstable that even an oyster would sink (which is incorrect as addressed above), it should be noted that the backfilled trench area will only occupy between 22 and 30 feet of width within the entire pipeline right of way where Pacific oyster shells are proposed to be distributed as habitat.

See Miller letter dated Nov. 3, 2011, at pp. 1-2. Mr. Miller's discussion constitutes substantial evidence to support the conclusion that the replacement shell habitat will not sink into the mud of Haynes Inlet.

In their final November 28 submittal, Dr. Chernaik offers detailed suggestions in order to ensure that the Mitigation Plan will be a success. In response, the applicant proposes a series of conditions of approval incorporating these suggestions, in order to ensure the successful implementation of the Mitigation Plan. These proposed conditions address the new issues raised by Dr. Chernaik and incorporates the suggestions raised in the related Groth & Rumrill memorandum dated November 28, 2011.

PROPOSED CONDITION OF APPROVAL

- No. ____.
- The applicant shall comply with the terms and conditions of the applicant's proposed Olympia oyster mitigation plan prepared by Bob Ellis of Ellis Ecological Services, Inc. dated October 7, 2011 (the "Mitigation Plan"), as supplemented and modified by the following mitigation measures:
- a) The applicant's compliance with the Mitigation Plan will be administered through permits pursuant to the Clean Water Act Section 404 by the Army Corps of Engineers (Corps), pursuant to Section 401 of the Clean Water Act by the Oregon Department of Environmental Quality (DEQ), and pursuant to Oregon's Removal-Fill Law (ORS 196.795-990) by the Oregon Department of State Lands (DSL). These permitting agencies will be provided with copies of the Mitigation Plan, as modified by this condition, and approval of the permits issued by the Corps, DEQ and DSL may, as appropriate, incorporate the terms of the Mitigation Plan.
 - b) As part of the state permitting process for the pipeline discussed in subsection (a) above, the applicant shall consult with ODFW on the specific details regarding how best to accomplish the actual placement of Pacific oyster shells addressed in Section 4.2.1 of the Mitigation Plan in order to ensure success of the project, including ideal depth and breadth of coverage of new hard substrate, specific methods for dispersal (*e.g.*, bagged vs. loose), and best locations for placement of substrate within the pipeline right of way .
 - c) Unless modified under the direction of ODFW during the consultation described above, the applicant will establish appropriate baseline conditions for the Olympia oyster mitigation effort in Haynes Inlet using the following guidelines for a before-after control impact study design in order to ensure that any impacts to Olympia oysters are insignificant or *de minimis*:
 - i. The "Before" conditions shall be determined by field surveys of the distribution, abundance, status, and condition of existing

Olympia oysters: (a) within the "Impact Area," *i.e.*, the 250-foot pipeline right of way within the intertidal portion of Haynes Inlet; and (b) within an appropriate "Control Area" in another portion of Coos Bay that will not experience any influence from construction of the pipeline. The precise location of the Control Area will be selected in consultation with ODFW.

- ii. The surveys of the Control and Impact Areas shall be conducted immediately prior to construction of the pipeline (Before), and repeated annually over a period of five years following construction of the pipeline (After) to encompass the lifespan of individual Olympia oysters.
- c) Monitoring of the "Relocation Area" shall be undertaken as described in Section 4.3 of the Mitigation Plan.

Adoption of this condition of approval addresses all of the issues discussed in paragraphs numbered 2 through 6 of the memorandum from Steve Rumrill and Scott Groth that is attached to Dr. Chernaik's November 28, 2011 submittal regarding creation of the best possible habitat for Olympia oysters in the applicant's mitigation area.

This condition of approval also recognizes that the applicant is required, under existing conditions of approval from the county's original decision, to obtain all necessary state and federal permits for removal and fill in Haynes Inlet necessary to construct the pipeline. Under that condition, all such approvals must be obtained prior to commencing construction of the pipeline. That condition was not challenged by opponents in the LUBA appeal. The condition set forth above recognizes that the applicant's proposed Mitigation Plan will need to be incorporated into those state and federal permitting requirements, and also expressly requires the applicant to consult with ODFW on some of the finer details of the plan regarding methods for placing new hard substrate and background monitoring.

For the reasons addressed above, there is substantial evidence in the record to support a finding that, in conjunction with the applicant's Protection Plan, the Oyster Mitigation Plan will "protect" existing Olympia oysters in Haynes Inlet. The opponents have not provided evidence that undermines the evidence such that it would not be relied upon by a reasonable person in making a decision.

4. History of Previous Oyster Relocation Efforts.

There is substantial evidence in the record to support a finding that several Olympia oyster restoration projects similar to the applicant's proposal have been successful in Coos Bay. The applicant submitted direct evidence on this issue in the form of: (1) a memorandum from Scott Groth, a Shellfish Biologist with the Oregon Department of Fish and Wildlife dated August 10, 2010, regarding "Coos Bay native oyster restoration project updates" ("ODFW Memo"); (2) a letter from Rex Miller dated September 9, ~~2001~~ 2011; (3) a short DVD prepared by Rex Miller that describes the success of his Olympia oyster restoration project in Isthmus Slough; and (4)

email exchanges with Scott Groth of ODFW regarding Mr. Groth's review of the proposed Mitigation Plan and his comments regarding the likely success of the final plan.

As explained in the Oyster Survey, and in the ODFW Memo at least three similar Olympia oyster relocation and protection efforts have been completed to date: (1) the Glenbrook Nickel site, (2) Rex Miller's property, and (3) the reconstruction of the Isthmus Slough bridge.

a. Glenbrook Nickel Project

The ODFW Memo includes a detailed description of the work that has been done at the Glenbrook Nickel site regarding restoration of Olympia oyster habitat. The ODFW Memo states that the project "has been tremendously successful and an excellent learning experience that will guide future native oyster restoration efforts in Coos Bay." ODFW Memo at 2.

b. The Rex Miller Restoration Project

The applicant also submitted the testimony of Mr. Rex Miller, who undertook a successful Olympia oyster restoration project on his own property near Isthmus Slough.

Mr. Miller's restoration project is summarized in correspondence to the hearings officer from Rex Miller, ("Miller Letter"), and also in a video prepared by Mr. Miller on a DVD entitled "Isthmus Slough Oysters: Living on the Edge." It involved the placement of approximately 20 cubic yards of Pacific oyster shells on his tideland areas in Isthmus Slough. Mr. Miller also placed hard substrate (structures he calls "gabions") in the water. These gabions consist of large chain link bags of Pacific oyster shells with Olympia oysters attached, for the purpose of "pollinating" the area with Olympia oyster larvae. As described in his letter, and shown in the pictures included on his DVD, Mr. Miller's project has been successful:

"As shown on the DVD, my efforts have resulted in a healthy new colony of Olympia oysters in Isthmus Slough. This project has been very successful, even though there is a relatively high amount of silt in the Isthmus Slough area (as compared to Haynes Inlet). I have reviewed the Oyster survey and proposal prepared by Bob Ellis of Ellis Ecological regarding the relocation of Olympia oysters from the proposed pipeline route. In my opinion, a project in the Haynes Inlet area like the one being proposed by Bob Ellis would also be very successful.

"The Haynes Inlet area is actually a better location for native oysters than Isthmus Slough because the tideland areas are sandier, with less mud and silt. One of the potential problems for oysters is freshwater arising out of heavy rain events. I believe that would be less of a problem in Haynes Inlet because the area is more of a channelized mudflat area, and the freshwater would be able to flow through the area faster than in Isthmus Slough. Finally, as shown on my DVD and in the Ellis survey, there is already a very healthy colony of Olympia oysters inhabiting the rip rap along the eastern edge of the highway, which will provide a good seed crop of larvae

that will 'pollinate' the area adjacent to the pipeline after completion of construction.

In my opinion, based on my experience with growing native Olympia oysters in the Coos Bay area, any oysters that exist along the pipeline route can be easily protected by relocating them to nearby portions of Haynes Inlet. If substrate along the pipeline route is replaced, I believe the applicant's proposed efforts will not only completely protect the existing oysters but will also result in an increase in the further colonization of Olympia oysters in the *area adjacent to the proposed pipeline*.

See Rex Miller letter dated Sept. 7, 2011, at pp. 1-2. The hearings officer finds the Miller letter and DVD constitutes substantial evidence. In fact, it is some of the most compelling evidence in the entire file. As an initial matter, the Miller site appears in the video to a very muddy site. Mr. Miller's DVD includes photos and video of Pacific oyster shell habitat for Olympia oysters at Mr. Miller's site, clearly showing that many of the shells are covered in mud and silt. Mr. Miller is seen in the video washing mud off of his oyster bundles. Nonetheless, despite these less-than-ideal conditions, Mr. Miller has experienced success in his efforts to propagate Olympia oyster colonies on his submerged lands.

The opponents have made no attempt to rebut or otherwise challenge any of the testimony provided by Mr. Miller regarding the likelihood of success of the applicant's proposal. This photographic and video evidence, which has not been challenged by the opponents, directly contradicts the expert testimony that even the slightest amount of silt (*i.e.*, 50 microns) on a Pacific oyster shell will prohibit Olympia oyster larvae from attaching.

After reviewing the Miller DVD, it seems clear that Haynes Inlet provides more likely habitat for Olympia oysters than the Isthmus slough area, and would be an excellent location for a project designed to protect and restore native oysters and their habitat in the general vicinity of the pipeline alignment.

c. Use of Methods Similar to those Proposed by the Applicant Have Been Found to be Successful in these Three Previous Efforts.

The methods proposed by the applicant in the Mitigation Plan are largely modeled after the methods and success of the Glenbrook Nickel project, which also involved the collection and relocation of existing Olympia oysters, and the distribution of Pacific oyster shells for habitat enhancement. As described in more detail below, Dr. Ellis provided a draft of the proposed Mitigation Plan to Scott Groth for his review and comment, and incorporated Mr. Groth's suggestions into a revised plan.

Finally, prior to finalizing the Mitigation Plan, Dr. Ellis forwarded a draft of the plan to Scott Groth of ODFW for his review and comment. Mr. Groth's email response dated October 6, 2011 is included in the record as Exhibit 6 to the applicant's October 10, 2011 submittal. In that response, Mr. Groth states his professional opinion that "the plan looks very good" and that "I would expect positive results." Mr. Groth goes on to state a number of questions and

suggestions for Dr. Ellis, and those suggestions were largely incorporated into the final version of the Mitigation Plan.

After finalizing the Mitigation Plan and reviewing some of the challenges being raised by the opponents, Dr. Ellis sent an email inquiry to Mr. Groth asking for his opinion regarding certain aspects of the Mitigation Plan and opponents' attempts to challenge the success of the Glenbrook Nickel project. Mr. Groth sent an email response on November 10, 2011, which is attached to the applicant's November 14, 2011 submittal, and states:

"If the goal of your project is to increase the density of native oysters at the site, the mitigation plan (for native oysters) you presented will certainly achieve that. Every Olympia oyster habitat restoration project I am aware of includes the addition of hard substratum (e.g., *Crassostea gigas* shell), as *Ostrea lurida* are known to prefer hard substrates. All uses of *C. gigas* shell to attract *O. lurida* larvae in Coos Bay have been successful, numerous projects show this.

"In the Glenbrook nickel project, the relocated oysters were in fact outside of the surveyed area. Therefore the preliminary results of that project show significant increases in population after 2 years when the baseline population was completely removed. This was easily related to the increased availability of appropriate settlement substrate via the restoration (mitigation) effort."

This message from Mr. Groth states his professional belief that the proposed Mitigation Plan will "certainly achieve" an increase in the density of native oysters at the site. It also notes that the Glenbrook Nickel project showed "significant increases in population after 2 years" due to increased availability of new substrate at the site. These statements from Mr. Groth of ODFW constitute substantial evidence to support a finding that the applicant's Mitigation Plan will result in increased density of Olympia oysters, and that it is appropriate to rely upon the success of the Glenbrook Nickel project as evidence regarding the likely success of the applicant's proposal.

On October 10, 2011 the applicant submitted a letter dated September 9, 2011 from Nancy Pustis, the Western Region Manager for the Oregon Department of State Lands (DSL), which provides the basis for a finding that it is feasible for the applicant to obtain the short-term access agreement that would be necessary to relocate the existing Olympia oysters onto adjacent state-owned tidelands. This is the method typically used by DSL to allow access for mitigation projects that require the addition of new habitat (e.g., eelgrass) on state-owned submerged and submersible land. The opponents have not raised any issues questioning the applicant's ability to obtain necessary state approvals to relocate oysters onto state lands.

The applicant will also be required to obtain many state and federal environmental permits in order to construct the pipeline, all of which are identified as conditions of approval attached to the county's prior approval of the pipeline. As described in more detail below, the applicant is proposing a new condition of approval that would require coordination with ODFW in the specific details regarding the placement of Pacific oyster shells in the mitigation area, and would involve incorporating the applicant's Mitigation Plan into the DSL permitting process.

B. Compliance with 13A-NA Management Objective (Subtidal Sandy-Bottomed Areas West of Hwy 101).

1. Ellis Oyster Survey of the Subtidal zone

Dr. Ellis and his team searched for Olympia oyster in the subtidal portion of the pipeline right of way located to the west of the Highway 101 bridge, between Milepost 2.8 and 1.8. Dr. Ellis's team took a series of approximately 38 sediment grab samples in this subtidal area. Those grab samples were evenly spaced across the right of way approximately every tenth of a mile. These grab samples revealed no evidence of Olympia oysters or the hard substrate that is necessary for Olympia oyster habitat. Ellis Oyster Survey, Figures 7, 18. The applicant's key finding is as follows:

Grab sampling of substrate along the pipeline route in subtidal areas (Figure 7) recovered no evidence of Olympia oysters or their preferred substrate habitat. As reported by Coast and Harbor (2011) the bottom velocity in some subtidal areas of the pipeline route is quite high (up to 3.0 feet per second) during maximum tidal exchange. Consequently, the substrates in this area are generally coarse sand, grading to finer sand at the west end of the right of way. Under the Highway 101 bridge, sediments appear to be dense sands; so dense that the sampler was only able to partially penetrate the surface layer. Most samples from this area were empty, with a few containing medium sand. Likewise, elsewhere along the pipeline route, samples consisted of sand with only rare shell fragments. The only soft sediments were found near MP 1.9. Figure 8 illustrates a typical sediment sample from subtidal areas of the pipeline route. No Olympia oysters, or Olympia oyster shells were recovered in the grab samples.

Ellis Oyster Study, at p. 19.

The opponents presented no direct evidence concerning the presence or absence of Olympia oysters in the portion of the Project Action Area that traverses the subtidal zone between mileposts 2.8 and 1.7. However, at the public hearing, the opponents complained that the grab sample approach could conceivably have missed some oysters or viable habitat. Dr. Chernaik repeats these arguments in his letter dated October 10, 2011. He enlists the opinion of Dr. Alan Trimble, who concludes that using 38 grab samples is not "continuous or exhaustive" and, as a result, individuals could have been missed.

The hearings officer finds that negative results from 38 grab samples, conducted at representative points along the pipeline right of way, provides a sufficient evidentiary basis to draw an inference that no significant levels of Olympia oysters reside in the subtidal portion of the right of way. While it is true that the grab samples could very well have missed an individual oyster or two (or more), it is reasonably clear from the grab samples that there are no large or

significant quantities of native oysters in the subtidal areas. The destruction of minor amounts of individual oysters does not prevent a finding that the pipeline use does not “protect[] the productivity and natural character of the aquatic area.”

Even so, the applicant decided not leave opportunity for doubt, and hired professional divers to survey the entire length of right of way’s subtidal area. The results of the two-day underwater survey are documented in the report from Dale Foster and Bob Ellis dated October 7, 2011 (“Diver Survey”). That survey notes that the entire subtidal portion of the pipeline right of way is composed entirely of sand and includes no Olympia oysters, and virtually no hard substrate habitat: “the divers described the area as an underwater desert with very little evidence of benthic invertebrate life.” Diver Survey, page 2. The diver survey constitutes substantial evidence that confirms that the pipeline’s construction activities in that area will “protect[] the productivity and natural character of the aquatic area” as it relates to oysters.

The opponents criticize the Diver survey for two reasons. *See* Chernaik Letter dated October 14, 2011, at p. 3-4. First, the opponents argue that the divers might not have been trained sufficiently to recognize oysters under water. Second, the opponents argue that the Diver survey was not comprehensive enough because the divers could only see a portion of the 250 foot right of way.

If the standard were “clear and convincing” evidence, or “evidence beyond a reasonable doubt,” then perhaps the opponents’ points *might* have merit. However, the standard is “substantial evidence,” which is a relatively low standard of proof. Substantial evidence is evidence that a reasonable person could rely on to draw a conclusion, after considering all countervailing evidence in the record. In employing this standard, the decision-maker is allowed to draw inferences from the evidence. Considering the results of the grab samples and diver survey in tandem, the hearings officer believes that a reasonable person could draw an inference and conclude that no significant quantity of oysters (or oyster habitat) exists in the subtidal portion of the proposed right of way. Had the opponents brought forth evidence that the terrain and habitat were highly variable in that portion of the right of way, or have provided evidence of actual oysters living in the subtidal portion of right of way, then they might have been successful in undermining the applicant’s evidence. However, the best the opponents can do is provide evidence that oysters have been found in other portions of the subtidal lands in Coos Bay. Based on this record, the opponents’ efforts to cast doubt on the applicant’s evidence simply fail.

Despite the diver’s direct evidence to the contrary, opponents continued to argue that the pipeline right of way could contain over a million Olympia oysters. *See* Oct. 17 memo from Mark Chernaik, page 8. The hearings officer finds that the opponent’s expert testimony on this particular point is not convincing, and does not create sufficient doubt to cause the hearings officer to believe that the applicant’s evidence regarding the absence of oysters or oyster habitat in the subtidal zone is not substantial.

C. Sedimentation (Joint Discussion of Both 11-NA-11 and 13A-NA Management Districts.

1. There is Substantial Evidence to Support a Finding that Construction of the Pipeline will not Result in Significant Impacts on Olympia Oysters Due to Sedimentation.

There appears to be agreement among the parties that there are two potential ways that Olympia oysters could be harmed as a result of pipeline construction: (1) direct impacts on oysters within the pipeline route due to pipeline construction, and (2) impacts from sedimentation resulting from pipeline construction. The first item is addressed above via the applicant's Protection Plan, which will protect all of the oysters within the pipeline route by relocating them to an area that will not be impacted by construction, and by the Mitigation Plan, which will provide additional habitat in the form of new hard substrate within the pipeline right of way after construction of the pipeline. The second item concerns the effect of sedimentation.

To be frank, this is the most difficult aspect of the case, because the evidence is the most difficult to decipher.

The opponent's chief scientist, Dr. Mark Chernaik, estimates that the hard substrate in Haynes Inlet would be covered by "a few millimeters of sediment." *See* Chernaik Letter dated Sept. 14, 2011, at p. 9. He asserts that such sedimentation could settle on hard surfaces and last for "several seasons." Even though he provides little to support his opinion, it does seem intuitive, at first glance, that he could be correct.

Conversely, the applicant relies primarily on a study by Vladimir Shepsis, Ph.D., P.E., and his company, Coast & Harbor Engineering ("CHE"),¹¹ to support findings that construction of the pipeline will not result in turbidity or sedimentation that will cause harm to existing Olympia oysters or impact their ability to reproduce.¹² The study is highly technical, and difficult for a layperson to understand.

¹¹ As stated in his letter dated October 10, 2011, Vladimir Shepsis is a Coastal Engineer with 39 years of experience in coastal engineering project. He is a principal with Coast and Harbor Engineering ("CHE"). Mr. Shepsis's specialty is in the field of coastal hydrodynamics and sediment transport.

¹² Dr. Shepsis makes one statement that the opponents latch onto, in an effort to undermine his work. Dr. Shepsis discussed the scope of his analysis as follows:

I am not a biologist and I cannot provide any specific conclusions regarding impacts of sedimentation on oysters. My analysis is limited to the question of whether the effect of flow velocities resulting from pipeline construction will cause an increase in suspended sediment concentration and deposition in Haynes Inlet.

See Shepsis letter dated October 10, 2011. The hearings officer interprets this statement to mean that Dr. Shepsis's analysis is not intended to evaluate how well oysters can survive the effects of sedimentation. Rather, Dr. Shepsis focuses his analysis on whether there will be a detectable increase in sedimentation as a result of the pipeline

Dr. Shepsis made a particularly impressive, high-tech, Powerpoint™ presentation at the September 21, 2011 public hearing. As some of the opponents correctly noted afterwards, it is easy to get dazzled by the “wow factor” of the special effects associated with Dr. Shepsis’s presentation, and lose sight of the core concepts that are being addressed. *See, e.g.*, Jan Dilley letter from dated October 10, 2011. In reviewing these materials, the hearings officer has made every effort to focus on the core of the argument to make sure it meets the substantial evidence standard.

Dr. Shepsis and CHE were originally hired to assist the LNG terminal applicant, Jordan Cove Energy Project (JCEP), in responding to information required by Oregon DEQ regarding potential sedimentation impacts that would result from construction of the JCEP terminal, dredging the access channel, and constructing the pipeline. In response to the DEQ request, CHE undertook a detailed sediment transport modeling analysis for much of Coos Bay, and produced a two-volume Technical Report to DEQ dated December 1, 2010 summarizing the results of that analysis. According to the applicant, those two volumes provided much of the background modeling that was relied upon by Dr. Shepsis in his presentation at the public hearing, and the two-volume report is included in the record as Exhibit 3 to applicant's October 17, 2011 submittal.

Prior to the public hearing, opponents raised concerns regarding potential impacts on Olympia oysters that due to increased sedimentation generated by pipeline construction. In order to respond to these concerns at the hearing, the applicant asked Dr. Shepsis to undertake a specific sediment transport analysis that was focused on potential impacts from construction of the pipeline within Haynes Inlet and specific locations where Olympia oysters had been identified by the applicant and the opponents. Dr. Shepsis completed this analysis and summarized his methods and conclusions in a detailed presentation at the public hearing on September 21, 2011. That presentation is included in the record in both video and hard copy format.

The methodology and results of Dr. Shepsis' study are summarized in his letter dated October 10, 2011. The analysis is based on a three-dimensional hydrodynamic model that shows the hourly flow velocities and directions for all of Coos Bay, and specifically, Haynes Inlet. The data supporting the model was calibrated against tides measured by NOAA at the Charleston Tide Station and actual currents recorded near the proposed LNG terminal in 2005 via Acoustic Doppler Profiler.

The analysis undertaken by Dr. Shepsis resulted in a qualitative study showing: (1) existing tidal and current flow velocities in and out of Haynes Inlet, and (2) the extent to which constructing the pipeline would result in any *increase* in suspended sediment concentration and sediment deposition in Haynes Inlet. As shown on slide #22 of the Shepsis Powerpoint™ presentation, his study considered potential impacts from stockpile placement in two locations that would be the most likely to result in sedimentation impacts. The first is located at

construction. This statement does not provide much fodder for criticism. Other evidence in the record, including the Rex Miller video, provides substantial evidence supporting the conclusion that Olympia oysters will survive and multiply in relatively muddy environments.

approximately milepost 3.2, close to where Dr. Ellis found the highest concentration of Olympia oysters. The second is located at approximately milepost 2.8, close to the Highway 101 bridge where tidal flow velocities are highest and close to locations where Olympia oysters were identified on the rip rap and shorelines (see slide #30).

The results regarding the first location are shown on power point slides #24 through #28, and on the animation file on the CD submitted by the applicant that is titled "Haynes.avi." The tidal flow animation in that file shows no change in sedimentation levels that is visible to the naked eye. However, a closer review of the data shows that during two time periods of less than 15 minutes, at approximately hours 27.75 and 52.5, there is an increase in suspended sediment that is very limited in scope, and is only present in the immediate area of the base of the pipeline trench. This is shown by the red areas on slide #27. Thus, the only area potentially affected by sediment in this area is the immediate vicinity of the stockpile itself, and the small volume of increased turbidity will remain in that area and will not be detected in any other portion of Haynes Inlet.

The results regarding the second location are shown on power point slides #30 through #34, and on the animation file on the CD that is titled "Oyster.avi." The animation in that file shows very brief increases in suspended sediment, primarily during the outgoing tide, coinciding with the time of highest flow velocities. Timing of turbidity spikes corresponding with tidal velocities for four specific locations where oysters have been identified is shown on slides #31-#34.

As the applicant points out, there are four significant points regarding the increases in turbidity shown on the "Oyster.avi" animation file:

- (1) the time period for the increase is very short, *i.e.*, less than 15 minutes per day;
- (2) that short time period coincides with the period of highest velocity of water flowing west, and *out* of the intertidal area where virtually all of the Olympia oysters are located;
- (3) although the areas of turbidity are larger than in the first study area (where they are miniscule), they are still very limited in scope and are located primarily in a small area immediately to the west of the stockpile; and
- (4) as explained by Dr. Shepsis, the corresponding high velocity during this period of turbidity will ensure that sediments would not be able to settle on the hard substrate shorelines where Olympia oysters are present in that area.

The overall results of the study are summarized in the October 10, 2011 letter from Dr. Shepsis, which concludes:

Based on the results of our detailed three-dimensional modeling, my conclusion is that pipeline construction will not result in any detectable increase of suspended sediment concentration and deposition in Haynes Inlet. Overall, our modeling indicates that changes in suspended sediment concentration during construction

of the pipeline will be negligible compared to existing conditions in Haynes Inlet. Although there may be very temporary and localized increases in suspended sediment concentration due to high velocities in the area of the bridge, the sediment would not be able to deposit on the identified oyster locations.

See Shepsis letter dated Oct. 10, 2011, at p.4. The hearings officer finds that the expert testimony of Dr. Shepsis constitutes substantial evidence on which the County may rely to reach a conclusion that pipeline construction will not result in increases in sedimentation that will negatively impact Olympia oysters.

The only remaining question is whether the opponents have submitted evidence or argument that "so undermines" the testimony of Dr. Shepsis and the data provided by CHE that it is no longer evidence a reasonable person would rely upon. The remainder of this section provides responses to specific arguments raised by the opponents in challenging Dr. Shepsis's testimony and the CHE data.

2. The Opponents' Evidence Intended to Underline Dr. Shepsis's Testimony Does Not Accomplish Its Goal.

Sadly, the opponents have provided no actual modeling of their own regarding how much sedimentation they believe will be caused by construction of the pipeline. As the opponents point out, this is a bit of a "David and Goliath" fight, and it seems apparent that the opponents do not have the resources to provide their own study. Unfortunately, this is a common dilemma in land use proceedings.

Rather, the opponents attempt to critique Dr. Shepsis's work, hoping that the County will find sufficient flaws to warrant a denial based on a failure to meet the burden of proof. This is a risky approach in an administrative proceeding, because the substantial evidence standard is a very low standard. The opponents would have ultimately been better served by providing substantial evidence, in the form of modeling, to support their position that the sedimentation will be significant and will necessarily result in harm to oysters. At the end of the day, it is apparent that the applicant has met its burden of proof to demonstrate that the effects on the Olympia oyster from sedimentation, if any, will be temporary and insignificant.

a. Chernaik materials dated October 10, 2011, Including Comments by Dr. Trimble dated Oct. 5, 2011.

The opponents challenge the studies and testimony provided by Dr. Shepsis and CHE by having them informally peer reviewed by Dr. Thomas Ravens, a hydrologist from the University of Alaska Specializing in hydrodynamics and sediment transportation. In his October 10, 2011 memorandum, Dr. Chernaik first argues that the CHE modeling results for sedimentation in Haynes Inlet are not "negligible" because (1) only 50 microns of sediment can impair attachment of oyster larvae, and (2) Mr. Shepsis's presentation shows spikes of sedimentation increase "lasting several hours."

i. 50 Microns of Sediment.

Dr. Chernaik's assertion regarding the "50 micron" figure is based on personal conversations with Dr. Alan Trimble. *See* Chernaik letter dated Oct. 10, 2011, at p. 8; Trimble letter dated Oct. 5, 2011, at p. 3. The opinion does not appear to be supported scientifically, and is directly contradicted by other evidence submitted by Dr. Chernaik. The 50 micron figure seems to be rather outlandish, as it a thickness that more or less approximates the width of human hair. A layer of sediment that thick would barely be visible to the human eye. Given the success that Rex Miller has experienced in waters that produce much higher rates of sedimentation, the hearings officer finds the 50 micron figure to either be wrong, or used out of context in this case.

But even if it is true, Dr. Shepsis's response to this argument is as follows:

Dr. Chernaik does not attempt to explain the significance of the 50 micron figure as it relates to my presentation. Note that 50 microns is 0.05 mm. Dr. Chernaik provides an analysis of dredging-induced sedimentation in Newark Bay prepared by T. Lackey, et al. (Chernaik Exhibit 7), which shows accumulation of sediment in the most unfavorable conditions at a maximum of only 0.03 mm or 30 microns. Based on actual conditions in Haynes Inlet, as discussed in my presentation and in responses below, my conclusion is that the maximum theoretical deposition in the Haynes Inlet area would be at a much lower detectable level than 30 microns.

See Shepsis letter dated Oct. 17, 2011, at p.4. The opponents never rebut Dr. Shepsis' response.

ii. Spikes of Sedimentation Concentration Lasting Several Hours.

Dr. Chernaik also states that Dr. Shepsis' analysis reveals "spikes of concentration lasting several hours." Dr. Shepsis responds as follows:

As explained in my presentation at the public hearing, spikes of sediment concentration coincide with highest flow velocities. Durations of high velocities exceed the durations of suspended sediment spikes, which results in no deposition of sediment in these areas. I do not understand why Dr. Chernaik believes that my presentation shows spikes of sedimentation "lasting several hours." Slides 31-34 of my presentation show only one sedimentation spike of any theoretical significance, which was at the opponents' site 4 (slide 31). Slide 31 shows one spike lasting less than 15 minutes during every 24-hour tide cycle.

See Shepsis letter dated Oct. 17, 2011, at p.4. Given that Dr. Chernaik is a biologist and Dr. Shepsis is an engineer, the hearings officer's tendency would be to defer to Dr. Shepsis on

engineering issues such as this, particularly since Dr. Chernaik has been demonstrably wrong on various other issues in this case.

iii. Source Terms.

Next, Dr. Chernaik argues that the County should not rely on the testimony of Dr. Shepsis as evidence, because the modeling results are unsubstantiated inasmuch as the study does not identify "source terms" regarding specific rates of expected sediment release. *See* Chernaik letter dated October 10, 2011, at p. 14. Dr. Chernaik submits an article regarding sedimentation impacts from a dredging project on winter flounder habitat in Newark Bay, and points out that it includes certain "source term" data that is missing from Dr. Shepsis's analysis. In his October 17, 2011 submittal, Dr. Chernaik raises the same "source terms" issue again, this time relying on comments provided by Dr. Thomas Ravens. *See also* Chernaik letter dated October 17, 2011, at p. 1, Raven Letter dated October 14, 2011, at p. 2-3.¹³

In his letter dated October 14, 2011, Dr. Ravens states:

Sediment transport modeling of dredging operations should generally include a sediment production term that accounts for the introduction of suspended sediment into the water column. Data such as that cited [in the Newark Bay study] – showing the mass rate of sediment introduction due to clam shell dredging – should be used to assess the sediment transport impacts of dredging operations. However, a close reading of the statement provided by Vladimir Shepsis indicates that such an accounting of the particle generation of the dredging operation was not undertaken.

See Ravens letter dated Oct. 14, 2011, at p. 3. Stated in lay person terms, the hearings officer understanding Dr. Ravens to be finding fault with Dr. Shepsis's analysis because it fails to define a value representing how much sediment enters into the water column when the crane's bucket scoops mud out of the pipeline trench.

In his letter dated October 17, 2011, Dr. Shepsis responds to Dr. Ravens by explaining the differences between his studies and the Newark Bay Study, as well as by explaining the absence of "source terms" from his study:

The analysis provided in the Lackey study of the Newark Bay project is very different from our study because that involved a project where dredged materials would be permanently removed from the bay by a clamshell dredge. In that type of project,

¹³ The letter from Dr. Ravens stating his qualifications includes what the applicants see as a "significant admission" that only "some of the work that I have done *tangentially* addressed sediment transport impacts of dredging." Oct. 14 letter from Dr. Ravens, page 1. The applicant states that "[t]his does not exactly provide a ringing endorsement regarding Dr. Ravens's qualifications for review of this project." It is noteworthy that none of Dr. Ravens's scholarly articles appear to involve sediment transport impacts from dredging. Unfortunately Dr. Ravens did not appear before the hearings officer to offer testimony, so questions regarding his credibility and qualifications must be based on his resume and comments alone.

potential turbidity is measured based on the impact of the dredging bucket on the bottom and amounts of sediment that come out of the bucket during ascent and descent. Those are the 'source terms' referenced and measured in Table 1 of the Lackey study. In contrast, the current project involves trenching and placement of a stockpile mound adjacent to the trench prior to placement of the material back in the trench. As explained in my letter dated October 10, 2011, turbidity arising from placement of dredged material in the mound and impacts from tidal currents on the mound will be significantly higher than impacts from dredging the same material. Therefore our analysis considers the 'worst case scenario' of sedimentation in the form of impacts of hydrodynamic flow on trenched material, but the different type of 'source terms' from the Lackey study regarding rates of sediment dispersal during dredging and removal are not part of our analysis. Instead, the computer model that we prepared provides the rate of release of sediment from the trenched stockpile material. The model allows constant erosion and re-suspension of trenched material in the water column instead of period releases of this sediment from the bucket. (Emphasis added).

See Shepsis letter dated Oct. 17, 2011, at p. 5. In essence, Dr. Shepsis states that the "source terms" for the crane's bucket do not matter in this case because, unlike a typical dredging operation where sediments are removed from the water, the dredge spoils in this case will be placed temporarily on the floor of the estuary. Dr. Shepsis notes that that much more sedimentation will occur from both the placement of dredged material in the mound as well as the corresponding impacts from tidal currents as it laps up against the mound and dislodges sediment from the pile.

Both Dr. Raven and Dr. Chernaik fail to reply to Dr. Shepsis's explanation set forth above regarding why this particular project did not require the same "source term" inputs as the Newark Bay dredging project.

iv. Actions Which Cause the Most Sedimentation.

To a certain degree, it seems that Dr. Shepsis and Dr. Ravens are talking past each other. One particular exchange between Dr. Shepsis and Dr. Ravens illustrates this problem. On page 2 of his Oct. 10, 2011 letter, Dr. Shepsis states:

“Results from our analysis on this project and many other projects indicate that turbidity during placement of dredged material on an open (non-confined) bottom of a water body and storing this material under impact from current velocities is significantly higher than that during the digging of the same material.”

Dr. Ravens responds as follows:

“Although his statement is ambiguous, Vladamir Shepsis implies that more particles are generated **following** placement of dredged materials than during the dredging and placement process. If this is true, it is not common knowledge amongst sediment transport specialists.” (Endnote omitted, Emphasis in original).

See Ravens Letter dated Oct. 14, 2011. Reading these two passages side by side, it is apparent that Dr. Ravens misreads and misquotes Dr. Shepsis. In his various materials, Dr. Shepsis identifies four different periods of potential turbidity releases:

- A = turbidity generated when the crane’s bucket “digs the material” (*i.e.* removes mud from the trench and lifts it into the air)
- B = turbidity generated when the crane’s bucket places / deposits the removed mud on an open (non-confined) bottom of a water body (*i.e.* when the crane bucket opens and releases mud onto the storage pile).
- C = turbidity generated from “storing this material under impact from current velocities” (*i.e.* when tidal currents lap up against the mud mound).
- D = turbidity generated when the crane’s bucket fills the trench back in.

In the quote set forth above, Dr. Shepsis is saying: $B + C > A$. However, Dr. Ravens states that Dr. Shepsis is wrong to assume that $C > B + A$. (Note that Dr. Ravens refers to $A + B$ as the “dredging and placement process.”). Therefore, it is clear that Dr. Ravens either did not understand what Dr. Shepsis was saying, or Dr. Ravens purposefully misquotes Dr. Shepsis. Either way, it is a misreading that is fatal to Dr. Ravens’ credibility in this case.

"Substantial evidence" in the land use context is "evidence a reasonable person would rely upon in making a decision." It is a relatively low standard, as mentioned above. In this case, Dr. Shepsis’s analysis constitutes substantial evidence, in part because he responds to Dr. Raven’s testimony in a manner that does not seem to be unreasonable, at least to a lay person, and because Dr. Shepsis comes across as having greater expertise and greater credibility.

b. Dr. Raven’s Letter dated October 14, 2011.

In his letter dated October 14, 2011, Dr. Ravens suggests that the CHE analysis is also faulty because: (1) it does not provide data regarding particle size of sediments; (2) it focuses on turbidity increases resulting from tidal flow effects on stockpiled material, but not from dredging; and (3) Dr. Shepsis's conclusion that any suspended sediments will not result in detectable accumulations in Haynes Inlet is not credible.

i. Grain Size.

The applicant responds to issue 1 as noting that specific data regarding sediment grain size is provided in Volume 1 of the CHE Technical Report at Section 5.2, and is discussed in more detail below.

ii. Impacts Related to Turbidity Caused by the Crane's Bucket.

With regard to issue 2, the applicant notes that Dr. Shepsis and CHE have explained the basis for their methodology concerning conducting turbidity modeling based on impacts on the stockpiled materials. The applicant cites to Volume 2 of the CHE Technical Report, at Section 10.1:

"10.1 Methodology

"The objective of analysis and modeling conducted in this section is to determine the potential impact of pipeline construction through Haynes Inlet on increases in turbidity (suspended sediments) at the area of interest. The location of the pipeline and area of interest for investigation of potential impact were defined in CHE (2010b) and are shown in Figure 10-1.

"There will be three elements of dredging operations during pipeline construction that may generate turbidity in the water column:

- "1. Dredging (excavation) of the pipeline trench.
- "2. Placing (dumping) dredged material adjacent to the pipeline trench for temporary stockpiling.
- "3. Replacing material back into the pipeline trench following pipeline construction.

"In order to address the worst case scenario of maximum turbidity and highest likelihood of impact, analysis and modeling of turbidity were conducted for the dredged material placement (dumping) adjacent to the pipeline trench. Results from the analysis and modeling suggest that turbidity during placement of dredged material on the open (non-confined) bottom is significantly higher than that during dredging of the same material. Similarly, re-placement of dredged material in the pipeline trench will create smaller amounts of turbidity because the material is more confined within the trench."

This methodology was adopted by CHE based on its modeling results for this particular project in Haynes Inlet, which involves not just dredging but also stockpiling and replacement of dredged material. According to the applicant: "this is a scientifically accepted methodology that has been accepted by DEQ for purposes of its review of potential water quality impacts from this project in Haynes Inlet."

The applicant further notes that Dr. Ravens admits that he has only "tangentially" reviewed dredging projects in "some" of his work, and it appears that he has *no* experience regarding this type of pipeline project involving not only dredging but also stockpiling and

replacement of material. For this reason, the applicant surmises that it is not surprising that Dr. Ravens is not familiar with the methodology. Under these circumstances, the hearings officer accepts the more specific expert testimony and conclusions of Dr. Shepsis and CHE regarding the appropriateness of their "worst case scenario" methodology for purposes of this particular project.

Further, even if the County looks past the "worst case scenario" methodology to also consider what the potential effects on turbidity could be from dredging and replacement of material in the pipeline trench, the evidence in the record from CHE and Dr. Shepsis support a finding that even if all three activities are considered, there would be no negative impacts from sedimentation on Olympia oysters. The analysis and reports prepared by CHE and Dr. Shepsis conclude that (1) turbidity resulting from tidal flows on stockpiled materials would not result in *any* detectable increase of sedimentation in Haynes Inlet, and (2) turbidity resulting from tidal flows on stockpiled materials would be "significantly higher" than that resulting from dredging or re-placement of the same material. CHE Technical Report Section 10.1, quoted above. Therefore, it is reasonable to conclude that if the activity causing "significantly higher" amounts of turbidity will result in no detectable sedimentation, then the activities that would cause significantly lower amounts of turbidity will also cause no increases in sedimentation in the area.

iii. Suspended Sediments Will Not Likely Result in Detectable Accumulations in Haynes Inlet.

The applicant responds to the third issue raised by Dr. Ravens by noting that Dr. Shepsis concluded that any suspended sediment caused by pipeline construction will disperse and not result in detectable accumulations of sedimentation in Haynes Inlet. Dr. Ravens states that this conclusion is "not credible." However, Dr. Ravens provides no analysis or explanation other than to say that "small concentration of particles can lead to significant deposition over time." See Ravens letter dated Oct. 14, 2011, at p. 3. A review of the specific results of Dr. Shepsis's study reveal that his conclusion is both credible and well-documented in his letter dated October 10, 2011.

The Shepsis study analyzed two potential stockpile locations, one at approximately milepost 3.2 and the other at approximately milepost 2.8. The modeling results for the milepost 3.2 location show a small volume of increased turbidity that is extremely limited in location to the immediate vicinity of the stockpile itself, and also limited to two time periods of less than 15 minutes per day. Therefore, it is certainly reasonable for Dr. Shepsis to conclude, as stated in his letter to the hearings officer, that any sediments in this area "will essentially remain in the immediate stockpile area and will not spread to the rest of Haynes Inlet." See Shepsis letter dated Oct. 10, 2011, at p. 3.

The second study area, located at milepost 2.8, is subject to much higher tidal velocities, and is therefore the more critical of the two sample locations. The modeling results in that location show very short increases in turbidity (less than 15 minutes per day) that coincide exactly with the highest outgoing tides. Therefore, to the extent there will be a very brief increase in suspended sediment in that area, such sediment would be immediately dispersed with the extremely fast-moving tidal currents of up to 4 feet per second and, essentially flushed out and under the Highway 101 bridge into an area where there is no documented evidence of

Olympia oysters. Therefore, Dr. Shepsis reasonably, and credibly, concluded his letter to the hearings officer as follows:

3. Conclusion

Based on the results of our detailed three-dimensional modeling, my conclusion is that pipeline construction will not result in any detectable increase of suspended sediment concentration and deposition in Haynes Inlet. Overall, our modeling indicates that changes in suspended sediment concentration during construction of the pipeline will be negligible compared to existing conditions in Haynes Inlet. Although there may be very temporary and localized increases in suspended sediment concentration due to high velocities in the area of the bridge, the sediment would not be able to deposit on the identified oyster locations.

See Shepsis letter dated Oct. 10, 2011, at p. 4. The only evidence that Dr. Ravens presents on this subject is his statement that "small concentration of particles can lead to significant deposition over time." However, the timeframes associated with construction of the pipeline and the existence of stockpiled material in Haynes Inlet are relatively short for each segment of construction. As explained in the CHE Technical Reports, the total duration of trenching operations (excavation, placement of pipeline and trench refill) for each 800-foot pipeline reach is approximately seven days. CHE Technical Report, Volume 2 page 17, Section 11.1. As described in that report: "Considering the above, the objective of this analysis is narrowed to determining the possible dispersion of sediment and turbidity resulting from a stockpile of dredged (excavated) material along the pipeline route during seven days of construction." *Id.*

Thus, while Dr. Ravens is correct that even tiny concentrations of particles can result in significant deposition over significant periods of time, Dr. Ravens has not provided any evidence to suggest that the small amounts of turbidity referenced in Dr. Chernaik's study could actually result in significant deposition given that their duration is less than 15 minutes per day, and the stockpiled material will only be located in the water for an estimated seven days.

c. Chernaik Materials dated November 17, 2011.

There are three sediment-related issues raised in the opponents' November 17, 2011 submittal.

i. Newark Bay, NY Study.

As an initial matter, there is continued discussion regarding the details of the Newark Bay project and how it compares to the applicant's project. However, as the applicant's attorney Roger Alfred notes, this "back-and-forth between the two doctors regarding the Newark Bay project has gone beyond its significance to this proceeding." As discussed above, that study was originally provided by Dr. Chernaik solely to provide an example of the type of "source terms" that he believed should have been included in Dr. Shepsis's work. The debate regarding

comparisons of the amounts of sediment likely to be generated by that project versus the Haynes Inlet project is not particularly relevant to the issues at hand.

Moreover, in this particular exchange, Dr. Shepsis clearly gets the better of Dr. Chernaik. The Newark Bay study involved dredging, rather than trenching and stockpiling, and the dredging operation would produce much higher amounts of sediment because the dredging bucket pulls sediment out of the bottom of the bay and all the way through a 30-40 foot water column. On the other hand, this project involves the temporary removal of material from the bottom of the inlet, in water that is no more than 8 feet deep, and the temporary placement of that material in a stockpile right next to the dredged area.

ii. "Unvalidated" Sediment Transport Model Regarding Background Levels of Turbidity.

The report prepared by Dr. Ravens titled "Limitations of the Haynes Inlet sediment transport study" dated November 13, 2011 challenges two aspects of the Technical Report prepared by CHE that provides the background data for this study. Specifically, Dr. Ravens states that the CHE analysis is faulty because: (1) it relies upon an "unvalidated" sediment transport model regarding background levels of turbidity; and (2) it incorrectly relies upon an assumption of uniform sediment size despite data showing that sediments are smaller than assumed.

The two issues raised by Dr. Ravens are discussed by Dr. Shepsis in his letter dated November 23, 2011. First, Dr. Shepsis explains that the CHE sediment transport model is being used for qualitative purposes only, and does not apply the type of absolute quantitative values that would require the modeling results to be validated or calibrated against measurements of background turbidity from the subject site. In other words, the CHE analysis compares a model of background levels of turbidity against what would be generated by project construction, and reports the extent to which there will be an increase, decrease, or no change in turbidity resulting from construction. The applicant states that: "[i]n this type of qualitative analysis it is an accepted scientific practice to rely upon modeled background data that has not been independently verified at the site, because the point of the study is only to establish the extent project conditions will result in an increase over existing conditions; therefore, knowing the actual quantitative amount of background turbidity is not essential." Dr. Shepsis further states:

I have clearly stated from the beginning of the project (see Technical Report entitled Jordan Cove Energy Project and Pacific Connector Gas Pipeline - Volume 1, Page 40) and have repeated several times in Volume 2 of the same technical report, that the model used for sediment transport and related parameters as turbidity, sediment concentration, etc..., has not been validated or calibrated for this study and that the modeling results for sediment transport and related parameters are used qualitatively for comparative analysis only. This means that the analysis is performed in terms of "relative to existing conditions." No quantitative absolute values are considered for this analysis. The study provides results of potential impact from the project

construction in respect to existing conditions (background conditions). The increase, decrease, or no-change of sediment concentration, turbidity etc... in respect to the modeled background conditions has been provided as output of this study. This approach, use of a non-validated model in qualitative mode, is typical in the industry and has been previously used in many credible studies.

Further, the argument used in Dr. Ravens' example is flawed because I did not perform the analysis in quantitative terms. In Dr. Ravens' example, the wrong assumption is to consider my results as absolute values. For example, if the modeled background concentration was even five times larger than the actual background concentration (as Dr. Ravens supposes in his example), then also the modeled post-project concentration would be five times larger than the actual post-project concentration. Therefore, the relative comparison between background and post-project would remain the same in nature as in the model. Regardless of what the actual background conditions are in nature, my results provide an increase, decrease, or no-change of the modeled parameter (turbidity, sediment concentration, etc...) for modeled post-project conditions in respect to modeled background conditions.

See Shepsis letter dated Nov. 23, 2011, at p. 2. Dr. Ravens does not respond to this testimony. The hearings officer finds Dr. Shepsis' analysis to be more credible and further finds that it constitutes substantial evidence that is not undermined by Dr. Raven's testimony to the contrary.

iii. Grain Size.

Next, regarding the allegations concerning improper assumptions of sediment size, Dr. Ravens argues that Dr. Shepsis' analysis is flawed because he assumes a single uniform grain size in his model (.27 mm), which is a typical size for a fine grain of sand. According to Dr. Ravens, the model should have used grain sizes that approximate silt and clay as well (i.e. grain sizes in the range of .10 mm and .05 mm). Dr. Ravens attributes two problems with this error: (1) "the calculation of background turbidity distribution at the study site would be inaccurate," and (2) the modeling of dredging-derived turbidity would be inaccurate. See Ravens letter dated Nov. 13, 2011, at p. 5-6.

The hearings officer notes that of the three representative grain sizes that Dr. Ravens places at issue. Of those three, the .10 mm grains are most likely to result in higher turbidity, according to his calculations. See Table 1 of Ravens letter, at p. 5. Table 1 shows .10 mm silt grains having an "average suspended sediment concentration" of 3000 mg/ltr, which is much higher than the sand sized-grains (10 mg/ltr), or the smallest silt sized grains (200 mg/ltr.). The hearings officer understand that the .05mm grains produce less turbidity than the .10 grains because the .05mm sized grains are "cohesive" in nature, which means that inter-particle forces start to dictate the resistance to motion, as opposed to mere gravitational forces. *Id.* at p. 5.

Nonetheless, Dr. Ravens conclusions do not seem to hinge specifically on the .10 mm sediments. Rather, Dr. Ravens' point is simply that finer grained silts and clay sediment will disburse farther than sand:

The time a given dredging turbidity plume is suspended can be estimated based on the ratio of depth over the fall velocity. The fall velocity for .27 mm and .05 mm sediments is about 30 mm/sec and 2 mm/sec respectively. Consequently, the finer sediment would be suspended for about 15 times as long and would be dispersed over 15 times the distance.

Id. at p. 6. Essentially, Dr. Ravens point is that sand falls through water much faster than silt, which means that silt stays in suspension longer than sand, and, as such, has more time to get carried away in the tides than will the sand.

Dr. Shepsis responds that Dr. Chernaik and Dr. Ravens are factually wrong to assume that the CHE Technical Report only uses one grain size (*i.e.* the larger .27 mm grain size). The CHE Technical Report states that numerical modeling of sediment transport was conducted with two sediment sizes, 0.27 mm grain diameter (sand) and 0.05 mm grain diameter (silt), which the report says is representative of the typical sediment sizes present in Coos Bay including Haynes Inlet. *See, e.g.*, CHE Technical Report at p. 41. Dr. Shepsis states:

These two sediment sizes are representative of the typical sediment sizes present in Coos Bay including Haynes Inlet, as it results from the study conducted by GeoEngineers (August 2010), referenced by Dr. Ravens. I was aware of the fact that the sediment size distribution in Coos Bay including Haynes Inlet was spatially variable, ranging from silt to sand. The modeling results presented in Section 10.1 of the Technical Report entitled Jordan Cove Energy Project and Pacific Connector Gas Pipeline - Volume 2 (quoted by Dr. Ravens) were conducted with 0.27 mm grain diameter because this is the type of sediment present in the majority of the study area. Dr. Ravens' statement that '*However, the sediment characterization study conducted by GeoEngineers (August 2010) indicates that the sediments are significantly finer than this in large portions of the study area*' is not supported by the GeoEngineers study of August 2010. According to the GeoEngineers study, the only section where the percentage of silt (50.4%) is comparable to the percentage of sand (48.4%) is section DMMU-1 (and not DWWU-1, as erroneously quoted by Dr. Ravens). This section is located in the north part of Haynes Inlet, far from the oyster relocation area. The other two sections (DMMU-2 and DMMU-3) have 67.0% and 86.2% of sand and only 33.0% and 13.1% of silt, respectively.

I have shown in the paragraph above that the use of 0.27 mm sand is a reasonable assumption for our study and not a '*wrong grain*'

size' as Dr. Ravens commented. Nevertheless, I want to reiterate that Dr. Ravens is again reasoning in absolute terms ('... *the calculation of the background turbidity distribution at the study site would be inaccurate if the wrong grain size is assumed...*'), while my analysis was performed in terms of 'relative to existing conditions.' My study was a qualitative/comparative analysis. My modeling results are produced as "concentration in excess of ambient concentration.

Again, the 0.27 mm grain size used in my modeling efforts is a reasonable sediment size, given the information in the Geo-Engineers study. Furthermore, not only did I use a reasonable grain size for analysis of sedimentation, but using a larger grain diameter (0.27 mm versus 0.05 mm) is conservative in terms of potential impact to oyster beds. Dr. Ravens should have known and should have educated Dr. Chernaik that larger sediment particles may deposit in close vicinity of the source of suspension and is more indicative factor for sedimentation of oyster beds.

See Shepsis letter dated Nov. 23, 2011, at p. 3. Thus, Dr. Shepsis states that the portions of the Haynes Inlet that have the most sand (as opposed to silt) are also the areas that have the highest flow velocities. Obviously, that is not a coincidence: the smaller sediment will not settle in high-velocity environments. The areas of low flow velocities will likely create less far-reaching turbidity, even though the percentage of silt is higher, due to the fact that the tides have less energy in those locations. Conversely, in areas where the flow velocities are the highest, the fact that the majority of the sediment is sand limits the distance that such sediments will travel. Dr. Shepsis seems to be of the opinion that the larger particles are the most dangerous in terms of potential impact to oysters for the simple fact that will deposit in close vicinity to the dredging location, and, therefore, will create thicker layers of sediment.

Although this issue presents somewhat of a close call due to its technical nature, the hearings officer finds Dr. Shepsis' analysis to be more credible and further finds that it constitutes substantial evidence that is not undermined by Dr. Raven's testimony to the contrary. Three issues factor into this conclusion. First, although Dr. Ravens criticizes Dr. Shepsis's study, he never really addresses the ultimate issue, which is to say that he never concludes that the dredging operations will fail to "protect" the oysters. Second, He never really accounts for, or weights in on, the use of best management practices such as silt curtains, etc. Third, the hearings officer does not believe that Dr. Ravens has done enough to make the case that the fine sediment (.05mm) will harm the oyster beds. As discussed elsewhere, Dr. Ravens does state that "small concentration of particles can lead to significant deposition over time," but he makes no effort to quantify what he means by "small quantities" or explain how much time he is referring to. In short, his statements and analysis are simply too vague and too perfunctory to cause a reasonable person to disregard Dr. Shepsis' analysis.

2. Even with some sedimentation, there will be only "temporary and insignificant" impacts on Olympia oysters.

The applicant argues that “the sedimentation issue is a red herring, because the opponents have greatly overstated the potential impacts of sedimentation from this project on Olympia oysters.” The applicant points out that “the bucketful of Olympia oysters that will be relocated by the applicant are, generally speaking, already attached to hard substrate.” There is substantial evidence in the record that (a) adult oysters can tolerate relatively high amounts of sedimentation (several millimeters), (b) Olympia oysters prefer to locate on the undersides of hard substrate, where sedimentation is not as much of an issue, and (c) the post-construction mitigation being proposed by the applicant will be successful, and obviously will not be impacted by sedimentation from the project, since it occurs after pipeline construction is complete.

Therefore, even if the opponents were somehow correct that Dr. Shepsis has underestimated the amount of sedimentation, that would not require the conclusion that there will be anything more than temporary or insignificant impacts on Olympia oysters. This is particularly true, given the applicant's proposal to provide post-construction mitigation in the form of new Olympia oyster habitat. Turbidity resulting from the project must be monitored as part of DEQ requirements. The hearings officer recommends a condition of approval requiring the use of turbidity curtains if monitored levels of turbidity exceed threshold levels mandated by DEQ.

The opponents attempt to cast doubt on the Shepsis /CHE analysis by having the study informally peer reviewed by Dr. Zarcherl and Dr. Ravens. The opponents also rely on data from a sedimentation study for a dredging project in Newark Bay.

There is evidence in the record to support the conclusion that Olympia oysters can survive some amount of sedimentation. For example, there is evidence in the record, in the form of the opponents' own statements, the testimony of Dr. Ellis, and the video submitted by Rex Miller, that sedimentation is not necessarily going to harm Olympia oysters (particularly adult Olympia oysters) or their ability to reproduce. First, the opponents themselves submitted the following statement from a 2005 Corps of Engineers study:

Although a thin layer (several mm) of sediments may not be fatal to adult oysters, it may affect reproduction. Because larval oysters require hard substrata for settlement, the presence of even a few millimeters of sediment covering an oyster reef may inhibit larval recruitment.

See Chernaik letter dated Oct. 10, 2011, at p. 8. Thus, opponents admit that several millimeters of sediment is not necessarily fatal to adult oysters, and that the real threat from sedimentation is on reproduction. However, even regarding reproduction, the above-quoted statement suggests that a millimeter or two of sediment is not going to "inhibit larval recruitment" on hard substrate. Thus, the opponents' later assertion that even 50 microns of sediment will prevent attachment of larvae is contradicted by their own evidence (one millimeter is a thousand microns, so 50 microns = 0.05 mm).

The Olympia oysters to be *relocated* under the Mitigation Plan are, by definition, adults that are already attached to hard substrates. Therefore, the evidence submitted by opponents indicates that those oysters can survive under "several millimeters" of sediment.¹⁴ Also, as discussed below, Dr. Zacherl's restoration project in Newport Bay shows significant increases in Olympia oyster density in six months where Pacific oyster shell was placed, *in spite of an average mud deposition of 0.8 mm (800 microns) on the shells.*

This is also consistent with the oysters shown in the DVD submitted by Rex Miller (at approximately 6:50 through 9:15), which are covered in relatively thick layers of mud. According to Mr. Miller, those oysters are "doing pretty well" and are even continuing to reproduce.

Based on this evidence, the hearings officer finds that even some amount of sedimentation will not impact the oysters being relocated by the applicant, or other existing adult Olympia oysters in Haynes Inlet. This is particularly true regarding the Olympia oysters in the areas near the bridge where high tidal flow velocities will prohibit accumulation of sediment.

Meanwhile, the mitigation being proposed by the applicant will be specifically designed in consultation with ODFW to attract larval settlement of Olympia oysters (see proposed condition of approval above), and will obviously occur *after* construction. Therefore, there will be *no* sedimentation impacts from pipeline construction on the ability of larvae to attach on the new hard substrate that will be provided by the applicant. As a result, the hearings officer finds that some sedimentation will not result in impacts to adult oysters, and larval attachment in the mitigation area will not be impacted because that will occur post-construction.

The opponents submitted arguments that a sediment covering of less than 50 microns (1/500th of an inch) is enough to impair the attachment of Olympia oyster larvae to hard substrate. Oct. 10 memo from Mark Chernaik, page 7. However, this figure is not based on any scientific study, it is merely based on a personal estimate provided by a biologist, Dr. Ravens, recruited by the opponents (*Id.* at 8). This evidence is directly contradicted by the 2005 Corps of Engineers study quoted above. Moreover, Dr. Ellis provided data to the contrary from Dr. Zacherl's project in Newport Bay, which is actually based on a scientific study. As stated by Dr. Ellis:

"Dr. Chernaik fails to mention that Olympia oyster spat have a strong preference for the undersides of hard substrates (Sawyer, 2011), which would be unaffected by sedimentation. Zacherl et al., (2011) found that six months after placement of Pacific oyster shell in Newport Bay, Olympia oyster density was up to 20-30 times greater than the control (where no Pacific oyster shell had been placed) in spite of an average mud deposition on that shell of 0.8 mm. The results of this study have not been published, but a presentation was given at the 2011 Headwaters to Ocean

¹⁴ Dr. Shepsis included an estimate that any sedimentation resulting from the pipeline construction in Haynes Inlet would be "a much lower detectable level than 30 microns." Oct. 17 letter from Dr. Shepsis, page 4.

Conference, and this presentation (Zacherl, et al., 2011) is included as attachment A."

See Ellis letter dated Oct. 17~~m~~-2011, at p. 10. Thus, Dr. Zacherl's own study found that Olympia oysters were thriving and reproducing despite an *average* sediment coverage of 0.8 mm. By way of contrast with the opponents' 50 micron figure, 0.8 mm is 800 microns. Dr. Zacherl admits that oyster larvae prefer attaching to the underside of hard substrate, and therefore relatively high levels of sedimentation cover on the topside of a shell is "less of an overall impediment" for the attachment of Olympia oyster larvae. See Chernaik letter dated Nov. 14, 2011, at p. 4.

The opponents' only substantive response is that the applicant's mitigation plan would distribute shells too diffusely for there to be any available undersides on which larvae can attach. *Id.* However, this misses the obvious fact that the applicant's proposed mitigation will occur *after* construction of the pipeline – when construction-related sediment will no longer be an issue. Moreover, it also ignores the fact that discarded Pacific oyster shells have been successfully colonized by Olympia oysters in Haynes Inlet.

Regardless, based on comments of this nature submitted by the opponents regarding a need for deeper dispersal of Pacific oyster shell to provide available "underside" for attachment, the applicant is proposing the condition of approval set forth above that requires the applicant to consult with ODFW regarding the best methods for and location of shell dispersal in order to ensure successful colonization, including greater depths of shells and placing thick groups in "bags" as documented in the Zacherl study. The hearings officer findings this proposed condition to be reasonable and likely to be effective. The hearings officer is satisfied that the applicant can work with the appropriate agencies to determine the best distribution of shells to maximize the recruitment / settlement of oyster larvae.

3. Discussion of Miscellaneous Arguments Associated with the Sedimentation Issue.

a. Reliance on 2005 data.

Jody McCaffree and other opponents challenge CHE's reliance on tidal flow data from June 2005, arguing that the data should have considered the months of October through February when construction of the pipeline will occur. Dr. Shepsis rebuts this assertion in his letter dated October 17, 2011. He states that tide fluctuations (*i.e.*, differences between highest and lowest tides) during the modeling period from June 18, 2005 through July 18, 2005 are similar to fluctuations during the month of October. Also, the maximum tide amplitudes for June are relatively high (11.12 feet), and are virtually the same or less for the months of October through February, with the exception of November which is only 0.2 feet higher. Therefore, as explained by Dr. Shepsis in his October 17, 2011 letter, tidal flow velocities during construction months would be lower or insignificantly higher than what is predicted in the model. Given this discussion, the hearings officer finds that the use of June 2005 data does not make the Shepsis analysis less "substantial."

b. Impact of Pipeline Trenching and Stockpiling on Flow Velocity.

Ms. McCaffree argues that the CHE analysis did not consider what the impact of the construction activities (*i.e.*, trenching and stockpiling) would be on flow velocities in Haynes Inlet. Dr. Shepsis responds in his letter dated October 17, 2011 by pointing out that the modeling does include consideration of trenched and stockpiled material on flow velocities, and the resulting turbidity analysis is therefore based on velocities that will occur upon trenching and stockpiling. Thus, the hearings officer finds that this concern does not ~~made~~ make the Shepsis analysis less “substantial.”

c. Consideration of Proposed Port channel and LNG terminal.

Ms. McCaffree contends that the CHE analysis should have included (a) potential effects from the Port's proposal to deepen and widen the Coos Bay Channel, and (b) impacts from removal of material required to construct the new slip for the LNG terminal. Dr. Shepsis argues in his letter dated October 17, 2011 that the Port's proposal was not considered as part of the CHE analysis because it is, as of that date, just a speculative project that may or may not actually occur. Also, Dr. Shepsis further points out that the two-volume Technical Report prepared by CHE provides a detailed analysis of flow velocities related to dredging for the LNG terminal, and shows that construction of the terminal and dredging the access channel would not alter tidal flow velocities in the area of Haynes Inlet.

The hearings officer finds that, with regard to this very technical issue, that Dr. Shepsis's second response to this issue seems reasonable and constitutes substantial evidence. Again, it would be much more effective for the opponents to have brought forth evidence tending to show that the deepening of the Coos Bay channel would in fact alter tidal flow velocities in the area of Haynes Inlet.

d. Timing of Construction During Oyster Spawning Season.

One of the more significant and potentially meritorious issues in this case was raised by Dr. Chernaik in his oral presentation at the Sept. 21, 2011 hearing. This argument is essentially repeated in his October 10, 2011 memorandum. Therein, Dr. Chernaik cites a Master's thesis published by a graduate student with the Oregon Institute of Marine Biology (K. Sawyer 2011) which determined that the “settlement” season for Olympia oyster larvae begins in earnest in September, peaks in October and lasts until early December. This study conflicts with other studies from the Puget Sound, cited by the applicant, which concluded that settling begins in the first week of September and lasts until the second week of October. *See* Ellis Oyster Survey, at p. 4. Dr. Chernaik summarized Ms. Sawyer's results are summarized below.

“Table 4 indicates that the maximum numbers of Olympia oyster settlers were counted on October 5, 2010 for almost all substratum types; this can be seen in the graph of total settlers per treatment (Figure 12) which illustrates the average density of settlers for all treatments on each collection date. Settlement varies significantly among the 20 collection dates with increased settlement from

September- November and a distinct settlement peak in October.”¹⁵

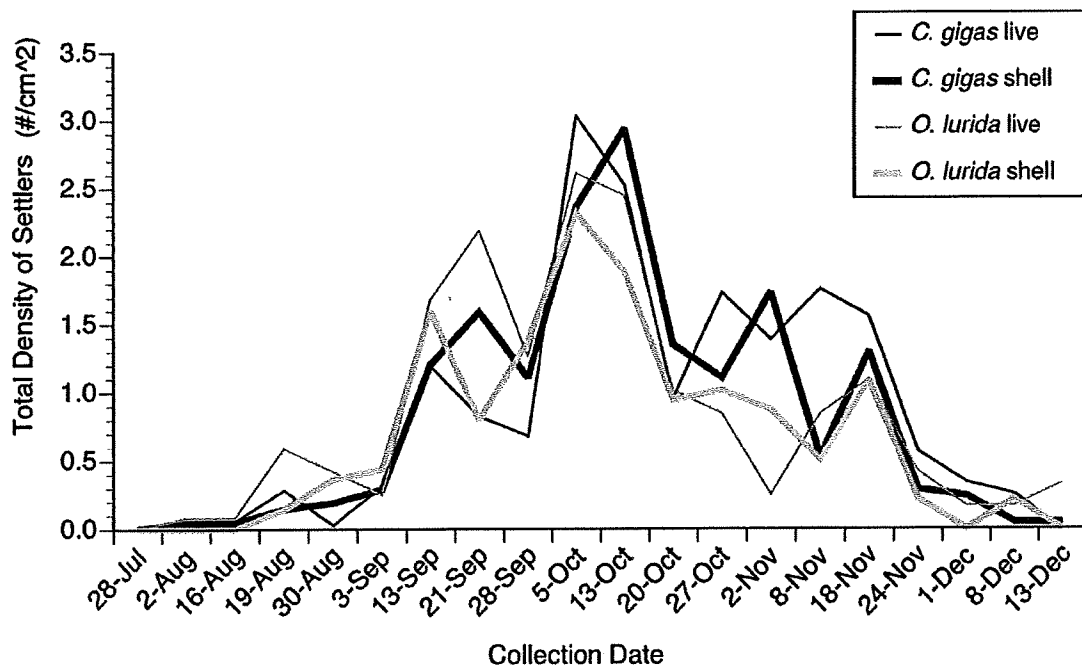


Figure 12. Total densities of Olympia oyster settlement (#/cm²) on each substratum throughout the season. Settlement on all four substratum types follows the same temporal pattern.

Dr. Chernaik concludes as follows:

The significance of these results is certain: not only would conditions placed on the construction of the Pacific Connector Gas Pipeline fail to protect Olympia oysters in Coos Bay, the timing of in-water work, beginning on October 1, would maximize the harm dredging activities in Haynes Inlet would have on the reproduction of Olympia oysters.

As a result, Dr. Chernaik contends that in order to protect Olympia oysters, pipeline construction should not be allowed to begin until the spawning season ends in early December.

Dr. Ellis rebuts Dr. Chernaik’s argument in a letter dated October 17, 2011, which explains as follows:

[Dr. Chernaik] contends that since the ODFW work period for Coos Bay is from October 1 to February 15 that suspended sediment generated during pipeline construction would occur at the

¹⁵ Sawyer, K. (2011) “Timing of Settlement and Substrate Selection by Larvae of the Olympia Oyster (*Ostrea lurida*) in Coos Bay, Oregon.” MsC Thesis, University of Oregon – Oregon Institute of Marine Biology, Charleston, OR. 53 pp.

most sensitive period for the larval oysters and cause widespread detrimental effects on Olympia oyster recruitment. This issue was addressed in our rebuttal testimony and is briefly summarized as follows:

- "1. Results of detailed 3-dimensional water velocity and sediment modeling indicate that dispersion of fine sediments will be spatially limited to the immediate vicinity of the trenching, stockpiling and backfilling areas of activity.
- "2. If fine sediments were to settle on hard substrates nearby to the construction area, it would be a very thin layer on the surface of the hard substrates and would not preclude larvae from attaching on the unaffected underside of hard substrates, which is their preferred location.
- "3. Placement of Pacific oyster shells in the right of way as mitigation for direct impacts to Olympia oyster habitat (i.e., MP 2.9 to 3.2) will occur post-construction and therefore, will not be subject to any construction-related sedimentation."

See Ellis letter dated Oct. 17, 2011, at p.10. Dr. Steve Rumrill weighs in on this issue in his letter dated November 28, 2011. His letter is notable by its matter-of-fact tone and a general lack of advocacy for either party.¹⁶ Dr. Rumrill states:

The data generated by [Ms. Sawyer's] thesis work documented that Olympia oysters exhibited a distinct peak in larval settlement in October that was preceded by a smaller period of elevated larval settlement in August. The thesis work by Ms. Sawyer has excellent reliability and represents the best available science regarding the timing of larval settlement by Olympia oysters in Coos bay. From the perspective of the Olympia oysters, it is advisable to avoid activities that disrupt deposited sediments and/or increases in the load of suspended sediments in October because the suspended sediments may become deposited on the limited surfaces of suitable hard substrate (*i.e.* oyster shall, rock, cobble) and interfere with the settlement and attachment of the Olympia Oyster larvae.

¹⁶ Dr. Rumrill has, surprisingly, not taken center stage in this proceeding, despite the fact that he likely has more expertise on Haynes Inlet Olympia Oysters than any of the other scientists. No doubt, he faced a concerted lobbying effort by both sides to solicit his testimony. Nonetheless, it is difficult to assess what to make of his overall lack of active participation in this process. Overall, the hearings officer believes that his lack of participation tends to favor the applicant, as it suggests a lack of concern on Dr. Rumrill's part.

See Rumrill letter at p. 6. The hearings officer assigns a high degree of credibility to the statements of Dr. Rumrill, due to his specific expertise with this particular bi-valve species. Nonetheless, it is unfortunate that Dr. Rumrill does not address the issues set forth in the Oct. 17, 2011 Ellis letter.

The hearings officer finds that that this is one of the more difficult issues in the case, and one that requires considerable thought and careful examination. The 2011 K. Sawyer study, viewed in light of Dr. Rumrill's endorsement, constitutes substantial evidence supporting the conclusion that pipeline construction could have negative effects on larval attachment if it results disrupted deposited sediments and/or increases in the load of suspended sediments in October. Since the Sawyer study is specific to Haynes Inlet, it carries with it substantial evidentiary weight. The only real weakness in the Sawyer evidence is that it only documents one season's worth of data (*i.e.* 2010). Since we know from the record that spawning is temperature dependent, and we know from common experience that 2010 was a cool summer throughout Oregon, one can draw an inference that 2010 may have been a late spawning season as compared to other years. That fact alone may account for the difference between Sawyer's results and the results of other studies from Puget Sound. Nonetheless, there is nothing to say that the year that pipeline construction takes place might not also be a late spawning season, and therefore the hearings officer is not dismissive of the Sawyer study on those grounds alone.

However, even if one assumes that the dredging activity will interfere, to some extent, with one spawning season, it does not follow that the construction activities result in management of the district that fails to "protect [the zoning district's] resource productivity." Under an unlikely worse-case scenario, the pipeline construction could - in theory - cause the complete failure of one spawning season in the portion of Haynes Inlet affected by siltation. Even that potential result, though unfortunate if it happened, would only set back the *recovery* of the Olympia oyster. It would not be expected have an effect on the adult Olympia oysters in the remaining portions of Haynes Inlet, nor would it reduce the overall population of Olympia oysters, given their long life spans.

The hearings officer finds it difficult to imagine a scenario where sedimentation from the construction activities will result in long-term or permanent siltation of Olympia oyster habitat. Given the effect of tidal activity in the bay and the high rainfall experienced in the Coos Bay area, there is sufficient hydraulic activity occurring in the Haynes Inlet to cause sediment to wash off of hard substrate. This is particularly true since the causeway creates a funneling effect that increases flow velocities in the southern portion of Haynes Inlet. Thus, under this worst-case scenario, the biggest effect on Olympia oysters would be a flat-lining of the population in a portion of the Haynes Inlet for one season. Such an effect would be temporary, and, in the hearings officer's estimation, insignificant to the overall population of Olympia oysters in Haynes Inlet.

Moreover, the applicant has already indicated that it would use turbidity curtains if needed to isolate in-water work zones and contain increased suspended sediment to a defined area. See Ellis Oyster Survey, §4.1.3 at p. 25. While these turbidity curtains are not likely

going to contain *all* sediment,¹⁷ their effect would be substantial in limiting harm to Olympia oyster beds.

The hearings officer finds, in addition, that the “worst case scenario” set forth above is unlikely to occur. As an initial matter, Olympia oyster larvae will still be able to attach to the underside of hard substrate, even if the top and sides of such substrate are silted too heavily to allow for attachment. Moreover, even under the opponent’s “October-peak” hypothesis, a significant number of oyster spat will have settled in the August and September time frame. It is assumed from the general discussion by the parties, that these early-settlers will not be affected by late season (October and later) siltation. Third, the applicant’s statement that the “dispersion of fine sediments will be spatially limited to the immediate vicinity of the trenching, stockpiling and backfilling areas of activity,” is reasonable and likely correct.

One final point warrants discussion. The applicant is already operating under a reduced work-window of 1 October to 15 February. Assuming that the applicant starts its in-water construction activities on October, it seems unlikely that the construction activities will have progressed far enough to reach the areas of oyster habitat (near the causeway, from Milepost 2.6 to MP 3.2.). Regardless from which direction construction begins, it will have to install at least one mile of pipe before reaching these critical areas. The applicant estimates that it can install 800 feet of pipe per week, which means that, at best, the applicant will only have traversed 3200 feet by the end of October. The high-density oyster beds near the causeway are fully a mile from either starting point within Haynes Inlet. Thus, given that schedule, it is unlikely that construction would reach the critical oyster habitat areas near the bridge until December at the earliest.

The hearings officer makes a number of recommendations:

1. It seems that the mitigation plan should be effectuated either in late-July or early August following the construction season. This would ensure that the oyster shells have been in the water only a short time prior to the time the larval oysters seek to attach to the shells.
2. Based on the potential for the larval settlement peak in October, PCGP should not be allowed to conduct dredging operations between Milepost 2.6 to MP 3.2. during the month of October.

These conditions will ensure that the potential harm is reduced to such a degree that there is at most a *de minimis* or insignificant impact on aquatic resources such as the Olympia oyster.

4. Discussion of Other Issues Raised by Opponents.

This section responds to issues raised by opponents that do not fit within the other sections set forth above.

¹⁷ See discussion on Chernaik letter dated Sept. 14, 2011, at p. 13.

a. Alternative Routes.

In her letter dated October 10, 2011, Jody McCaffree invites the hearings officer to apply Plan Policy 14 in a manner to compel an alternative route. However, that issue was not raised to LUBA and therefore the issue is waived on remand. The local government is entitled to limit the scope of the remand proceedings to issues that were the basis of the remand. *Hearne v. Baker County*, 89 Or App 282, 748 P2d 1016, *rev denied*, 305 Or 578 (1988); *Von Lubken v. Hood River County*, 19 Or LUBA 404, 419 (1990), *aff'd*, 106 Or App 266, *rev denied*, 311 Or 349 (1991). Coos County did so in this case.

Even if the issue were not waived, Ms. McCaffree's argument is wrong on the merits. In this case, FERC decided that the route it approved was better than a host of alternative routes. The County is not in a position to second guess FERC on this issue. But even if it were, Plan Policy 14 was not written in a manner that makes it obvious that it applies to linear features such as a pipeline. The policy sets up a preference for using urban or urbanizable lands as well as exception lands prior to using lands subject to Policy 14. The Plan policy simply has no applicability to linear features such as pipelines that traverse multiple zoning districts.

In her letter dated October 17, 2011, Ms. McCaffree presents additional arguments in favor of an alternative route for the pipeline. The hearings officer finds that these arguments are beyond the scope of issues in this remand proceeding, and are waived.

b. Impacts Results from other Pipeline Projects.

Some of the opponents, including Mr. Robert Fischer, submit photos and articles related to negative environmental consequences from other pipeline construction projects in other states and countries. In Mr. Fischer's case, much of this evidence comes from what the hearings officer assumes is a newspaper or periodical ("The Courier Mail") and a website with the domain name of www.dredgingtoday.com.

There are three primary problems with this kind of anecdotal evidence. First, the persons submitting this evidence have not provided a foundation to support the reliability and credibility of the source, its political perspective, etc. Depending on the source, the information presented in such materials could be one-sided, misleading, taken out of context, or completely false.

Second, the articles themselves provide varying theories as to what is causing the negative effects on the environment, and do not conclusively fault the LNG-related construction. Third, even making the huge leap of faith that the negative facts stated in these articles are true, there is no evidence to suggest that the situations are sufficiently analogous to support the conclusion that the adverse effects happening in those cases will necessarily happen in this case.

Thus, while it is possible that newspaper articles and other reporting can constitute substantial evidence in some cases, the hearings officer finds that a reasonable decision-maker would not draw any conclusions concerning the PCGP case based on this evidence. While interesting, that is not evidence a reasonable person would rely upon to make a decision regarding potential impacts on Olympia oysters in the current project.

c. Scour.

Ms. McCaffree points out that in some cases, pipelines have been scoured out by big storm events. However, this issue is beyond the scope of the remand proceedings. Moreover, this pipeline is going to be encased on four feet of concrete, a feature which was apparently not present on the other pipelines she mentioned that were affected by scouring action.

d. Pipeline Companies Don't Keep Their Promises.

Ms. McCaffree states that “gas and oil companies are notorious for promising all sorts of things but * * * they do not always follow through with the things they promise.” McCaffree Letter dated October 10, 2011. Ms. McCaffree is undoubtedly correct that things do not always go according to plan. However, the suggestion that land use applications should be denied because the applicant *may* not comply with conditions of approval is not well taken. As an initial matter, the success or failure of the project will, to some degree, depend on how aggressive the County is with regard to its enforcement of conditions. The hearings officer cannot assume that the applicant will not comply, or that the county's enforcement of problems will be ineffective. More importantly, the land use process is not intended to guarantee that things will go according to plan. The reality is that the land use process only ensures that there IS a plan, and that engineering solutions to potential problems have been devised and are feasible and likely to succeed. If the hearings officer believed that the applicant's plan was not feasible and likely to succeed, a recommendation for denial would have been forthcoming.

e. Sediments from New Carissa.

Ms. McCaffree notes that contaminants from the New Carissa may be re-suspended by the PCGP pipeline. McCaffree Letter dated October 10, 2011, at p. 3. This issue was not preserved sufficiently to be considered on remand. On the merits, the issue is speculative, in the absence of something more in the way of scientific evidence tending to substantiate the claim. *Palmer v. Lane County*, 29 Or LUBA 436 (1995) (unsupported statements are mere conclusions, and do not constitute evidence). Even if the contaminants exist in the sediments, there is no information regarding their concentration

f. Dredging of Coos Bay Navigation Channel.

In her letter dated October 17, 2011, Ms. McCaffree argues that there will be a need to dredge the Coos Bay navigation channel to accommodate the transit of LNG vessels in Coos Bay, and that such dredging should have been considered as part of the CHE modeling. Mr. Bob Braddock of JCEP addresses this issue in his letter dated October 30, 2011. Therein, Mr. Braddock explains that Ms. McCaffree has her facts wrong and there is no need for additional channel dredging to accommodate LNG tankers. The Braddock letter is attached as Exhibit 2 to the applicant's November 14, 2011 submittal.

The hearings officer finds that “the navigational channel within the Coos estuary is routinely dredged to maintain adequate depths for commercial shipping.” Groth & Rumrill 2009. Given this fact, the hearings officer finds that the results of routine dredging activity would already be accounted for in the data sets used by CHE modeling. Even if the channel

needs to be deepened to accommodate LNG-related shipping, there is no evidence in the record that suggests that that deepening channel would invalidate Dr. Shepsis's model. To the extent that Ms. McCaffree is asking the hearings officer to draw an inference based on common sense, the hearings officer finds that the issue is not so obvious that such a deduction necessarily flows from the stated proposition.

g. Compliance with CCZLDO 5.7.300(4)(B).

On page 5 of her letter dated October 10, 2011, Ms. McCaffree argues that the applicants have not complied with CCZLDO 5.7.300(4)(B), because "it does not appear the record contains proper authorizations for written and oral testimony by Randy Miller, Vladimir Shepsis or Robert Ellis on behalf of the Pacific Connector Gas Pipeline, L.P...." The provision at issue states:

4. Representatives

A. A party may represent themselves or be represented by an attorney. Consultants and other non-attorney professionals may appear as fact witnesses¹⁸ for any party, but may not appear as a legal representative.

B. Any person presenting testimony on behalf of a group, company or any other organization, except an attorney, must enter written evidence into the record establishing that the person is authorized to appear on behalf of the organization. Such written authorization must:

- (1) Be written on the group, company, or organization's official letterhead;**
- (2) Name the person authorized to appear on behalf of the group, company or organization;**
- (3) Specify the scope of the authorization; and**
- (4) Contain the signature of a person with authority to grant the authorization.**

¹⁸ CCZLDO 5.7.300(6) is entitled "Definitions," and provides:

As used in this Article the following definitions shall apply:

- A. "Party" means any person, organization or agency who has established standing under the provisions of this Article 5.8.**
- B. "Witness" means any person who appears and is heard at a hearing and is not a "party". A witness shall not be considered a "party" unless the Board of Commissioners determines that the person is a party in accordance with Article 5.8.**

LDO 5.7.300 Subsection (4) generally describes who may appear on behalf of parties and organizations in county land use proceedings and requires written evidence that certain individuals are authorized to testify on behalf of parties where such parties are not represented by an attorney. The purpose of this code provision is to ensure that persons who claim to be appearing on behalf of another individual, group, or company are actually authorized to speak on behalf of the individual, group or company.

i. Failure to Raise in LUBA Appeal

LUBA cases are very clear that, when a decision is back before the county on remand, opponents may not raise issues that “could have been raised, but were not raised” in the first LUBA appeal. *Wetherell v Douglas County*, 60 Or LUBA 131, 137 (2009) (citing *Beck v. City of Tillamook*, 313 Or 148, 831 P2d 678 (1992)). This issue could have been raised by the opponents in the prior proceedings before the hearings officer, where the applicant had even more employees and consultants who testified on its behalf, and could have been raised and resolved by LUBA. Because the opponents failed to raise this issue at the time when they could have done so, they have waived the issue and cannot raise it for the first time on remand. LUBA’s Order on remand is very narrow, and limits the county’s review to two narrow issues; those issues do not include authorization of the applicant’s witnesses under LDO 5.7.300(4).

ii. Interpretation of Authorization Requirement

As stated above, the purpose of the authorization requirement in LDO 5.7.300(4) is to prevent situations where consultants or other individuals appear at the land use hearing and claim to be representing a group or company when they have no authority to do so. This provision was added to the LDO in 2006 after this situation occurred several times at county hearings.

This code provision is not intended to apply where, as in the present case, the applicant is not only represented by attorneys who coordinate the submittal of all testimony, but the applicant’s representatives are also present at the hearing and provide direct oral testimony to the hearings officer. In other words, PCGP obviously consented to the individuals who were testifying on its behalf because those individuals were identified in PCGP’s attorneys in their written materials and introduced by PCGP’s attorneys at the outset of the hearing. Further, the senior management of PCGP was present at the hearing and PCGP’s Project Manager and Staff Environmental Scientist Randy Miller was one of the individuals who provided testimony on behalf of the company at the hearing.

The interpretation being urged by the opponents is not the outcome intended by the county when this code provision was adopted. Clearly the individuals who appeared and testified on behalf of the applicant were authorized to do so, and the opponents have not attempted to explain how the failure to include the letters from the applicant has harmed their rights to a full and fair hearing.

An analysis of the language of LDO 5.7.300(4) reveals that the more plausible interpretation of that section is that, where a party to the proceeding is represented by an attorney,

that attorney may provide any necessary authorization regarding individuals who submit evidence on behalf of the represented party. LDO 5.7.300(4) provides, in relevant part:

4. Representatives

- A. A party may represent themselves or be represented by an attorney. Consultants and other non-attorney professionals may appear as fact witnesses for any party, but may not appear as a legal representative.
- B. Any person presenting testimony on behalf of a group, company or any other organization, except an attorney, must enter written evidence into the record establishing that the person is authorized to appear on behalf of the organization. Such written authorization must:
 - (1) Be written on the group, company, or organization's official letterhead;
 - (2) Name the person authorized to appear on behalf of the group, company organization;
 - (3) Specify the scope of the authorization; and
 - (4) Contain the signature of a person with authority to grant the authorization.

First, section (A) expressly provides that a party may represent themselves or be represented by an attorney. In the present case, at the hearing the applicant both represented itself (via the testimony of Project Manager Randy Miller) and was also represented by attorneys (Mark Whitlow and Roger Alfred). One week prior to the hearing, the applicant's attorneys submitted a letter to the hearings office dated September 14, 2011 that identified certain individuals who would appear at the hearing on behalf of the applicant and also attached and summarized written testimony from those individuals. At the hearing, the attorneys also introduced each individual who would be providing direct oral testimony to the hearings officer.

As addressed above, because the project manager for PCGP was present at the hearing and provided direct testimony to the hearings officer, and because PCGP was represented by legal counsel at the hearing, there is no basis to challenge the authority of other witnesses who appeared at the hearing on behalf of the applicant. If someone without authority attempted to testify, obviously the attorneys or the project manager would have objected.

Nonetheless, to the extent that subsection (B) creates a requirement for written authorization under these circumstances, such written authorization was provided by the attorneys for the applicant in their correspondence dated September 14, 2011, October 10, 2011, October 17, 2011, November 14, 2011, and November 28, 2011. Those letters expressly identify the individuals who are authorized to present testimony on behalf of the applicant and describe the scope of their testimony.

III. CONCLUSION

For all the reasons set forth above, the hearings officer finds that the applicant has met its burden of proof to demonstrate that the proposed pipeline construction will reduce any potential harm to the Olympia Oyster population in Haynes Inlet to such a degree that there is at most a *de-minimis* or insignificant impact on the oyster resources that the management objectives for the aquatic zoning districts 11-NA and 13A-NA require to be protected.

PCGP REMAND – CONDITIONS OF APPROVAL

Property Owner Signatures amended Condition 20

- No. 20. This approval shall not become effective as to any affected property in Coos County until the Applicant has acquired ownership of an easement or other interest in all properties necessary for construction of the pipeline, and/or obtains the signatures of all owners of the affected property consenting to the application for development of the pipeline in Coos County. Prior to this decision becoming effective, the County shall provide notice and opportunity for a hearing regarding compliance with this condition of approval and the property owner signature requirement. County staff shall make an Administrative Decision addressing compliance with this condition of approval and LDO 5.0.150, as applied in this decision, for all properties where the pipeline will be located. The County shall provide notice of the Administrative Decision as provided in LDO 5.0.900(B) and shall also provide such notice to all persons requesting notice. For purposes of this condition, the public hearing shall be subject to the procedures of LDO 5.8.200 with the Board of Commissioners serving as the Hearings Body

CONDITIONS ON REMAND

Oyster Mitigation Plan

- No 1. The applicant shall comply with the terms and conditions of the applicant's proposed Olympia oyster mitigation plan prepared by Bob Ellis of Ellis Ecological Services, Inc. dated October 7, 2011 (the "Mitigation Plan"), as supplemented and modified by the following mitigation measures:
- a) The applicant's compliance with the Mitigation Plan will be administered through permits pursuant to the Clean Water Act Section 404 by the Army Corps of Engineers (Corps), pursuant to Section 401 of the Clean Water Act by the Oregon Department of Environmental Quality (DEQ), and pursuant to Oregon's Removal-Fill Law (ORS 196.795-990) by the Oregon Department of State Lands (DSL). These permitting agencies will be provided with copies of the Mitigation Plan, as modified by this condition, and approval of the permits issued by the Corps, DEQ and DSL may, as appropriate, incorporate the terms of the Mitigation Plan.
 - b) As part of the state permitting process for the pipeline discussed in subsection (a) above, the applicant shall consult with ODFW and OIMB on the specific details regarding how best to accomplish the actual amount and placement of Pacific oyster shells addressed in Section 4.2.1 of the Mitigation Plan in order to ensure success of the

project, including ideal depth and breadth of coverage of new hard substrate, specific methods for dispersal (*e.g.*, bagged vs. loose), and best locations for placement of substrate within the pipeline right of way .

- c) Unless modified under the direction of ODFW during the consultation described above, the applicant will establish appropriate baseline conditions for the Olympia oyster mitigation effort in Haynes Inlet using the following guidelines for a before-after control impact study design in order to ensure that any impacts to Olympia oysters are insignificant or *de minimis*:
 - i. The "Before" conditions shall be determined by field surveys of the distribution, abundance, status, and condition of existing Olympia oysters: (a) within the "Impact Area," *i.e.*, the 250-foot pipeline right of way within the intertidal portion of Haynes Inlet; and (b) within an appropriate "Control Area" in another portion of Coos Bay that will not experience any influence from construction of the pipeline. The precise location of the Control Area will be selected in consultation with ODFW.
 - ii. The surveys of the Control and Impact Areas shall be conducted immediately prior to construction of the pipeline (Before), and repeated annually over a period of five years following construction of the pipeline (After) to encompass the lifespan of individual Olympia oysters.
- d) Monitoring of the "Relocation Area" shall be undertaken as described in Section 4.3 of the Mitigation Plan.

No. 2. In-Water Work Periods

- (a) If the applicant's mitigation plan is approved by other regulatory agencies, the dispersal of Pacific oyster shells within the pipeline right of way will be effectuated either in late July or early August following the construction season.
- (b) Based on the potential for the larval settlement peak in October, the applicant should not be allowed to conduct dredging operations between Milepost 2.6 to MP 3.2 during the month of October, unless otherwise modified or agreed to by the Oregon Department of Fish and Wildlife.

No. 3. Turbidity

The applicant must comply with all DEQ regulations and requirements regarding turbidity. The applicant shall employ turbidity curtains and/or other appropriate control measures to assure that turbidity does not exceed the levels specified in the applicant's DEQ water quality permit.