RECONSIDERATION OF HEARING EXAMINER DECISION

THE APPELLANT, after review of the terms and conditions of the Hearing Examiner's decision hereby requests that the Hearing Examiner take the following information into consideration and further review under the provisions of Chapter 2.06.060 of the Thurston County Code:

(If more space is required, please attach additional sheet.)

☐ Check here for: APPEAL OF HEARING EXAMINER DECISION

TO THE BOARD OF THURSTON COUNTY COMMISSIONERS COMES NOW Taylor Shellfish Company on this 20th day of September, 2012, as an APPELLANT in the matter of a Hearing Examiner's decision rendered on September 14, 2012, by Thomas R. Bjorjen relating to Project No. 961372, for a shoreline substantial development permit to construct and operate mussel rafts in Totten Inlet. (Findings, Conclusions and Decision dated July 19, 2012 and Supplemental Findings, Conclusions and Decision dated September 14, 2012)

THE APPELLANT, after review and consideration of the reasons given by the Hearing Examiner for his decision, does now, under the provisions of Chapter 2.06.070 of the Thurston County Code, give written notice of APPEAL to the Board of Thurston County Commissioners of said decision and alleges the following errors in said Hearing Examiner decision:

Specific section, paragraph and page of regulation allegedly interpreted erroneously by Hearing Examiner: See attached

1. Zoning Ordinance
2. Platting and Subdivision Ordinance
3. Comprehensive Plan
4. Critical Areas Ordinance
5. Shoreline Master Program
6. Other:

(If more space is required, please attach additional sheet.)

AND FURTHERMORE, requests that the Board of Thurston County Commissioners, having responsibility for final review of such decisions will upon review of the record of the matters and the allegations contained in this appeal, find in favor of the appellant and reverse the Hearing Examiner decision.

STANDING

On a separate sheet, explain why the appellant should be considered an aggrieved party and why standing should be granted to the appellant. This is required for both Reconsiderations and Appeals.

Signature required for both Reconsideration and Appeal Requests

THURSTON COUNTY RECEIVED
SEP 28 2012
DEVELOPMENT SERVICES

William Taylor
APPELLANT NAME PRINTED

SIGNATURE OF APPELLANT
Address, SE 130 Lynch Road
Shelton, WA 98584 Phone 360-426-6178

Please do not write below - for Staff Use Only:
Fee of $95.00 for Reconsideration or $220.00 for Appeal. Received (check box): Initial Receipt No. 24198
Filled with the Resource Stewardship Department this day of September 2012
September 27, 2012

Permit Assistance Center
Thurston County Courthouse
2000 Lakeridge Drive SW
Building 1, Second Floor
Olympia, WA 98502

Board of County Commissioners
Thurston County Courthouse
2000 Lakeridge Drive SW
Building 1, Room 269
Olympia, WA 98502

Re: Appeal of Hearing Examiner Decision
Project No. 961372—North Totten Inlet Mussel Farm

Dear Commissioners:

This firm represents Taylor Shellfish Farms ("Taylor"), the Applicant for the North Totten Inlet Mussel Farm project ("Project"), in the above-titled matter. This letter sets forth the errors in the Thurston County Hearing Examiner’s ("Examiner") decision(s) regarding Project No. 961372, and is part of the appeal of said decisions. This letter supplements the standard Thurston County Appeal form. The decisions being appealed include the Findings, Conclusions and Decision dated July 19, 2012 (attached as Exhibit A); and the Supplemental Findings, Conclusions and Decision dated September 14, 2012 (attached as Exhibit B).

I. STANDING

Taylor is the Applicant and therefore the most directly affected and aggrieved party. Among other things, Taylor wishes to establish mussel farming rafts at the Project site and has pursued such approval since 1996, investing over a million dollars to have respected experts evaluate the proposal at the request of the County. However, Taylor is prevented from developing the Project by virtue of the decisions. Thus, Taylor is directly and financially adversely affected by the Examiner’s decisions and Taylor has the requisite standing to file an appeal of the Examiner’s decisions at issue here.
II. PROCEDURAL HISTORY

To fully comprehend the Examiner’s errors, it is important to understand the lengthy history of this proposal and the extensive study and technical expertise supporting the staff recommendation to approve the Project. This Project commenced more than 15 years ago when Taylor submitted an application for a Substantial Development Permit (“SDP”) in November 1996, initially proposing to develop 108 mussel rafts. In response to staff and public comments in 1997, and in order to minimize impacts, Taylor proposed an alternative Project description eliminating 50 rafts at the North Totten Inlet site and reconfiguring the remaining 58 proposed rafts.

In 1998, Taylor and the County staff began to prepare an Environmental Impact Statement (“EIS”) for the reduced and alternative proposal under the State Environmental Policy Act (“SEPA”). The EIS, limited in scope by another Thurston County Hearing Examiner, focused on impacts to bottom-dwelling (benthic) organisms, the surrounding water column, phytoplankton resources and marine navigation, and impacts that could be caused by the escapement and propagation of mussels. Thus, the EIS specifically addressed the three areas of concern cited by this Examiner as his basis for denying the Project: impacts resulting from dissolved oxygen, impacts to benthic organisms, and the potential for Gallo mussels to harm native mussels. Decision at Conclusion 77.

In addition to the experts retained by Taylor, the County selected a team of scientists to serve on an Independent Technical Review Committee (“ITRC”). The Committee was charged with reviewing and commenting on all documents prepared by Taylor consultants, including the original scope of work, study protocols and methodology, and findings and conclusions described in technical reports. The ITRC experts, considered among the best in their respective fields, include:

- Jack Rensel, Ph.D. (Rensel Associates Aquatic Science Consultants) – phytoplankton, algal blooms, and effects on benthic organisms and finfish;
- Mitsuhiro Kawase, Ph.D. (University of Washington School of Oceanography) – flushing characteristics (circulation) and water quality (eutrophication);
- Jan Newton, Ph.D. (University of Washington, Applied Physics Lab) – water quality (nutrients and dissolved oxygen) and phytoplankton productivity;
- Ralph Elston, Ph.D. (AquaTechnics, Inc.) – mussel genetics, including potential escapement and competition issues; and
- Roger Newell, Ph.D. (University of Maryland, Horn Point Laboratory) – water column and benthic community effects.

The ITRC reviewed the Project over an eight-year period, between 2001 and 2009, as technical studies were prepared. A Draft EIS (“DEIS”) was released on May 26, 2010. The
DEIS was accompanied by a series of technical reports, all of which were reviewed by the ITRC. The DEIS concluded, based on the technical reports and analyses prepared during the lengthy review period, that the Project would not result in any significant unavoidable adverse impacts within the areas investigated. The DEIS specifically addressed the three areas of concern later cited by the Examiner in his decision to deny the Project: dissolved oxygen ("DO") impacts, benthic impacts and genetic impacts to native mussels. Decision at Conclusion 77.

The County received written and oral comments on the DEIS during a 45-day public comment period. The County and its consultants meticulously and comprehensively responded to these comments in the Final EIS ("FEIS"). In response to some comments, yet more research was conducted and analysis performed. The County and its consultants responded to each individual comment in sections 2.2, 2.3 and 2.4 of the FEIS. Further, the County and its consultants summarized concerns raised by the public and provided comprehensive responses to those concerns in section 2.1 of the FEIS. The FEIS was issued November 7, 2011.

In advance of the public hearing on Taylor’s SDP application, a staff report was prepared, taking into account the years of study and research as well as the conclusions and recommendations of the SEPA review, recommending approval of the SDP application. The report proposed four conditions of approval: (1) Securing all necessary local, state and federal permits and approvals; (2) implementing all mitigation measures noted on pages 1-15 through 1-22 of the FEIS; (3) disposing construction and operational debris at an approved site; and (4) keeping the rafts in a neat and orderly manner, including not storing materials on the rafts. At the public hearing, Taylor representative Diane Cooper testified Taylor would comply with all conditions of approval.

III. ERRORS ON APPEAL

Taylor alleges the following errors on appeal:

A. The Examiner Erred in Interpreting and Applying the Policies of the Shoreline Management Act, Ch. 90.58 RCW ("SMA") and the Shoreline Master Program ("SMP"), in Particular by Misinterpreting and Elevating SMP Regional Criterion B as Paramount to All Other Shoreline Codes and Policies.

The SMA is a regulatory program intended to balance various and sometimes competing interests. The various interests are reflected in the goals and policies of the SMA and the locally adopted policies of the Thurston Region Shoreline Master Program ("SMP"). Decisions regarding shoreline applications are made and guided by balancing these various policies. An analysis of the Project in light of all applicable shoreline policies was presented to the Examiner (the "consistency analysis"). The consistency analysis is incorporated into this appeal by reference and attached as Exhibit C.

The Project is the most studied aquaculture project ever presented to Thurston County. Decision at Finding 34. It was studied over the course of many years with the unprecedented assistance of an independent panel of world-respected experts. Id. The County planning staff
and the experts, after years of study, and modifications of the Project, recommended approval of the SDP, determining the Project was consistent with all applicable shoreline codes and policies.

The Examiner made a fundamental flaw in his review of the Project when he disregarded the careful balancing of competing interests and policies reflected in the staff recommendation and instead determined that he should deny the Project based upon one policy of the SMP that the Examiner focused upon while disregarding numerous other policies. The Examiner’s error here is best illustrated by a quote from our Court of Appeals in another case involving an SDP:

Courts and the agencies charged with applying land use and environmental regulations have a responsibility to be evenhanded and balance the many competing concerns. After five years and seven redesigns, the City of Bellevue (Bellevue) issued . . . a substantial development permit to the Overlake Fund to construct a hotel on the shore of Lake Washington. Bellevue imposed numerous conditions on the permits to protect the surrounding environment and comply with zoning, building, traffic and fire safety requirements . . . Geoffrey Bidwell appealed the shoreline permits to the Shorelines Hearings Board (Board). After a hearing, the Board . . . "affirmed" the substantial development permit, but only after imposing additional conditions which prohibited Overlake from using any of the wetland on the site for any purpose . . . Bellevue and Overlake appealed to this court. We conclude that the administrative board unnecessarily thwarted Bellevue's careful, balanced permitting decisions by considering issues not before it and failing to recognize the importance of balancing competing interests. The Board ignored or did not inquire into the reasons for the municipal balancing act, considered only one of the many competing values that contributed to Bellevue's decision and substituted its judgment on the reasonableness of the use for that of local decision-makers. We hold that the decision of the Board redesigning the Overtake hotel project was arbitrary and capricious and not supported by substantial evidence. We therefore reverse and remand to reinstate the original permits issued by Bellevue. This will restore the balance Bellevue sought to achieve.

Overlake Fund v. Shorelines Hearings Board, 90 Wn. App 746, 750-751 (1998). Here, the Examiner, like the Shorelines Hearings Board ("SHB") in Overlake Fund, improperly disregarded the careful balancing of interests and policies reflected in the staff recommendation, improperly focused upon only one SMP criterion, and substituted his judgment for that of doctorates hired by the County at the expense of Taylor to investigate concerns raised by the prior Examiner over a decade ago.

The Criterion that the Examiner focused upon states:

B. Protection of water quality and aquatic habitat is recognized as a primary goal. All applications for development of shorelines and use of public waters shall be closely analyzed for their effect on the aquatic environment. Of particular concern will be the preservation of the larger
ecological system when a change is proposed to a lesser part of the system, like a marshland or tideland.

SMP Regional Criterion B. Based upon this one Goal of the SMP, the Examiner found and concluded that there was insufficient information for him to determine whether the Project met this standard in three areas: dissolved oxygen ("DO") impacts; impacts to the benthic community; and impacts concerning possible genetic effects of Gallo mussels upon native mussels. See Supplemental Decision at Finding 185 (a) to (e); Conclusion of Law 84. See also Decision at Finding 105, 136 to 147, 160 to 181; Conclusions of Law 12 to 35, and 61 to 66 and 77.

That the Examiner could conclude there was insufficient information to render a decision in this matter is extraordinary. By the Examiner’s own admission, “This is one of the most thoroughly reviewed proposals that has been presented to Thurston County. The presence of an expert and independent technical review panel is unique in this Hearing Examiner’s experience.” Decision at Finding 34.

Moreover, in his focus upon Regional Criterion B, the Examiner failed to give sufficient weight or consideration to other competing interests and policies guiding shoreline decisions in Thurston County. An analysis of all applicable codes and policies is attached as Exhibit C. However, a few examples of policies that were either ignored or given little consideration are listed below.

In the “Conservancy Environment” (SMP, Section Two, VII.B), the Goals include the following:

**Goal Statements**

1. **Economic Development.** The goal for this element is to reach a high level of renewable resource utilization on a sustained yield basis.

The Examiner failed to sufficiently consider policies of the SMP (SMP Section Three, II) that actually encourage development of aquaculture facilities. That section states:

**B. Policies**

1. The Region should strengthen and diversify the local economy by encouraging aquacultural uses.

2. Aquacultural use of areas with high aquacultural potential should be encouraged.

The SMA, like the SMP, also encourages development of aquaculture and in this regard, the Examiner failed to consider the Washington Shellfish Initiative. The initiative is an agreement among federal and state government, tribes, and the shellfish industry to restore and expand Washington’s shellfish resources to promote clean-water commerce and create family wage jobs. This initiative calls for:
• Expanding, promoting and improving shellfish aquaculture in Washington;
• Increasing opportunities for and improving access to public tidelands for recreational shellfish harvesting;
• Restoring native shellfish habitat and populations such as the Olympia oyster and pinto abalone; and
• Improving and protecting water quality to help ensure healthy and safe shellfish for consumers.

A copy of the Washington Shellfish Initiative is attached as Exhibit D.

In a recent case, the SHB emphasized that shoreline interests and policies must be balanced, and that shellfish aquaculture is favored by the SMA and should be encouraged:

Ecology staff testified at the hearing that while the SMA seeks to protect important ecological resources, it also fosters reasonable and appropriate uses. Water dependent uses are given priority over many other types of shoreline uses. Ecology staff testified the Longbranch farm, as conditioned by the Examiner, is consistent with the SMA and with the protection of the shorelines.

Ecology’s guidelines specifically call out aquaculture as an activity of statewide interest. WAC 173-26-241(3)(b). The importance of shellfish aquaculture as an activity of statewide interest is emphasized by the Washington Shellfish Initiative, announced by Governor Gregoire on December 9, 2011.

Coalition to Protect Puget Sound Habitat and Case Inlet Shoreline Association v. Pierce County and Long Branch Shellfish, LLC and Ecology, Intervenor, SHB No. 11-019, Findings of Fact, Conclusions of Law and Order (2012). A fair and balanced consideration of all competing interests and policies of the SMA and SMP results in only one conclusion -- that the Examiner erred in his interpretation and application of policies in this matter.

Compounding the Examiner’s error in focusing on Regional Criterion B, the Examiner also erred by misinterpreting and misapplying that policy. The Examiner applied Criterion B not as a goal, but as an absolute threshold justifying denial if there was any remote uncertainty of meeting the threshold. Under the Examiner’s erroneous interpretation, he could deny the Project if there was a possibility of potential, speculative and insignificant impacts. Regional Criterion B requires that potential impacts be evaluated. By the Examiner’s own admission, this was the most studied proposal presented to the County with an unprecedented technical review panel of experts working for nearly a decade to study the Project. Decision at Finding 34. The EIS found no significant adverse impacts in all the areas of inquiry. The Examiner’s conclusions regarding dissolved oxygen, benthic communities and mussel genetics (Decision at Conclusion 77, and Supplemental Decision at Conclusion 185) do not state that there will be adverse impacts but merely hypothesizes that there could be. Further, the Examiner only found this potential for possible adverse effects if the Project were subjected to even further cumulative impacts review - - taking into account impacts from other projects in Totten Inlet.
It was legal error for the Examiner to conclude that the Project could be denied pursuant to Regional Criterion B based upon potential speculative insignificant impacts. This interpretation of Regional Criterion B would conflict with the overall purpose of the SMA. The SMA does not prohibit development of the state's shorelines. Instead, it calls for "coordinated planning ... recognizing and protecting private property rights consistent with the public interest." RCW 90.58.020 and Nisqually Delta Ass'n v. City of DuPont, 103 Wn.2d 720, 726 (1985). See also Biggers v. City of Bainbridge Island, 162 Wn.2d 683, 697, 169 P.3d 14 (2007) ("The SMA embodies a legislatively-determined and voter-approved balance between protection of state shorelines and development.").

Further, in his analysis of Regional Criterion B, the Examiner overlooked and ignored the offsetting environmental benefits of the Project. The Examiner cites with approval testimony from Dr. Rensel that the principal environmental threat to the waters of southern Puget Sound is eutrophication. Decision at Finding 43. As the Examiner explained, eutrophication results from too much human generated nitrogen waste (from sewage disposal, fertilizer use, and atmospheric inputs) entering Puget Sound. Id. When this occurs, "the addition of nitrogen to coastal waters stimulates algal blooms and growth of bacteria, and can cause broad shifts in ecological communities present and contribute to anoxic events and fish kills." Id. (quotations and citations omitted). The Examiner found that the proposed mussel farm would significantly reduce nitrogen (and thus eutrophication) in Totten Inlet. The Examiner made the following finding:

More precise evidence was presented through the testimony of Dr. Rensel. He testified that nearly 5000 kilograms of nitrogen which this proposal would remove per year represented 9.6% of the 47,000 kilograms of nitrogen deposited in Totten Inlet each year from stream and watershed run off. This reduction, Dr. Rensel testified, is of measurable and significant benefit.

Thus, there was specific evidence presented of a significant environmental benefit fulfilling the environmental protection goal of Regional Criterion B. This known benefit is in sharp contrast to the speculative potential adverse cumulative impacts to dissolved oxygen, benthic communities and native mussel genetics that the Examiner cites as justifying denial of the Project under Regional Criterion B. Decision at Conclusion 77.

The Examiner misinterpreted and misapplied the applicable policies of the SMA, and failed to properly balance the competing policies and interests behind the SMA and SMP. Accordingly, his decision should be reversed, and the SDP granted.

B. The Examiner Erred in Interpreting the SMA to Require a Cumulative Impacts Review for Substantial Development Permits that Was "indistinguishable from that under NEPA [the National Environmental Policy Act]," and in Applying that Standard to the Project.

Compounding the errors in interpreting and applying the SMA, SMP and applicable policies, the Examiner also erred in making a completely unprecedented announcement that, for
purposes of review of the Taylor SDP, he would analyze potential cumulative impacts under the expansive standard established under the National Environmental Policy Act ("NEPA").

The Examiner's Conclusions of Law regarding cumulative impacts are set forth in the Decision at Conclusions 12 to 23. He correctly notes that neither SEPA nor NEPA "directly apply to this proceeding." Decision at Conclusion 13. The Examiner also correctly notes that cumulative impacts are reviewed narrowly under SEPA, but expansively under NEPA. Decision at Conclusions 14 and 15. Then, the Examiner commits clear legal error in Conclusions 16 to 23 in determining he should apply the NEPA standard to the subject SDP. In fact, the appropriate legal standard for review of cumulative impacts for an SDP is not only more narrow than that under NEPA, but is also more focused than review under SEPA given the limited circumstances under which our courts the SHB has held such discretionary review to be appropriate.

Cumulative impact review for a SEPA or NEPA EIS is directly authorized under the statutes and implementing regulations for both regulatory regimes. By comparison, cumulative impact review is not directly authorized regarding SDPs under the SMA. It is only through interpretation of the SMA that our courts and the SHB found implied authority for discretionary cumulative impact review of SDP applications.

The only specific statutory authorization for cumulative impact review in the SMA is with respect to shoreline variances or conditional use permits. Even there, the focus is upon the potential for project approval to set a precedent for future like approvals: "consideration shall be given to the cumulative impact of additional requests for like actions in the area." WAC 173-27-160(2); WAC 173-27-170(4) (emphasis added).

The Examiner also cited Hayes v. Yount, 87 Wn.2d 280 (1976), and Skagit County v. Department of Ecology, 93 Wn.2d 742 (1980), in his analysis of cumulative impacts. Both cases stand for the proposition that the cumulative effects to be considered in review of an SDP are the cumulative impacts of future similar projects in the area that could result from approval of the Project at issue. Hayes was a case about the filling of wetlands in the Snohomish River estuary. The Hayes court affirmed that part of the SHB's decision which precluded filling based upon the cumulative impacts of "future development similar to respondent's proposed fill." Id. at 287.

In Skagit County, the applicant sought approval for a construction office and land disposal of dredge spoils at a site near Padilla Bay. The site was designated "rural" by the master program and was intended to serve as a buffer "for the protection of prime agricultural land." Id. at 744. The Supreme Court affirmed the part of the SHB decision that precluded disposal of dredge materials. Id at 749. The SHB had reasoned that denial was required under the facts of that case because "of primary importance is the establishment of a buffer zone around the proposed industrial use in order to prevent industrial encroachment into agricultural areas." Id. at footnote 2.

The SMA itself, and both Supreme Court decisions cited by the Examiner stand for the proposition that the potential for "future additional requests for like actions" is an important factor in whether or not cumulative impact assessment is appropriate for review of a SDP. As shown below, subsequent SHB decisions also all consider the potential for future like actions. The SHB cases further suggest that it is also appropriate to consider whether there are
applications pending for such similar actions, but whether such future like actions would be approved under applicable codes and policies. In a case where the SHB approved an application for a joint use Pier, Ramp and Float, the SHB stated:

The Petitioner asks the Board to consider the cumulative view impact of similar docks that might be installed on this segment of Hood Canal if the permit is affirmed. The cumulative impact of future docks on the view from the Overaa and Wist properties would not be significant. In addition, the number of future docks in the area is quite speculative, since each application must be measured against the multiple criteria of the MCSMP.

Overaa v. Bauer and Mason County, SHB No. 10-015 Findings of Fact Conclusions of Law and Order (2010), at Conclusion 6. Further, the SHB made a specific finding that, under applicable codes and in light of shallow waters in the area, it was unlikely additional docks would be approved in the vicinity. Overaa at Finding 4.

If the Examiner had considered the risk of future like actions, as discussed in the SMA statute, existing court cases and SHB decisions, and if he had considered Overaa, and whether additional applications were pending, the Examiner would have concluded that no cumulative impacts assessment was required. This result follows from the Examiner’s own finding that, “there are no pending applications for floating aquaculture facilities in Thurston, Mason or Pierce Counties.” Decision at Finding 25. However, the Examiner declined to do so, specifically disclaiming that evidence of additional, similar projects was a factor that should be considered. Decision at Conclusion 22 and footnote 2. This was clear legal error.

In his legal conclusions regarding cumulative impacts, the Examiner provides some discussion of other authority but ultimately boils cumulative impact review down to a single sentence, which, in his view, governs when cumulative impacts can be reviewed for an SDP: “The Fladseth test will also be followed, requiring examination of cumulative impacts, ‘where there is proof of impacts that risk harm to habitat.’” Decision at Conclusion 23. (citing Fladseth v. Mason County, SHB No. 05-026 Findings of Fact Conclusions of Law and Order (2007) (“Fladseth”).

In Fladseth, it is clear that the main harm the SHB sought to avoid was the potential for the Fladseth’s proposed recreational pier, ramp, and float (“PRF”), to trigger a rash of similar applications for PRFs along the largely undeveloped north shore of south Hood Canal. In its discussion of cumulative impacts, the SHB explained, “considerable weight must be given to the possibility that similar docks will be sought by property owners . . . if the permit here is allowed to stand.” Fladseth, at Conclusion 13, citing and quoting Viafore v. Mason County, SHB No. 99-033, Conclusion of Law 6 (2000). The Examiner also cited and relied upon Overaa v. Bauer, SHB No. 10-015, another decision discussing the detrimental effect of the proliferation of personal recreational PRFs.

It is inappropriate for the Examiner to rely upon either Fladseth or Overaa because both cases can be distinguished. Both cases involve recreational PRFs, probably the most well known area where shoreline policies are specifically designed to avoid proliferation of docks, support joint use docks and thereby address the cumulative impact of future additional requests for like
actions in the area. It was also inappropriate for the Examiner to rely upon Fladeth and Overaa because, as the SHB explained, the justification for reviewing cumulative impacts in those cases was in part based upon the specific Project at issue and specific provisions of the Mason County SMP: “The Board has acknowledged that the MCSMP requires that dock proposals be evaluated for cumulative impacts as well as individual impacts.” Overaa, at Conclusion 10, citing Fladeth.

The Fladeth decision, as well as previous court decisions, SHB decisions, the SMA, and its implementing regulations cannot be boiled down and reduced to a single factor impliedly authorizing review of cumulative impacts for SDPs. The Examiner’s analysis is flawed because he neglected to consider, among other things, the extent to which approval of the Project would become a precedent for future similar projects in the area. In fact, here, the Examiner found there was no such risk, as “there are no pending applications for floating aquaculture facilities in Thurston, Mason or Pierce Counties.” Decision at Finding 25. With this finding, no analysis of cumulative impacts was appropriate.

More recently, the SHB addressed the scope of review for an SDP for an aquaculture facility in Coalition to Protect Puget Sound Habitat (CPPSH) v. Pierce County, SHB No. 11-019, Findings of Fact, Conclusions of Law and Order (2012) (“CPPSH”). In that case, the SHB explained that cumulative impacts review for SDPs is discretionary, not mandatory, “A cumulative impact analysis is not required for an SDP approval under the SMA.” CPPSH at Conclusion 15. As in every SMA case cited by the Examiner discussing cumulative impacts, the SHB in CPPSH looked into whether the proposal could lead to additional future projects in the area:

The Longbranch farm is not dependent on any existing or subsequent development. No evidence was presented that similar projects will be proposed and approved under applicable regulations near the farm. Approval of the SDP for the Longbranch farm does not set a precedent for approvals of subsequent SDP applications for geoduck aquaculture because of the need to examine specific site conditions.

CPPSH at Finding 21.

Distinguishing piers, ramps and floats from aquaculture facilities, the SHB further held that a cumulative impacts review was not appropriate for aquaculture projects because:

With respect to geoduck aquaculture, the Board concludes that each separate geoduck aquaculture proposal will need to be reviewed on its own particular site characteristics. For example, if a particular proposed site had currents that made it likely to transport sediments over known spawning areas of forage fish, the Board would give that particular proposed project considerable scrutiny. The Board rejects any suggestion by the Petitioners that a cumulative impacts analysis under the SMA is required in this case, given the circumstances of the Longbranch Shellfish site.
CPSH, at Conclusion 15. Similarly, here, the SEPA review found no significant unavoidable adverse impacts in each area of inquiry. Under these circumstances, no cumulative impacts review was warranted for the Project.

The Examiner’s erroneous analysis of cumulative impacts reaches beyond his conclusions of law interpreting the SMA and extends and renders erroneous numerous other findings and conclusions. For example, the very basis relied upon by the examiner for denying the application was purported cumulative impacts in three areas: “dissolved oxygen, the effect on the benthic community, and the spreading of, or genetic pollution by Gallo mussels.” Decision at Conclusion of Law 77. Other Findings and Conclusions that are rendered erroneous based upon the flawed cumulative impacts analysis are listed below.

- Decision Findings 91 to 105 regarding impacts to Benthos
- Decision Findings 133 to 147 regarding Gallo Mussels
- Decision Findings 160 to 181 regarding cumulative impacts
- Decision Conclusions 12 to 23 creating a new cumulative impact standard under the SMA
- Decision Conclusions 25 to 35 applying erroneous cumulative impacts standard
- Decision Conclusions 61 to 80 also applying cumulative impact standard
- Supplemental Decision at Finding 185 summarizing cumulative impacts
- Supplemental Decision Conclusion 82 to 84 summarizing perceived lack of evidence for cumulative impacts review.

C. The Examiner erred in Finding and Concluding that Alleged Cumulative Dissolved Oxygen Impacts Justified Denial of the Application.

As the Examiner acknowledges, the FEIS concluded there would be no significant, unavoidable adverse impacts to dissolved oxygen (“DO”) as a result of the Project. Decision at Finding 72. The Examiner should have deferred to this finding, supported by the County’s panel of technical experts. Instead, the Examiner substituted his own judgment for that of the experts. Further, as discussed above, he also erred in interpreting and applying all applicable shoreline policies and in applying an erroneous standard for cumulative impacts. Accordingly, the Examiner’s findings and conclusions regarding DO, identified above, are all in error.

D. The Examiner erred in Finding and Concluding that Alleged Cumulative Benthic Impacts Justified Denial of the Application.

As the Examiner acknowledges, the FEIS concluded there would be no permanent, significant, unavoidable adverse impacts to macroinvertebrates (benthic organisms) as a result of the Project. Decision at Finding 105. The Examiner should have deferred to this finding, supported by the County’s panel of experts. Instead, the Examiner determined to parse the language and found that the reference to “permanent” adverse impacts implied that there would be temporary unavoidable adverse impacts to benthic organisms. Here, the Examiner simply ignored the more probable interpretation of the FEIS, that, because any adverse impacts to benthos would be temporary and transitory, the impacts were not significant.
Here again, the Examiner substituted his own judgment for that of the experts. Accordingly, the Examiner’s findings and conclusions regarding benthic impacts, identified above, are all in error.

E. The Examiner Erred in Finding and Concluding that Alleged Cumulative Genetic Impacts Justified Denial of the Application.

The Examiner concedes that, after extensive and focused environmental review, the EIS concludes, “the risk of Gallo Mussels displacing or genetically polluting [native mussels] is low and that it is unlikely the Project would have a significant adverse effect of this nature.” Decision at Finding 147. The Examiner should have given deference to the experts and authors of the EIS but instead, substituted his judgment for that of the experts. This substitution of judgment compounded the other errors previously identified (the Examiner erred in interpreting and applying all applicable shoreline policies and in applying an erroneous standard for cumulative impacts). Accordingly, the Examiner’s findings and conclusions regarding Gallo Mussels, identified above, are all in error.

Thank you for your thoughtful consideration of this appeal.

Respectfully Submitted,

Michael P. Witek
Samuel W. Plauché

MPW:ttat
Attachments:

Exhibit A: Findings, Conclusions and Decision of the Hearing Examiner for Thurston County dated July 19, 2012
Exhibit B: Supplemental Findings, Conclusions and Decision of the Hearing Examiner for Thurston County dated September 14, 2012
Exhibit C: Analysis of Project Consistency with the SMA and SMPTR, dated February 13, 2012
Exhibit D: Washington Shellfish Initiative dated December 9, 2011
Exhibit A
FINDINGS, CONCLUSIONS AND DECISION
OF THE HEARING EXAMINER FOR
THURSTON COUNTY

CASE NO: 961372 (Application by Taylor Shellfish Company for a shoreline substantial development permit to construct and operate mussel rafts in Totten Inlet)

APPLICANT: Taylor Shellfish Company

SUMMARY OF REQUEST:

The Applicant requests a substantial development permit under the state Shoreline Management Act to construct and operate a mussel facility consisting of 58 rafts anchored off-shore along the eastern shoreline of north Totten Inlet. The proposal is described in detail in the Findings, below.

LOCATION OF PROPOSAL:

A portion of the south half of Section 5, T19N, R2W, W.M., which is approximately 600 feet waterward of the mean lower low water mark of the western shore of the Steamboat Island Peninsula, between approximately 85th Avenue NW and 90th Avenue NW.

SUMMARY OF DECISION:

HEARING EXAMINER DECISION IN NO. 961372

PAGE 1
See Part III, Decision, below.

HEARING AND RECORD:

The hearing on this request was held before the undersigned Hearing Examiner on February 13 and 17, 2012. The record was held open until April 9, 2012 for submission of post-hearing briefing by the parties. Due to the amount of evidence and the nature of the issues, the Hearing Examiner requested a number of extensions in the time for decision. The final extension, to which the Applicant agreed, was until July 19, 2012.

The following exhibits are admitted as part of the record:

Exhibit 1. Nov. 3, 2011 Email from Tom Bjorgen to Parties.

Exhibit 2. Nov. 27, 2011 Email from Samuel Plauche to Tom Bjorgen.

Exhibit 3. Dec. 2, 2011 Email from Tom Bjorgen to Parties.


Exhibit 5. Feb. 6, 2012 Email from Tom Bjorgen to Parties.


Exhibit 7. Final Technical Reports.


Exhibit 8a. CD containing the DEIS, the FEIS and the Technical Reports.


Exhibit 14. Staff Report by Thurston County Resource Stewardship Department for Project No. 961372, prepared by Robert Smith and dated February 13, 2012. This exhibit includes the 12-page Staff Report and attachments a through l, listed on p. 12 of the Report.


Exhibit 22. Letter from Laura Hendricks, Sierra Club, Feb. 12, 2012, with attachments.

Exhibit 23. Plastic Disk of the type used in mussel facilities.


Exhibit 29. Written testimony of Cathy Wolfe, including attachments, undated.


Exhibit 33. Written testimony of Preston Troy, including attachments, Feb. 13, 2012.

Exhibit 34. Comment email from Carrie Toebbe, Feb. 17, 2012.


Exhibit 36. Enlarged Aerial of Totten Inlet.

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Exhibit 38.  Transcript of Proceedings on Mar. 15, 2011 of public hearing by the Pierce County Hearing Examiner in administrative appeal No. AE1-10 and shoreline permit application No. SD22-06.


Exhibit 42.  Excerpts from Final Notice by the Army Corps of Engineers on reissuance of Nationwide Permit 48, effective March 19, 2012.

Exhibit 43.  Chapter 8 of Shellfish Aquaculture and the Environment by Odd Lindahl, 2011.

Exhibit 44.  Illustration titled "Shellfish present in system, Shellfish absent from system".

Exhibit 45.  Enlarged Color Map of Project Location.


Exhibit 49.  Calculations by Dr. Jack Rensel.

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Exhibit 50. Email sent February 22, 2012 from Thomas Bjorgen to the parties, with issues for post-hearing briefing.

Exhibit 51. Emails from Jules Michel to Thomas Bjorgen sent March 11, 2012 at 11:49 and 11:56 a.m. inquiring into party status.

Exhibit 52. Email sent March 12, 2012 from Thomas Bjorgen to the parties and staff regarding inquiry from Jules Michel on party status.

Exhibit 53. APHETI's Closing Argument, dated April 9, 2012.


Exhibit 55. Emails between the Hearing Examiner and the Applicant, concerning extension of the deadline for the decision.

At the hearing, the following individuals testified under oath:

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Billy Plauche and Laura Kisielius, Plauche & Stock, appeared on behalf of Applicant Taylor Shellfish Company; Brendan Donckers, Gendler Mann, appeared on behalf of the Association to Protect Hammersley, Eld and Totten Inlets; Jeff Fancher, Deputy Prosecuting Attorney, appeared on behalf of Thurston County.

After consideration of the testimony and exhibits described above, the Hearing Examiner makes the following findings of fact, conclusions of law, and decision.

I. FINDINGS OF FACT

A. General description of proposed facility and Totten Inlet.

1. The Applicant, Taylor Shellfish Company, requests a substantial development permit under the Shoreline Management Act, Chap. 90.58 RCW, to install and operate a mussel raising facility in northern Totten Inlet.

2. The mussel species to be cultivated is Mytilus edulis galloprovincialis, popularly referred to as Gallo mussels. The Applicant has cultivated Gallo mussels at its Gallagher Cove mussel raft facility just to the southwest of the proposed site since 1992 and at its Deepwater Point mussel raft facility further south in Totten Inlet since 1994. The Gallagher Cove and Deepwater Point sites are shown on Figure 1-3 of the Final Environmental Impact Statement (FEIS) p. 1-1, at Ex. 8.

3. The facility would consist of 58 separate rafts anchored to the sea floor. Each raft would be 30 by 34 feet in size. The rafts would be attached end to end, with two feet in between, in two lines of eight rafts each and six lines of seven rafts each. Each line of eight rafts would 256 feet long. Each line of seven rafts would be 224 feet long. These groups of rafts
would be aligned with their long axis parallel to the shore in the general configuration shown at Exhibit (Ex.) 1, Attachment (Att.) e.

4. Each line of rafts would be secured in place at both ends with nylon lines and concrete wedge anchors. The rafts would be placed in water depths of 15 to 70 feet mean lower low water. Ex. 7, NewFields Report.

5. The Applicant proposes to lease 11.25 acres of aquatic lands from the state Department of Natural Resources. The landward edge of the lease area would be about 550 to 600 feet waterward of the mean lower low water tidal elevation line, and the lease area would extend about 700 feet further out into Totten Inlet from that landward edge. The length of the lease area parallel to the shore would be approximately 700 feet. The tidelands adjacent to the lease area are owned by the Applicant and are approximately mid-way in a 1.6 mile length of tidelands it owns. FEIS, p. 1-1, at Ex. 8.

6. According to Ex. 14 at p. 2, the mussel facility itself would occupy about 1.36 acres within this lease area. The Visual Impact Assessment at Ex. 12 states that the 58 proposed rafts themselves would cover 63,100 square feet or 1.45 acres of surface area. A comment letter at Ex. 15 characterized this as similar in size to a housing subdivision, since each of the rafts at 34 by 30 feet, would be similar in size to a house. The approximate location of the proposed raft facility is superimposed on an aerial photograph of the vicinity at Ex. 7, NewFields Report, Figure 2.

7. The approximate location of the proposed mussel raft facility, known as the North Totten Inlet (NTI) site, is shown on Figure 1-2 of the FEIS.

8. The raft components would be constructed at the Applicant’s Lynch Road plant in Mason County, and the rafts would be assembled at low tide on the beach at the Applicant’s Old
Plant site in Thurston County, the location of which is shown at FEIS Figure 1-2 and 1-3. After assembly, the rafts would be towed to the site of the proposed facility.

9. The rafts will be constructed of untreated lumber (Douglas fir), welded aluminum cross beams, and 55-gallon recycled food product barrels (for floatation devices). Synthetic "socks" made of a polypropylene or polyethylene mesh will be suspended from the raft structure, as shown in Ex. 1, Att. g. Each raft will have approximately 720, 16-foot long lines of socks suspended from it. The distance from the bottom of the lines to the sea bed will range from approximately three feet to forty eight feet. The socks will be seeded with immature mussels at a density of approximately 150 mussels per foot. The mussels will require approximately 14 to 18 months to reach harvestable size. Predator nets will enclose the underwater features of the rafts to exclude fish, marine birds, and marine mammals until the mussels are large enough to no longer be vulnerable to predation. See test. of King, FEIS at Ex. 8, and Staff Report at p. 2.

10. The operation will not involve any dredge harvesting, tilling or harrowing of bottom sediments. At harvest, a submersible platform would be moved under a raft and the lines with socks would be cut and would drop onto the platform. The platform would be brought to the surface and mussels would be stripped by hand from the socks. The socking material would be reused.

11. In general, there will be workers on some of the mussel rafts 5 or 6 days per week year-around between approximately 8:00 AM and 3:00 PM. During the summer months, work hours may be earlier. During winter months, work hours may be less due to very cold temperatures. At times, there may be no workers on the rafts for several days at a time. FEIS p. 1-11.

12. The facility would be subject to requirements of the U.S. Coast Guard for private aids to navigation. Ms. Cooper testified that the Applicant would install navigation lights with the lowest
brightness that complies with Coast Guard standards in order to reduce visibility from shoreline residences. A comment letter at Ex. 15 states that the Applicant has not installed navigational aids at its Gallagher Cover facility, that those rafts are virtually invisible in the dark and that boats have run into them.

13. With all 58 rafts in operation, an average of 877,963 pounds (whole body, wet weight) of mussels would be produced for sale each year.

14. Full development of the North Totten Inlet mussel farm will occur over a period of approximately five years or less. According to the Applicant, the first phase will likely consist of 12 to 24 rafts, depending on the availability of mussel “seed” to start the first crop, market demand, and the availability of financial resources to construct and initiate the farm. Subsequent phases would likely consist of 12 to 20 rafts per year up to the 58-raft total. Staff Report at p. 2.

15. Mr. Troy states at Ex. 33 that the mussel rafts at the Applicant’s Gallagher Cove facility have been in the same positions for over 20 years.

16. The Applicant’s Gallagher Cove and Deepwater mussel facilities in Totten Inlet are the first third-party certified sustainable mussel farms. Test. of Hopper.

17. Totten Inlet is one of the five long, narrow inlets that make up the southern basin of Puget Sound. Totten Inlet is primarily oriented in a southwest to northeast direction, and is divided into a main basin and two distinct inlets, Inner Totten Inlet (Oyster Bay) and Little Skookum Inlet in the south. The main basin is further divided between the deeper northern portion and a shallower southern portion. The northern portion, between the mouth of the Inlet and Windy Point, averages about 59 feet in depth, with a linear distance of approximately 2.2 miles and width of 0.7 mile. The southern portion extends from Windy Point south toward the entrances of Skookum Inlet and Inner Totten Inlet, and averages 26 feet deep with a linear distance of approximately 1.7
miles and an average width of 1.4 miles. Little Skookum Inlet and Inner Totten Inlet are generally very shallow with less than ten feet of water depth, and are approximately 3.5 miles in length. Totten Inlet receives its primary direct freshwater input from the Kennedy Creek, Skookum Creek, and Schneider Creek watersheds.

18. Totten Inlet is classified by the state Department of Ecology as Extraordinary, Class AA waters. Newfields Study, Ex. 7, Tab 9 at p. 1. However, The Department of Ecology has also placed Totten Inlet in the moderate concern category for water quality. NewFields, Ex. 7, Tab 9 at p. 26. It has the water quality necessary for shellfish growing. Test. of King.

19. The DEIS at Ex. 6, Sec. 3.1.1 contains a detailed analysis of the patterns of water circulation in Totten Inlet. The analysis concluded that tidal flushing occurs at the project site through consistent, low velocity water movement during flood and ebb cycles. Water at the site is constantly moving during the tidal cycle, without stopping or stagnating.

20. The analysis at Ex. 6, Sec. 3.1.1 of the DEIS noted also that “water mass residence time” refers to the amount of time it takes for a volume of water within a basin to be replaced with water from outside the system. These measurements represent the degree of water mixing, with systems that have short residence times being the most connected to adjacent water bodies. Several studies have estimated water residence time in Totten Inlet. After discussing several studies, the analysis in the DEIS concluded that water mass residence time in Totten Inlet is relatively brief, with the most accurate model pointing to about four days and other more simple models indicating up to 11 days. The flushing rate is much faster in the northern end of the inlet, where this project is proposed, compared to the southern end of the Inlet. The analysis concluded that the proposed mussel facility site is well flushed and that water passing through the site can, within a few tidal cycles at most, be transported to the mouth of the Inlet.
21. Ms. Hendricks testified that Totten Inlet is not a high flushing area. Dr. Rensel testified that it is fast flushing. On the basis of Dr. Rensel's expertise and the evidence cited above, the Inlet must be characterized as fast flushing.

22. In addition, the analysis at Ex. 6, Sec. 3.1.1 of the DEIS concluded that with the proposed raft array, current velocity inside the raft perimeter would be reduced by 60% to 79% and could be doubled on each side of the strings of rafts. Water currents would be expected to be affected up to 755 feet down current of the rafts. Because the differences in velocity are low and because a small percentage of the Inlet's water is affected, the analysis concluded these are not likely to cause a significant, adverse impact on the environment.

23. The July 8, 2010 letter from the Sierra Club at Sec. 2.2 of the FEIS at Ex. 8 states that "currently, 91% of the shoreline and intertidal areas of Totten Inlet have already been converted over to commercial aquaculture, with most of this expansion occurring just in the last 10 to 15 years." However, the response at p. 2-29 of the FEIS states that all but 4.9 miles of the 33 miles of shoreline in Totten Inlet are under commercial aquaculture lease, but that not all land under lease is under cultivation.

24. According to p. 1-24 of the FEIS, Table 1.7-1 of the FEIS lists the general level of shellfish aquaculture in Totten Inlet, but the Table itself only gives the acreage in geoduck cultivation, a total of 18.54 acres. Table 1.7-2 shows that since 2003 almost as many acres were taken out of geoduck production in Totten Inlet (14.5 acres), as were put into geoduck production (15.4 acres). However, the Endangered Species Act consultation document at Ex. 40, p. 32 states that as of 2009, there were approximately 2150 acres of shellfish farms in Totten Inlet. Mr. Daley testified that aquaculture in Totten Inlet well exceeds the natural level and that the density of mussel production at the proposed facility is many times greater than the natural density.
25. To summarize, the evidence shows that the statement that 91% of Totten Inlet shorelines have been converted to commercial aquaculture is incorrect. Instead, roughly 85% of Totten shorelines are under commercial aquaculture lease, and approximate 2150 acres are in shellfish farms. Since 2003 there has been a net gain of .9 acres in geoduck production in the Inlet. There are no pending applications for floating aquaculture facilities in Thurston Mason or Pierce counties. Test. of Smith.

26. The proposed mussel farm is located in the Conservancy environment under the Thurston Region Shoreline Master Program (SMP). Adjacent upland areas of the County are zoned Rural Residential Resource – One Dwelling Unit Per Five Acres (RRR 1/5).

27. Adjacent upland uses consist of single-family residences located on lots of various sizes. The Capital Land Trust recently purchased a 34-acre tract of land on the east side of Totten Inlet on Adams Cove, directly onshore from the location of the proposed mussel facility. The property contains a small pocket estuary with critical salmon habitat, an intertidal salt marsh, mudflats, a subtidal kelp bed, 1400 feet of waterfront, and several small streams flowing through a mature forest that covers most of the property. DEIS, Ex. 6 at p. 2-164. The property contains habitat for coho salmon, winter steelhead, chinook salmon, chum salmon and coastal sea-run cutthroat and a beach used for spawning by forage fish. Ex. 33.

B. History of the review of this proposal,

28. Taylor Shellfish Company (formerly Taylor Resources, Inc.) submitted an application for a Shoreline Substantial Development Permit accompanied by an Environmental Checklist to Thurston County Development Services on November 13, 1996. That application proposed to expand their existing mussel farm in Gallagher Cove (approximately one mile southwest of the
proposed North Totten Inlet site) from 21 rafts to 42 rafts and to develop a new mussel growing site (the North Totten Inlet site) for 108 rafts.

29. After initial County review, including several public meetings where a number of nearby property owners and other interested people expressed concern and opposition to the project, the Applicant revised its proposal. The revised proposal eliminated the proposed expansion at the existing Gallagher Cove facility and reduced the scope of the North Totten Inlet facility. That facility was reconfigured from 108 rafts to 58 rafts and aligned in a single row extending waterward from a shoreline location southerly of the original proposed location. That is the proposal now before the Hearing Examiner.

30. During continued review of the revised proposal, the County determined that no definitive local information was available to determine the capacity of Totten Inlet to support additional Gallo mussel production and the effects on water quality and bottom dwelling organisms that would result from the proposed expansion of mussel farming in the Inlet. Therefore, Thurston County issued a Determination of Significance (DS) under the State Environmental Policy Act (SEPA) on September 14, 1998, requiring preparation of a limited-scope Environmental Impact Statement (EIS) to address the following five issues:

- Impacts to bottom-dwelling organisms (benthic community);

- Impacts to the surrounding water column;

- Impacts to the phytoplankton resource, and the effects this could have on other aquaculture and aquatic life in Totten Inlet;

- Impacts that could be caused by the escapement and propagation of mussels; and
Impacts to marine navigation: lighting, and vessel navigation around the proposed mussel rafts.

31. The Applicant appealed the County’s issuance of the DS. After holding a public hearing, the Thurston County Hearing Examiner issued a decision on June 18, 1999 that upheld the DS and required preparation of an EIS. The Applicant and the County have spent the intervening years gathering scientific information on the identified environmental issues and preparing an EIS.

32. As part of that process, Thurston County, after an extensive search and with input from the Applicant and from the Association to Protect Hammersley, Eld and Totten Inlets (APHETI), selected an Independent Technical Review Committee (ITRC) to review and comment on all technical documents and reports prepared by consultants to the Applicant. The members of the ITRC are J.E. (Jack) Rensel, Ph.D., Mitsuhiko Kawase, Ph.D, Jan Newton, Ph.D., Ralph Elston, Ph.D., and Roger Newell, Ph.D., each of whom are recognized experts in their respective fields. Those fields are set out in the FEIS, Ex. 8 at p. 1-6.

33. The ITRC operated separately from and independently of the Applicant. It identified topics for scientific review, reviewed the Applicant’s technical reports and, according to Mr. Smith, did not accept a significant portion of the Applicant’s consultants’ work. The responses to comments in the FEIS are by the ITRC. The work of the ITRC extended from 2001 to 2009. Its purpose was to assure that best available science was used in the EIS. See FEIS at p. 1-6 and test. of Smith. Dr. Rensel of the ITRC testified at the hearing on this matter.

34. This is one of the most thoroughly reviewed proposals that has been presented to Thurston County. The presence of an expert and independent technical review panel is unique in this Hearing Examiner’s experience.
C. The visual impact of the proposal.

35. As found, the 58 proposed rafts would be aligned in eight rows of either seven or eight rafts, beginning about 550 to 600 feet waterward of the mean lower low water tidal elevation line and extending about 700 feet further out into Totten Inlet. Each raft would be 34 feet by 30 feet in size. The 58 rafts themselves would cover 63,100 square feet or 1.45 acres of surface area. Since the rows of rafts are spread out somewhat as shown at Ex. 1, Att. e, the area occupied by the facility as a whole would be greater. The approximate size and location of the proposed raft facility is superimposed on an aerial photograph of the vicinity at Ex. 7, Tab 9, NewFields Report, Figure 2.

36. The rafts would rise between one and two feet above the water surface. However, the comment letters at Ex. 15 contain pictures showing mussel rafts in the area with unsightly collections of largely unidentifiable equipment and other objects stored on them. Some of the objects appear three to four times as high above the water line as the raft itself. Ms. Troy testified that the existing mussel rafts are piled high with equipment and are cleaned only when complaints are made. Ms. Eggleston stated at Ex. 15 that the existing rafts are used to store equipment in a messy, unsightly way. The photographs at Ex. 33 confirm these observations. The Department proposes a condition requiring that the rafts be kept neat and orderly and that materials which are not part of the rafts not be stored on them. Ex. 14, p. 11. The Applicant states it will comply with that condition. Test. of Cooper.

37. The Applicant's Visual Impact Assessment by EDAW, Inc. at Ex. 12 states that from 10 to 15 residences would have sustained views of the raft array. The Visual Impact Analysis by APHETI at Ex. 11 states that views from at least 25 to 30 residences would impacted by the proposed rafts. According to Ex. 11, these effects would be sustained.
38. The EDAW Visual Impact Assessment states that the rafts would be in the right to the far right side of the majority of views from these residences. APHETI's Visual Impact Analysis states that the proposed facility would be directly in line with typical viewing corridors and would negatively impact the aesthetic appeal of the viewing experience.

39. The Visual Impact Assessment by EDAW states that the homes adjacent to the raft site range from 15 to 40 feet above the shoreline or base of the bulkhead. APHETI's Visual Impact Analysis states that homes adjacent to the raft site range from 15 to 70 feet above the shoreline or base of the bulkhead. APHETI's analysis states that with the rafts beginning approximately 600 feet from the shoreline, residences within 1000 feet of the facility would have views from 15 to 50 feet above the shoreline, while those from 1000 to 2000 feet of the site would have views from 60 to 70 feet above the shoreline. In general, the higher the residence, the more obvious the view of the rafts.

40. Each assessment describes the nature of the present view from these homes. The Applicant's characterizes the view as one of "open waters that are generally unobstructed by permanent, man-made water features", while APHETI's assessment is lyrical in its description of the light, color and power of the waters of the Inlet. The comments at Ex. 15 from nearby residents tend to agreement with the lyrical description.

41. Each assessment evaluated visual impact using the same ten criteria. From these, EDAW concluded that the proposal would have a moderate to high visual impact. However, on the basis of the computer generated photographs of views with and without the proposal at Ex. 12, EDAW concluded that

"the siting and design of the facility in the context of its landscape setting and low number of viewers would allow the mussel rafts to remain subordinate to the Project setting as a whole. Therefore . . . the Project would likely have a moderate visual impact on the area's visual resources."
42. From the same ten criteria, APHETI's analysis concluded that the proposal would have a high visual impact. APHETI argued that EDAW's reduction of the impact to moderate was flawed, because it relied on the low number of viewers and the number was low because only one view was analysed. In fairness, though, it is not at all clear that EDAW reduced the impact to moderate on the basis of computer generated photos from one location. Instead, the assessment appears to rely on its initial characterization at Ex. 12, p. 21 that with 10 to 15 residences, the number of viewers is "very low". As noted, APHETI disagrees, stating that views from at least 25 to 30 residences would be affected by the proposed rafts.

D. Nutrients.

43. Dr. Rensel testified that the principal threat to the waters of southern Puget Sound is eutrophication. "Eutrophic" is defined by the glossary in the DEIS as

"... nutrient over-enrichment, generally caused by excessive nitrogen in marine waters and phosphorus in freshwater. Coastal eutrophication results [from] principally human activities such as sewage disposal, fertilizer use, and atmospheric inputs. The addition of nitrogen to coastal waters stimulates algal blooms and growth of bacteria, and can cause broad shifts in ecological communities present and contribute to anoxic events and fish kills."

The evidence was consistent with the last sentence in this definition, confirming that the death of large quantities of algae from blooms stimulated by excess nitrogen will deplete oxygen levels in the water and lead to fish kills. Mr. Dewey added that debris from dead algae blooms also kills eel grass and other sea plants by blocking sunlight.
44. The evidence discussed three types of nutrients: nitrogen, silicates, and phosphorus. The reports concluded that the latter two types would not be appreciably affected by this proposal. See DEIS, Ex. 6 at p. 3-20, and Ex. 7, Tab 9, NewFields Report at p. 48. The Findings below discuss nitrogen.

45. The evidence focused on three forms of nitrogen: ammonium (NH4), nitrate (NO3) and nitrite (NO2). These are collectively referred to as dissolved inorganic nitrogen or DIN.

46. Mussels both consume and release nitrogen. They consume nitrogen by filtering and consuming phytoplankton, microzooplankton and organic particles suspended in the water. Undesirable or excess filtered material is discarded into the water as pseudofeces. Wastes are excreted as feces.

47. No feed would be introduced to the mussels grown as part of this proposal. Test. of Dewey.

48. The NewFields Study at Ex. 7 projects that approximately 5817 kilograms of nitrogen per year would be released by the mussels in this project. Nitrogen from feces and pseudofeces that is deposited in sediments is metabolized by certain organisms and released to the water in the form of ammonium, nitrate and nitrite. However, not all of the feces and pseudofeces have an available form of nitrogen. The unavailable forms settle into the sediments and are broken down. Ex. 7, p. 45. According to the DEIS Glossary, remineralization refers to the breakdown of complex structures like plant life into simpler substances. According to the DEIS text at p. 3-21, remineralization is the process of transforming organic to inorganic nitrogen. The discussion at p. 45 of the NewFields Study at Ex. 7 states that remineralization in Totten Inlet is difficult to predict. Indications are that it could be either a source of DIN or a process reducing it. Id. Whatever its effect, the DIN generated or released through these processes does not represent new or
additional nitrogen introduced to the Inlet. Rather, it is a recycling of nitrogen which is more intense under the mussel rafts. DEIS, p. 3-21.

49. For these reasons, operation of mussel culture results in elevated levels of DIN, primarily ammonium, beneath and downcurrent from the rafts. The NewFields Study at Ex. 7, Tab 9, p. 40 projected that at a current speed of 10 cm per second, the concentration of ammonium under the rafts would reach a high of 5 micromoles in May (see DEIS glossary) and would be well under that in other months. At 25 cm per second, the levels would be lower. However, the NewFields Study at the same page stated that

"the proposed mussel rafts would not be expected to increase water column ammonium concentrations exceeding 5 [micromoles], except in the late spring and early summer."

Five micromoles is the Department of Ecology criterion for a high concentration of ammonium. NewFields, p. 40 at Ex. 7. This ammonium increase is localized and would not be expected to trigger eutrophic conditions in Totten Inlet. Id. DIN returns to ambient levels approximately 230 feet downcurrent from the raft arrays. DEIS, p. 3-20.

50. The harvesting of mussels from the proposed rafts is projected to remove 4549 kilograms of nitrogen per year. Removal of the fouling community, which are organisms like barnacles, sea anemones and algae that live on hard surfaces, would remove 1044 kilograms of nitrogen per year. Gamete production is projected to remove 1023 kilograms per year. NewFields, p. 49, Ex. 7. The NewFields Study also states that 5614 kilograms per year would be removed through "reintroduction as excretion" or "excretion to the water column as ammonia" and 5817 kilograms per year would be removed as feces or pseudo feces productions. However, it is not explained how excretion of the 5614 kilograms to the water column represents a decrease in nitrogen in the system. Further, the evidence discussed above shows that it is uncertain how
much of the 5817 kilograms per year as feces or pseudo feces would actually be removed from the system.

51. For these reasons, it does not seem accurate to claim, as Newfields does, that 18,047 kilograms per year will be removed from the system, and not just unavailable until recycled back in. Conservatively, though, the proposed mussel production would remove the 4549 kilograms of nitrogen per year through mussel harvest, 1044 kilograms through removal of the fouling community, and 1023 kilograms through gamete production. It is uncertain from this evidence how much of the 5817 kilograms of nitrogen per year from feces or pseudo feces would be permanently removed from the Inlet. Without counting any of the latter figure, adding these this numbers indicates that this project would permanently remove 6616 kilograms nitrogen per year. That sum would be increased by however much of the 5817 kilogram figure would be permanently removed. The sum would be decreased if not all of the assumed fouling community were removed.

52. More precise evidence was presented through the testimony of Dr. Rensel. He testified that the nearly 5000 kilograms of nitrogen which this proposal would remove per year represented 9.6% of the 47,000 kilograms of nitrogen deposited in Totten Inlet each year from stream and watershed run off. This reduction, Dr. Rensel testified, is of measurable and significant benefit.

53. The evidence showed that aquaculture is an increasingly recognized way of removing excess nitrogen from water bodies, thus helping to prevent eutrophication and depletion of oxygen that it leads to.

54. Mr. Cheney referred to a 2010 Study by the National Research Council, listing the ecological benefits from bivalves. He testified that bivalves are more effective in providing these benefits in areas like Totten Inlet.
55. Nitrogen in Puget Sound is primarily from human generated sources, including agricultural run-off into rivers and streams, sewage entering either from sewage treatment facilities or leaching into ground water from septic systems, and atmospheric deposition from burning fossil fuels. There are also modest influxes from adjacent marine systems. Recent work on productivity and nutrient sources in Totten Inlet has suggested a high level of nitrogen coming from human-generated sources, with concentrations increasing with distance further inside Totten Inlet from its mouth. See DEIS, Ex. 6, p. 3-19.

56. The Department of Ecology placed Totten Inlet in the moderate concern category for water quality. NewFields, p. 26, Ex. 7. Mr. Lentz testified that Totten Inlet has experienced algae blooms, and that in parts of Hood Canal eutrophication has led to the death of all sea life needing oxygen.

57. Concerning another benefit from aquaculture, Mr. Reuv testified that cultivated clams and oysters on the Pacific coast sequester 3500 metric tons of carbon each year.

58. The FEIS concluded that there would no significant, unavoidable adverse impacts to silicate, phosphorus or DIN as the result of the proposed project.

E. Dissolved oxygen.

59. The NewFields study at Ex. 7, Tab 9, p. 18 discusses the current levels of dissolved oxygen (DO) at the project site. An examination of DO at a depth of 1.5 meters at the site disclosed levels ranging from 9.6 to 14.5 mg/L throughout the year. Another study examined DO at different depths during different tides in September and October. One examination showed DO concentrations at all depths ranging from 7.5 to over 10 mg/L. Another showed concentrations at different depths ranging from 6.8 to 7.2 mg/L during flood tide and 6.7 to 6.8 mg/L during slack
tide. Another examination found that DO near the bottom near the project site remained above 7 mg/L. Ex. 7, NewFields, p. 18.

60. In general, the higher the water temperature, the lower the DO level. Test. of Pedersen.

61. DO decreases as water moves on the tide beneath mussel raft arrays. Ex. 7, NewFields, p. 21. This is caused by respiration by mussels and associated epifauna. Id. The lowest concentrations occur beneath the center of the raft array. Once water passes the raft array, it will likely recover to ambient DO concentrations within 230 to 656 feet. These distances may be "somewhat longer" with the proposed Alternative 1. DEIS, Ex. 6 at p. 3-15. Mr. Pedersen testified that lower concentrations would persist past these distances only if the ambient DO was depressed.

62. The level of 5 mg/L DO is a "biological stress concentration benchmark", depending on temperature and salinity. DEIS, Ex. 6 at p. 3-14, fn. 2. Mr. Pedersen testified that this level is recognized as the minimum for maintaining life without stress, according the state Department of Ecology and the U.S. Environmental Protection Agency. As levels drop below this point, "an organism becomes increasingly more stressed, more susceptible to disease, or potentially at low values even dies from suffocation if it cannot move away to better conditions." DEIS, Ex. 6 at p. 3-14, fn. 2. Mr. Pedersen's testimony was consistent with these characterizations, although he clarified that effects would depend on the species.

63. Table 2, Figures 15 and 16, and the text on pp. 21 and 23 of the NewFields Study at Ex. 7 provide key evidence about the likely effect of the proposed facility on DO. These data are from the Deepwater Point mussel raft facility further up Totten Inlet. NewFields at p. 23 states that because the proposed raft configuration is very similar to that at Deepwater, these data may be used to predict the effects of this project. Mr. Gardner and Dr. Rensel testified, though, that

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ambient DO is higher at the proposed site, so its DO will be somewhat higher than the corresponding figures from Deepwater. Mr. Gardiner testified that ambient DO at the project site is not below 5 mg/L.

64. Table 2 of the NewFields Study at Ex. 7 shows the minimum and maximum ambient or background levels of DO approaching the facility at different months and at different tides. Table 2 also gives the percent change in ambient DO levels caused by the facility at Deepwater Point. Consistently with Mr. Pedersen’s testimony about temperature, the lowest ambient levels and the greatest percentage reductions are in the summer months.

65. For most of the year, Table 2 indicates that DO would remain above the stress benchmark of 5 mg/L, although at some times it would fall below that level. To take the worst case, Table 2 shows that in August ambient, incoming water at flood tide would have an average DO ranging from 9.5 to over 10 mg/L, with a minimum level of 4.5. Table 2 shows that at the center of the raft array at flood tide, there would be an average decrease of 44% and a maximum decrease of 70%.

66. Both Mr. Pedersen and Dr. Rensel testified that the maximum 70% reduction should not be applied to the minimum 4.5 mg/L level for August flood tides. Dr. Rensel testified that this would result in large scale fish mortality, which has not happened, and that DO levels under 3 mg/L do not occur. However, Mr. Pedersen testified that fish could swim away from DO levels down to 2 mg/L at slack tide, which suggests that the absence of widespread mortality may not preclude DO at this level. Dr. Rensel pointed out also that Figure 16 of NewFields does show that if the incoming DO is at 4.5, it could be lowered by 70% as the worst case, although, as noted, Dr. Rensel testified that this has not occurred. Thirty percent of 4.5 is 1.35. Application of the average reduction of 44% to the minimum incoming DO of 4.5 results in a level of 2.52.

67. As another example of low DO, Table 2 shows a minimum incoming DO of 4.6 in October at flood tide and a maximum decrease of 15%. If that reduction were applied to the 4.6
minimum, a level of 3.9 would result. If it were applied to the low end of the average range for incoming water on the flood tide, a level of 4.8 would result.

68. The level resulting from applying the worst case reduction percentage to the worst case incoming minimum level, 1.35 mg/L, is one that the NewFields report at Table 2 and Figure 16 indicates could occur, but which expert testimony at the hearing indicated has not occurred. Further, as noted, the ambient DO at the project site is somewhat higher than that at Deepwater. Nevertheless, the data above does show that at least in August and October, this proposal would cause DO levels to fall below 5 mg/L. The same data indicate that these levels could be well below 5, even discarding the outlier figure of 1.35. As noted, DO of 2.52 results from applying the average reduction to the minimum incoming DO level at Deepwater. That figure would be an undetermined amount higher due to the higher ambient DO at the project site.

69. Dr. Rensel testified that the duration of the worst case would depend on water movement. At slack tide, it could last an hour or two. If a current is present, it may only last a matter of minutes. Test. of Rensel. However, Mr. Pedersen testified that the low DO levels may only last for a tidal cycle, which would be approximately six hours.

70. Mr. Pedersen testified that the areas of depressed DO are very localized and that even if it were 2 mg/L at slack tide, fish could swim away. He testified it would stress the fish, but that they could recover. Dr. Rensel testified that salmonids would not be present in Totten Inlet in August and that cutthroat trout should not be present. They would seek out cooler water and would swim away from areas of low DO.

71. Mr. Daley testified that the stream flowing out of the adjacent conservation area supports sea-run cutthroat trout and that generally all Puget Sound shorelines are utilized by Chinook salmon and steelhead. He testified also that DO is below 5 mg/L can have a chronic adverse impact on fish.
72. The FEIS concluded that there would no significant, unavoidable adverse impacts to DO as the result of the proposed project.

F. Phytoplankton, zooplankton, macroalgae and the food web.

73. Phytoplankton are microscopic plants and unicellular protists (organisms not well classified to other kingdoms) that form the foundation of the marine food web. See DEIS at Ex. 6, pp. 3-24.

74. The composition and growth cycles of phytoplankton in Totten Inlet are described in the Newfields Report at Ex. 7 and in the DEIS at Ex. 6, pp. 3-24 and 3-25. In summary, phytoplankton in Totten Inlet is characterized by relatively low abundance in late fall and winter, a large diatom bloom in early spring, more modest abundance from late May through July, followed by a second bloom in August. This second bloom was less pronounced but longer lasting than the spring bloom.

75. Mussels ingest phytoplankton up to 25 micrometers in diameter. Test of Pedersen.

76. The presence of chlorophyll a (chl a) is a measurement of phytoplankton abundance. Measurements at Deepwater Point showed that chl a concentrations are significantly reduced within the raft array, by up to 90% of the concentrations in incoming water. NewFields, Ex. 7 at p. 67.

77. At a current velocity of 5 cm/sec, chl a concentrations are predicted to return to background levels by 293 meters downcurrent from the rafts. At a current velocity of 15 cm/sec, chl a concentrations are predicted to return to background levels within 90 meters downcurrent from the rafts, and at a velocity of 25 cm/sec, those concentrations would return to ambient conditions within 30 meters downcurrent. NewFields, Ex. 7, Tab 9 at p. 68. These velocities, 5, 15 and 25 cm/sec, represent the typical depth-averaged current speeds at the project site.
NewFields, Ex. 7, Tab 9 at p. 68. Peak currents at the site range from 25 to 50 cm/sec. At the Deepwater mussel raft facility, chl a concentrations returned to background levels from three to 70 meters downcurrent from the rafts. NewFields, Ex. 7, Tab 9 at pp. 62 and 67.

78. If there is decreased phytoplankton abundance past this zone of mixing, it would return to ambient conditions in about one day based on cell division rates of about one division per day. DEIS, Ex. 6 at p. 3-25.

79. In spring and summer the mussel facility here proposed may remove from .3 to .9 percent of the primary phytoplankton production over 50% of the area of Totten Inlet, representing the Northern Totten Inlet basin. In fall and winter, the proposed facility may remove from .5 to 1.4 percent of the primary phytoplankton production in the same area. DEIS, Ex. 6 at p. 3-25. In spring and summer the proposed facility is predicted to remove from 1.4 to 4.6 percent of the seasonal phytoplankton production relative to 10% of Totten Inlet, representing the area immediately surrounding the site. In fall and winter, the proposed facility is predicted to remove from 1.2 to 7.7 percent of the seasonal phytoplankton production in the same area. NewFields, Ex. 7 at Tab 9, p viii.

80. Dr. Rensel testified that there are approximately 40 million kilograms of phytoplankton in Totten Inlet in spring and summer. He characterized excess phytoplankton production as that beyond what the food web requires and testified that the amount of phytoplankton removed by this proposal would represent 1.1% of the excess phytoplankton production in Totten Inlet.

81. Zooplankton are small organisms that live in the water column. The two important categories of them are microzooplankton and gelatinous zooplankton. Zooplankton provide a critical link between the photosynthetic phytoplankton and fish and shellfish. Microzooplankton are a critical link between phytoplankton and bivalves. DEIS, Ex. 6 at p. 3-30.
82. Mussels ingest some zooplankton. Test. of Daley and Rensel. Mr. Pentilla agreed and testified that mussels may also ingest forage fish larvae. Mr. Pedersen testified that in his 40 years of work, he has never heard of mussels ingesting larvae of forage fish. Mr. Pedersen testified that he consulted with Dr. Newell, a member of the Independent Technical Review Committee on this, and Dr. Newell stated that Gallo mussels would not be able to capture or ingest larval herring. Mr. Pedersen testified that mussels sometimes capture adult copepods, small crustaceans such as water fleas, but that they do not ingest herring eggs. The preponderance of the evidence is that mussels will ingest phytoplankton less than 25 micrometers in diameter, some zooplankton and copepods, but not forage fish larvae or herring eggs.

83. Based on the food web analysis described below, the DEIS concluded that concerning zooplankton this proposal

"would be unlikely to create irreversible impacts to the hydrologic or biological health of this subbasin of Puget Sound due to characteristics of the proposed site and regional-specific physical and biological factors discussed in NewFields (2009)"

and that this proposal would not have any significant unavoidable adverse effects on zooplankton. DEIS, Ex. 6 at pp. 3-31 and 3-32.

84. Portions of the sea immediately beneath the proposed mussel raft array contain macroalgae known as sea lettuce and brown kelp. DEIS, Ex. 6 at p. 3-26. These plants, which are attached, not drifting, were only present under the approximately 7 percent of the raft area shown in green on Fig. 3-11 of the DEIS. Within this area, the bottom coverage of fixed macroalgae was very sparse, mostly ten percent or less. DEIS, Ex. 6 at p. 3-26.

85. The two shoreward rafts will likely shade unspecified portions of the area of macroalgae beneath the raft array. Because the rafts ride at anchor, their shadows will move,
allowing light to reach the bottom around the periphery of each unit. The rafts are not completely covered, so some light will penetrate through them. DEIS, Ex. 6 at p. 3-29.

86. Fig. 3-11 of the DEIS shows drift algae under the remaining 93% of the proposed raft array.

87. To evaluate the long-term effects of the proposed rafts on organisms in the water column, NewFields developed a carbon flow model for the Totten Inlet food web. The model considered the effect of phytoplankton, zooplankton in general, microzooplankton, gelatinous zooplankton, bivalves, herring, other forage fish, salmonids and the proposed mussel raft array on carbon flow in Totten Inlet and the Totten Inlet food web. The methods, mechanisms and results of the model are described at Newfields, Ex. 7, Tab 9 at pp. vii and viii and pp. 69 through 88. The model did not consider the direct consumption of zooplankton by mussels, but did consider the consumption of phytoplankton by zooplankton. See Newfields, Ex. 7, Tab 9 at p. vii and p. 83.

88. Mr. Eggleston testified that the United States produced 1.5 billion metric tons of carbon in 2010. Because phytoplankton and zooplankton sequester carbon, he testified that their loss must be considered in the carbon balance. This point is well taken. However, it appears that the carbon flow model in the NewFields report did consider that sequestration in its analysis of the proposal’s effect on the food web. The report did not consider the effect of the proposal on the balance of carbon in a more general sense.

89. On the basis of the model, the NewFields report predicts that the proposed mussel facility would not change carbon flow in the water column food web in either the spring/summer or the fall/winter periods. Newfields, Ex. 7, Tab 9 at p. 88.

90. The FEIS concluded that there would no significant, unavoidable adverse impacts to phytoplankton, zooplankton or macroalgae as the result of the proposed project.
G. Benthos.

91. Benthos are creatures dwelling on the sea bottom. Ex. 6, DEIS Glossary. The DEIS at Ex. 6, p. 3-32, et seq., describes the benthic community beneath the mussel raft facility here proposed. At pp. 3-34 and 3-35 the DEIS describes the 2005 study by Brooks on the effects of the Deepwater Point mussel raft facility in Totten Inlet on the benthic community and concludes that the effects of the current proposal will be similar. This study by Dr. Brooks is found at Ex. 8, Tab 3. Those conclusions are that there will be "subtle infaunal community effects" extending to a distance from 148 to 246 feet downcurrent from the facility, but not beyond. The area of these effects would be between .92 and 1.54 acres for each of the eight rows of rafts proposed. DEIS, Ex. 6 at p. 3-35.

92. Neither the DEIS nor the FEIS describes these effects or states whether they are adverse or beneficial. The study by Dr. Brooks at Tab 4 of Ex. 7 at p. 9 describes these "subtle" effects as "nonsignificant".

93. In response to a question as to what the benthic "infaunal effects" were, Dr. Rensel testified that mussels deposit organic material which uses oxygen and which can extirpate benthos. Dr. Rensel, however, did not disagree with Dr. Brooks' conclusions.

94. The principal evidence indicating potential harm to benthos is the November 2006 dive under the Applicant's mussel rafts at Gallagher Cove. A number of individuals stated that this dive disclosed a white bacterial mat of Beggiatoa under the rafts, which was characterized as feeding on hydrogen sulfide which develops in anoxic environments. See Ruddy comment at FEIS, Ex. 8 at p. 2-143; Mary Troy comment at FEIS, Ex. 8 at p. 2-167; Francis Walker comment at FEIS, Ex. 8 at p. 2-179; and Anita Woodnutt comment at FEIS, Ex. 8 at p. 2-188. The comments raise concerns about the effect this growth may have on the benthic community.

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95. The results of the 2006 dive are described in the December 1, 2006 letter from David S. Mann to Doug Sutherland, former Commissioner of Public Lands, at Ex. 33. In addition to the Beggiatoa, the dive showed a three-inch layer of "sludge" covering the sea bed beneath the rafts, mussel shell debris covering the sea bed beneath the rafts, other debris such as sheet metal and PVC, and three large clumps of a colonial tunicate. No evidence of algae or other plant life was observed beneath the rafts and the benthic area under and around the rafts was described as "significantly compromised and indeed like a 'dead-zone'." Ex. 33.

96. Mr. King responded to the Mann letter at Ex. 33 by stating, among other matters, that Beggiatoa has been observed when the rafts carry a full crop of mussels and heavy algae blooms are taking place. Mr. King stated at Ex. 33 that the Beggiatoa disperses after harvest. He stated also that concentrated feeding by adult mussels during algae blooms "will result in a high concentration of organic waste ending up on the benthos." Ex. 33.

97. The FEIS responds at Ex. 8 at p. 2-148 to the SEPA comments by stating that the project site has better circulation than Gallagher Cove and

"is better suited for mussel farming due primarily to better circulation that allows for the distribution of wastes in a manner to optimize aerobic assimilation into the existing food web instead of anaerobic decomposition that would, at higher levels, result in die-off of benthic infauna."

The FEIS at p. 2-148 also states that while "there are statistical differences in organic enrichment effects on the benthos under the existing rafts compared to control sites", there are "very localized and temporary, citing the report at Tab 3 of Ex. 7, entitled Benthic Response at Deepwater Point, by Dr. Brooks, 2005b.

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98. The anodyne phrase, "statistical differences in organic enrichment . . . ", must mean that there is more enrichment under the rafts than at similar locations without mussel rafts. Even so, the FEIS’s response does show agreement by the ITRC with Dr. Brooks that the effect is very localized and temporary and with Dr. Brooks’ conclusion at Tab 4 of Ex. 7 at p. 9 that the effects on benthos would be "subtle" or "nonsignificant".

99. The response of the FEIS at p. 2-148 and 2-149 also pointed out that dive surveys performed by Brooks under the Deepwater Point rafts showed a healthy megafauna under the rafts, including a large number of crabs and starfish, while the megafaunal community at the reference location was "nearly depauperate".

100. In contrast to megafauna, the Brooks Report at Tab 3 of Ex. 7 states at p. 39 that macrofauna under the Deepwater Point rafts was significantly less than at the reference location. However, this was caused more by the coarse sediment grain size than by the high sulfide concentrations observed in the summer of 2002 just before harvest. Ex. 7, Tab 3, p. 39. Those concentrations were 12,800 to 15,300 micromoles, which was "sufficiently high to exclude most infaunal organisms." Ex. 7, Tab 3, p. 38. These effects under the farm’s footprint were characterized as "significant". Id. These sulfide levels declined exponentially with distance to the north and reached background levels in 60 meters. Ex. 7, Tab 4, p. 8. Even higher sulfide concentration were apparently recorded in November 2002. See Ex. 7, Tab 3, p. 40.

101. The Brooks Study states that

"if sediments under the rafts had contained higher concentrations of fine material (silts and clays), the moderately high sulfide concentrations observed in July would have excluded sensitive infauna and the very high sulfide concentrations observed in November 2002 would have excluded all but a few opportunistic annelids."

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102. The Brooks Study at Ex. 7, Tab 4, p. 1 states that except for a deep channel, subtidal areas in Totten Inlet north of Little Skookum Inlet, including most of the project site, "were generally characterized as a muddy bowl." This strongly suggests that the sea bed beneath the project site has higher concentrations of silts and clays than does the coarse sediment grain beneath Deepwater. This suggests that, consistently with the excerpts from Ex. 7, Tab 3, pp. 38 and 40, above, the sulfide concentration observed in 2002 would likely have excluded most infaunal organisms if they occurred at the project site. The evidence did not indicate that the project site would be less susceptible to the high sulfide concentrations than would Deepwater. However, the Brooks Study at Ex. 7, Tab 3, p. 24 states that a sampling at Gallagher Cove about a month before harvest in 2002 showed sulfide at 414 micromoles under the downcurrent raft and 252 micromoles at 45 meters downcurrent from it. These are far below the high sulfide readings at Deepwater noted above.

103. The DEIS at Ex. 6, p. 3-35 states that the effect on benthos from each row of rafts at the proposed site would be between .92 and 1.54 acres in size. Dr. Brooks states that, assuming a three month fallow period from harvest to reseeding, at Deepwater the chemical characteristics of the sediment would remediated in a "few months" and biological characteristics would be remediated within about seven months. See Ex. 7, Tab 3, p. 39. (The seven months is derived from the description of the period from harvest at the end of August 2001 to the reading of low sediment sulfides on March 22, 2002 at Ex. 7, Tab 3, p. 39.)

104. The only treatments of Beggiatoa which I found in the Brooks studies were at Ex. 7, Tab 4, pp. 4 and 38. The former reference describes Beggiatoa and gives some examples of how it appears; the latter reference states that pandalus platyceros (a type of shrimp) and Cancer magister (Dungeness crab) have been seen foraging on mats of Beggiatoa.
105. In its survey of environmental impacts, the FEIS concluded there would be no significant unavoidable adverse impacts in all areas but one. In its discussion of macroinvertebrates—benthos, the FEIS states there would be no permanent significant unavoidable adverse impacts to macroinvertebrates (benthic organisms). Ex. 8, p. 1-19. The contrast in phrasing implies the presence of significant unavoidable adverse impacts which are not permanent on benthic organisms.

H. Forage fish.

106. Forage fish are small, schooling fish that provide a critical link in the marine food web. They eat zooplankton and are preyed upon by larger fish, birds and marine mammals. See Ex. 26, Subexhibit #2, and DEIS, Ex. 6 at p. 3-39. Key forage fish species in Puget Sound include Pacific herring, surf smelt, Pacific sand lance, northern anchovy, and longfin smelt. Pacific herring, surf smelt and sand lance are the most common in Puget Sound. Id. Habitat for Pacific herring, surf smelt, Pacific sand lance, and longfin smelt is considered priority habitat by the state Department of Fish and Wildlife (DFW). Id.

107. Pacific herring, surf smelt and sand lance spawn in the nearshore area, occupying many intertidal and shallow subtidal areas. Ex. 26, Subexhibit #2. Sand lances spawn between November and February in the intertidal area and deposit eggs in the top 3 cm of beach material. Ex. 26, Subexhibits #2 and #6. Surf smelt also deposit eggs in the intertidal area up to extreme high water. Ex. 26, Subexhibit #8. Spawning is widely variable and may occur year-round. Ex. 26, Subexhibit #2. Pacific herring spawn between early January and mid-June by depositing eggs mainly on marine vegetation in the intertidal and shallow subtidal zone. However, Squaxin Pass herring, those spawning in Totten Inlet, often deposit eggs on rocks and gravel, occasionally quite deep. Ex. 26, Subexhibit #10, and DEIS, Ex. 6 at p. 3-39. The state
Department of Fish and Wildlife map at Ex. 37 notes that the typical depths for herring spawning are +3 feet to -20 feet (mean lower low water).

108. Pacific herring, surf smelt and sand lance congregate in large numbers during spawning and are particularly vulnerable to shoreline activities during this stage. Ex. 26, Subexhibit #2.

109. The state Department of Fish and Wildlife map at Ex. 37 shows certain spawning areas in outer Totten Inlet. A comparison of Ex. 37 with the FEIS Location Map at Ex. 8, Fig. 1-2 shows that the beaches adjacent to the proposed facility are documented sand lance and surf smelt spawning areas. The proposed facility is not in a documented herring spawning area. Mr. Pentilla, however, states that the area of the proposed facility was probably not adequately surveyed for herring spawn and advises that the rafts be moved further off-shore to avoid shading vegetation landward of the -30 foot contour. Mr. Pedersen testified that herring in South Puget Sound evolved so as not to depend on macroalgae for depositing eggs.

110. A comparison of Ex. 37 with the FEIS Location Map at Ex. 8, Fig. 1-2 shows also that the Old Plant beach, where raft assembly would take place, is a documented herring spawning area, but not a documented sand lance or surf smelt spawning area. As noted, typical depths for herring spawning are up to three feet above mean lower low water. The report by Margenex International at Ex. 7, Part 9 states that raft assembly will take place between the +9.5-foot and +1.0-foot elevations, mean lower low water. Thus, the area of raft assembly will overlap herring spawning area.

111. Mr. Pentilla states at Ex. 26, Subexhibit #15 that based on photographs from the Margenex report, the upper intertidal zone of the beach at the Old Plant site shows clear potential for surf smelt and sand lance spawning, based on the substrate. Mr. Pentilla states that he believes it was not included on DFW Salmonscape maps as a potential area, because he did not
position a sample site there during past surveys. Mr. Penttila worked for DFW for 39 years and participated in extensive surveys of forage fish spawning areas in Totten Inlet and south Puget Sound. Test. of Penttila and Ex. 26, Subexhibit #15. Mr. Pedersen testified that Mr. Penttila did not go on the Old Plant beach, but that he did. Mr. Pedersen testified that this beach at Old Plant has oyster shell hash, which is not good for surf smelt spawning. However, the Margenex Report at Ex. 7, Part 8 states that the heavy oyster hash is in the upper intertidal area. As noted raft assembly will take place down to one foot above mean lower low water, which would not be the upper intertidal area. Mr. Pedersen testified that although he felt there was no significant impact, increased assembly of rafts on the beach could have some impact and that a forage fish survey was appropriate. Mr. Penttila also recommended that a forage fish spawning survey be carried out at the Old Plant site.

112. Surf smelt eggs would be damaged by individuals walking on them or by raft assembly. Ex. 26, Subexhibit #4. The evidence did not specifically address the issue, but it seems likely that herring eggs deposited on rocks and gravel in the intertidal area would also be damaged by those actions.

113. The waterward limit of the nearshore area is the maximum depth where sunlight can support plant growth, which can reach depths of 30 meters. Ex. 26, Subexhibit #2.

114. The evidence conflicted as to whether mussels would ingest larval fish. Mr. Penttila indicated that forage fish larvae range from 4.5 to 6 mm in length and that mussels have been observed consuming amphipods, a species between 5 and 6 mm in length. Mr. Pedersen indicated that he has never heard of mussels ingesting forage fish larvae. Mr. Pedersen consulted with Dr. Newell of the ITRC, who stated that Gallo mussels will not be able to ingest larval herring. Dr. Newell stated also that mussels sometimes capture adult copepods, which are small crustaceans such as water fleas and are much smaller than fish larvae. The preponderance of the evidence offered is that mussels would not ingest larval fish.

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1. **Fish other than forage fish.**

115. Chum salmon are common in Totten Inlet, with Kennedy Creek at its head one of the most productive Chum streams in Puget Sound. DEIS, Ex. 6 at p. 3-40. Chinook and coho salmon, winter steelhead and sea-run cutthroat trout also likely occur in the Inlet, but do not have significant spawning in its tributaries. Id.

116. Adult chum and coho salmon return to Totten Inlet to spawn in fall and early winter. Juvenile chum and coho are present in Totten Inlet from early spring to summer. Winter steelhead and coastal cutthroat are present in spring through late summer. NewFields, Ex. 7, Part 9, p. 73.

117. Effects on salmonids from this proposal would stem from its effect on their prey and on the phytoplankton and zooplankton that feed their prey. FEIS, Ex. 8, p. 1-19. Puget Sound Chinook salmon is listed as a threatened species under the federal Endangered Species Act (ESA). There are no runs of Puget Sound chinook to the tributaries of Totten Inlet, and the DEIS, Ex. 6 at p. 3-51 concludes their occurrence in the Inlet would be rare. Puget Sound steelhead is listed as a threatened species, but critical habitat has not yet been designated. Test. of Daley. Similarly, there are no runs of steelhead to the tributaries of Totten Inlet and their occurrence in the Inlet would be rare. DEIS, Ex. 6 at p. 3-52. The National Marine Fisheries Service will review this proposal under the ESA. Test. of Hoberecht.

118. Mr. Pedersen testified that the proposed rafts would not block any migratory routes for salmonids and that they should have no effect on the nearby Capital Land Trust property at Adams Cove.
119. Mr. Daley testified that salmonid stocks in the region have deteriorated since 1992. For example, in 1992 ten salmon or steelhead stocks were listed as healthy and four were listed as critical. In 2002 four stocks were considered healthy and five were critical.

120. It is unlikely that bull trout occurs in Totten Inlet. DEIS, Ex. 6, pp. 3-48 to 3-50.

121. The U.S. Corps of Engineers issued Nationwide Permit (NWP) No. 48 for existing commercial shellfish activities in 2007. The permit was subject to consultation under the ESA and the Magnuson-Stevens Act, the results of which are at Ex. 40. Because the permit under consideration is not for an "on-going, existing operation", see Ex. 40, p. 2-3, it does not fall under the umbrella of NWP 48.

122. Ms. Cooper testified that the federal permit needed under Section 10 of the Rivers and Harbors Act is on hold at the Corps of Engineers, while a biological assessment is being conducted. That federal permit will be subject to consultation requirements under the ESA.

123. The DEIS concludes at Ex. 6, p. 3-42 that the proposal is unlikely to have any significant adverse impact on fish or their prey organisms.

J. Whales.

124. Southern resident killer whales (orcas) in Puget Sound are listed as endangered under the ESA. The site of the proposed mussel facility is within designated critical habitat for the orca. Since 1990, fewer than ten sightings of orcas have been reported in Totten Inlet. This rate of occurrence is very low compared to most other areas of Puget Sound. Their presence would tend to coincide with the late fall chum salmon run into Kennedy Creek. DEIS, Ex. 6 at p. 3-53.
125. The DEIS at pp. 3-53 and 3-54 states that whales would be likely to travel in the deeper parts of the Inlet away from the rafts and that they would echo-locate and tend to move away from the rafts. The DEIS states that mussel rafts and fish farms have been present in the marine waters of western Washington for up to 40 years without a single adverse interaction between a whale and the facilities. Id. No evidence to the contrary was offered. For these reasons and due to their rare presence, the DEIS concludes that the proposal would have "little or no significant effect on Southern Resident killer whales". Id. at 3-53. Evidence to the contrary was not presented.

K. Tunicates.

126. Tunicates are defined by dictionary.com as "marine chordate animals of the subphylum Tunicata, having a rounded or cylindrical body that is enclosed in a tough outer covering", such as sea squirts.

127. A colonial or invasive species of tunicates known as Didemnum vexillum, likely originating in Japan, was first discovered in Puget Sound in 1998 (FEIS p. 2-47) or 2004 (DEIS, p.3-33). It now grows in several Puget Sound areas and has been observed on Taylor shellfish mussel lines in Totten Inlet. FEIS, Ex. 8, p. 2-47. It can grow on hulls, ropes, docks and other structures and can form extensive encrusting mats over gravelly bottoms, smothering other marine organisms. DEIS, Ex. 6, p. 3-33. Mr. Penttila testified that tunicates can also grow on fallen shells.
128. The communication from Mary Carmen from the Woods Hole Oceanographic Institution, attached to the comment from Jules Michel at Ex. 15, cites an article by Bullard and Lambert in the Journal of Experimental Marine Biology and Ecology that D. vexillum has potential to cause great ecological and economic damage. The article cites the Applicant’s Gallagher Cove mussel facility as a heavily fouled mussel culture facility. Unfortunately, this citation does not say whether the Bullard it cites is the same as the authority on whom the FEIS relies on p. 2-47, but it likely is the same. The DEIS at p. 3-33 cites D’Amore 2006 that D. vexillum is considered a serious threat in Puget Sound, because it disperses so easily and overgrows surfaces so rapidly.

129. D. vexillum can spread in several ways: by dispersing motile larvae, by overgrowing surrounding areas, or when fragments break off an existing colony and drift to new locations. DEIS, Ex. 6, p. 3-33; and FEIS, Ex. 8, p. 2-47. The FEIS states that fragments may only be able to reattach within six hours and have to come in contact with hard substrate. FEIS, Ex. 8, p. 2-47, citing Bullard et al. 2007. However, the communication from Mary Carmen at Ex. 15, states that she received an e-mail from Dr. Bullard, who stated that this assertion appears to be "somewhat incorrect". Dr. Bullard clarified that around 10% of the fragments could attach in as little as six hours, but that approximately 75% attached after 30 hours. Ms. Carmen also cites a response from "co-author" Dr. Reinhardt, whom I assume is Dr. Bullard’s co-author. This response states that fragments of D. vexillum have been known to survive more than four weeks. Dr. Reinhardt also states that 75% to 80% of fragments reattach in 30 hours, which is inconsistent to some degree with Dr. Bullard’s reported statement above that around 75% attach after 30 hours.

130. Technical evidence which is not subjected to cross-examination may not be developed to optimum precision. Nevertheless, the weight of the evidence just noted is that D. vexillum fragments are able to attach well after six hours, with most attaching by around 30 hours. Some fragments survive for more than four days.
131. Seabed composed of fine silty mud or shifting sands, which is the case in the vicinity of the project site, does not support D. vexillum. They will attach only to a hard substrate. FEIS, Ex. 8, p. 2-47. Ms. Carmen states that the proposed 58 rafts will result in an additional 24 acres of surface area below water and would create another vector for the spread of D. vexillum. The FEIS notes that pleasure boats spread D. vexillum in Puget Sound far from any shellfish operation and that it is common at many marinas.

132. The FEIS concludes that on p. 2-47 that the proposed facility could be a substrate for this organism, but that given its life history and all the current natural and human-made structures in Totten Inlet, "the problem can be expected to remain at about the same level with or without the project." The evidence does not show whether the apparent mistaken assumption that the species may not reattach after six hours is part of the "life history" on which this conclusion rests or whether the conclusion would be modified by the evidence that 75% to 80% would reattach by 30 hours. Nevertheless, the preponderance of the evidence is that with the extensive other hard surfaces in Totten Inlet and Puget Sound, both natural and man-made, the addition of this facility will not perceptibly worsen this problem.

L. Gallo mussels.

133. The native mussel in Puget Sound is Mytilus edulis trossulus (M. e. trossulus). DEIS, Ex. 6, p. 3-36. The most commonly cultured mussel in Washington is Mytilus edulis galloprovincialis, referred to as the Gallo or Mediterranean mussel. North Totten Inlet is one of the few places in Puget Sound where Gallo mussels grow particularly well. DEIS, Ex. 6, p. 3-36. As noted, the Applicant proposes to raise Gallo mussels at the proposed facility.

134. After reviewing scientific literature, the DEIS at p. 3-36 and 3-37 concluded that the origin of Gallo mussels such as those cultured in Washington is unknown and that Gallo mussels were resident in Puget Sound prior to their culture here.
135. M. e. trossulus, the native mussel, is adapted to cold water with reduced salinity, while the Gallo is adapted to warmer water with fairly high and constant salinity. DEIS, Ex. 6, p. 3-37. The waters of Puget Sound are relatively cold and experience large reductions in salinity during the winter peak spawning period of Gallos. This, according to the DEIS p. 3-37 and the study by Kenneth Brooks at Ex. 7, p. 11, would likely inhibit, but not extinguish successful recruitment of this species. Mr. Pedersen testified that Gallo mussels have superior growth, but only under the conditions to which they’re adapted. The evidence did not examine whether general atmospheric warming would allow Gallos to spread more rapidly due to warming of Puget Sound.

136. The Brooks study at Ex. 7, Tab 5 drew on random samples of mussels taken in Puget Sound in areas of intensive mussel culture, including Totten Inlet. The 2002 survey in Totten Inlet was a random sampling of non-cultured, naturally occurring mussels. Of those taken from Totten Inlet in 2002, up to 3% were Gallos and 3% to 10% hybrids of Gallos and M. e. trossulus mussels. See Brooks, Ex. 7, p. 9 and DEIS, Ex. 6, p. 3-37. The DEIS concludes from this on p. 3-37 that in Totten Inlet, where intensive culture of Gallo mussels has been practiced for 20 years, that M. e. trossulus is still the dominant species in the naturally recruiting population and that there is little evidence that this natural mussel population may contain Gallo genes.

137. The Brooks study at Ex. 7, Tab 5 also describes some nonrandom mussel samples, which disclosed a higher percentage of hybrids. For example, in a sampling of mussels which resembled Gallos from Dyes Inlet in Puget Sound, 67% were found to be hybrids. Of nine mussels from Sequim Bay identified as Gallos from shell characteristics, 100% were hybrids. Of 53 mussels from Holmes Harbor resembling Gallos, 26 were Gallos, 26 were hybrids and one was M. e. trossulus. The Brooks study also explains that these samples came from areas with temperature, salinity or nearby traffic that could favor the spread of Gallos. See Ex. 7, Tab 5.
138. The Brooks study states at Ex. 7, Tab 5, p. 11 that nonrandom sampling is appropriate for determining the presence or absence of Gallo mussels, but that random sampling must be used to estimate population parameters.

139. The photographs at Ex. 30 by the Walkers show mussels colonizing on logs, rocks, ropes and chains on their beach in the vicinity of the Applicant's existing Gallagher Cove mussel raft facility.

140. The FEIS comment by Mr. Morrison at Ex. 8, p. 2-126 cites a letter from the U.S. Fish and Wildlife Service (U.S.F.W.S.) to the Corps of Engineers which he states concerns the Applicant's intent to grow Gallo mussels on rafts in Totten Inlet. The letter states in part:

We do oppose the use of the non-indigenous mussel, M. galloprovincialis, because of the risk to the native mussel (M. trossulus) and the wildlife species that feed on it . . .

If Taylor United, Inc. is wrong in its assessment, it is doubtful that any corrective measure would be effective in the eradication or control of the spread of this non-native mussel to other areas of Puget Sound."

Ex. 8, p. 2-126.

141. The FEIS responds to this comment by noting that no date is given for the letter cited by Mr. Morrison and stating that the Applicant's Director of Regulatory Affairs believes it was prepared in response to a proposed mussel facility on Whidbey Island over 15 years ago and is outdated. The comment also states that more recent review by the U.S.F.W.S. is in the Biological Opinion prepared for NWP 48 in 2009 and that the Biological Opinion did not recommend any conservation measures relative to cultivating Gallo mussels. Mr. Pedersen testified that the
Biological Opinion for NWP 48 would have examined invasiveness of Gallo mussels. As found above, NWP 48 covers existing shellfish operations, not the present proposal for a future facility.

142. Mr. Morrison’s comment at Ex. 8, pp. 2-127 and 2-128 also cites a 2002 letter from Peter Wimberger, Associate Professor of Biology at the University of Puget Sound, with reasons why he believes that genetic sampling method used by Dr. Brooks is inadequate.

143. The FEIS responds at p. 2-129 by stating that Dr. Elston, the member of the Independent Technical Review Committee (ITRC) with expertise on mussel genetics, escapement and competition, reviewed Mr. Wimberger’s comments and made recommendations to Dr. Brooks on his methodology. Dr. Brooks incorporated Dr. Elston’s recommendations and used some of the methods proposed by Mr. Wimberger. The methodology used by Dr. Brooks was accepted by the ITRC.

144. Mr. Troy testified that a study by the University of Puget Sound found a higher percentage of Gallo mussels over time. He testified that where Dr. Brooks found up to 10% hybrids, U.P.S. found from 10% to 19%. In his FEIS comment at Ex. 8, p. 2-171, Mr. Troy cited the November 2008 issue of the Ecological Society Review which described the Gallo as "an invasive specie with the highest ecological impact score of 4, stating: Disrupts entire ecosystem processes with wider abiotic influences.” Mr. Troy stated also that a 2009 sampling by APHETI found that 40% of the mussels in Gallagher Cove were Gallos. No evidence about the expertise of those carrying out the APHETI sampling was offered.

145. The County’s response to Mr. Troy’s comments noted that the study discussed in the Ecological Society Review assigned the ecological impact score globally and that it reflects the most damaging documented impacts. FEIS, Ex. 8 at p. 2-173. The response also cites experiments carried out by Dr. Rensel showing that Gallos grow and survive better than M. e.
trossulus, but that neither species was having a strong competitive effect on the survival or growth of the other. Ex. 8, p. 2-173 and 2-174.

146. Mr. Stevens testified that he has been growing Gallo mussels since 1985 or 86 and that a neighboring grower concerned about escapement filed a complaint against him. Mr. Stevens testified that the state Department of Fisheries subsequently determined that escapement was not a significant impact and allowed the cultivation of Gallos to continue.

147. Based on the studies it examines, the DEIS concludes at p. 3-38 that the risk of Gallo mussels displacing or genetically polluting M. e. trossulus is low and that it is unlikely the project would have a significant adverse effect of this nature. The DEIS, however, does not list the U.P.S studies as those it considered. The FEIS concludes at Ex. 8, p. 1-19 that there would be no significant unavoidable adverse impacts to the genetic make-up of native mussel populations in North Totten Inlet as the result of this proposal. The FEIS did consider the comments based on Professor Wimberger’s analysis at U.P.S. As just noted, Dr. Elston of the ITRC reviewed Professor Wimberger’s comments and made recommendations to Dr. Brooks on his methodology. Dr. Brooks incorporated Dr. Elston’s recommendations and used some of the methods proposed by Mr. Wimberger. The methodology used by Dr. Brooks was accepted by the ITRC.

M. Miscellaneous effects.

148. A number of nearby residents commented or testified that mussel rafts and their predator nets create a stench; see, e.g., Eggleston comment at Ex. 15, test. of Kirsop, test. of Hickel, and comments at Part 2.3 of the FEIS. Mr. Hickel stated in his FEIS comment that a strong odor emanates from seals and sea lions that use the rafts as a rookery. Ms. Troy commented in the FEIS that there is often a strong stench of decaying, putrid material from the Applicant’s rafts at Gallagher Cove.
149. Ms. Cooper testified that nets smell when stored on the beach and that the Applicant will no longer store them there. Mr. Kirsoo testified that Taylor has responded to the problem of odor from the nets.

150. In the FEIS and in testimony, members of the public stated that the Applicant does not exercise oversight over its geoduck crews, which are loud and use foul language, that noise from current aquaculture operations has awakened residents in the middle of the night, that noise from the operation will resonate over the inlet on calm days which are most suited to work on the facility, and that lights from the operation will shine through windows of residences.

151. Conflicting evidence was submitted on plastic debris from mussel aquaculture washing up on beaches. Ms. Hendricks testified to reports of mussel disks being found in marine waters in Thurston and Pierce counties and that from six to eight washed up on her beach in one month earlier this year. An example of such a disk is at Ex. 23. Ms. Macomson, who lives at 6110 88th Avenue, testified that she finds mussel disks weekly and has removed "truckloads" of plastic from the beach. She testified that some consists of bags with the Taylor label.

152. Ms. Hendricks testified that plastic debris can be toxic and can show up in fish. She stated at Ex. 22 that studies have shown that plastic pollution harms aquatic life and that plastics are being found in fish, birds and mammals. The excerpts from Plastic Ocean at Ex. 24 state that in a 2008 fish study, 35% of the fish had ingested plastic. The excerpts state that plastic in the sea does not dissipate, that it breaks down into smaller, more ingestible pieces, that polyethylene and polypropylene contain BPA at levels causing adverse health effects. The excerpts at Ex. 24 state also that sessile or attached organisms can be carried long distances by plastic flotsam. Ms. Hendricks stated at Ex. 24 that plastic disks from mussel rafts in Totten Inlet have been found at Johnson Point and Henderson Bay.

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153. Ms. Eggleston’s commented at Ex. 15 that they often pick up pieces of plastic, rubber bands, zip ties, torn netting, floating tubes and mussel raft disks on walks along Totten Inlet. Steve and Julie Kirkwood commented at Ex. 15 that when they walk on the beaches downwind of the existing mussel rafts, it is rare that they don’t find plastic containers that have blown from the rafts. Ms. Peterson testified that she regularly walks the beaches of Totten Inlet and Hope Island and “constantly” picks up plastic trash such as geoduck tubes, tube nets and oyster bags from the Applicant’s operations in Totten Inlet.

154. Ms. Wilson, however, testified that she has lived on Puget Sound for 25 years, where Totten and Hammersley inlets join. She testified that her house is bordered by a lagoon that tends to collect debris and that she has only found two or three of the mussel disks in a six month period.

155. Mr. King testified that the Applicant has stored disks on scows and that from now on they will be stored on land. Mr. King testified also that retaining nets around the rafts will generally catch any disks that fall off. Ms. Cooper testified that the condition proposed by the Staff concerning storage on the rafts should eliminate plastic materials falling off a raft. That condition prohibits storing anything on a raft which is not part of the raft itself. Ex. 14, p. 11. Ms. Cooper also testified that microplastics are caused by long UV exposure and that the Applicant does not allow that to occur.

156. Rosalind Schoof, a toxicologist with expertise in assessing toxicological risks from exposure to chemical substances, stated that not storing extra equipment on the rafts and removing plastic items upon evidence they are becoming brittle or subject to degradation “is anticipated to reduce or eliminate the risk that the aquaculture gear will release microplastics. Ex. 48. Ms. Schoof also stated that the polyethylene or polypropylene used in the mussel “socks” has been shown to be safe for direct, prolonged contact with food due to the negligible transfer of chemicals. Ex. 48.
157. Conflicting evidence was also submitted about the general state of wildlife at Totten Inlet. Ms. Eggleston stated at Ex. 15 that a former abundance of diving ducks is now down to an occasional visitor and that they see fewer seals and eagles now. Fritz and Barb Mondau stated at Ex. 15 that they no longer see flounders, dogfish or schools of small "feeder fish" anymore and that sand dollar beds have been buried in silt. They described the method of harvesting geoducks as one generating much sediment in the water. Ms. Eggleston stated at Ex. 15 that before the present level of aquaculture, there was abundant life in Totten Inlet and its water looked clear. She described the water now as looking dead. Mr. Troy testified that sea smelt and herring have virtually disappeared from Totten Inlet. Ms. Coontz testified that she has noticed in Totten Inlet the loss of species such as sand dollars and changes in tidal currents. She believes the loss of species is due to oyster cultivation.

158. Mr. Schaffel disagreed with these characterizations, testifying that farmed beaches in the Inlet are still loaded with sand dollars, crabs and other wildlife and that the mussel rafts are loaded with birds. Ms. Wilson testified that she has farmed shellfish for 12 years near where Totten and Hammersley inlets merge and that the beaches they work on and around are full of life, with fish in the water. Mr. Steele testified that the decline in wildlife and habitat in Puget Sound has many causes and cannot be ascribed to shellfish farming.

159. The mussel rafts will be equipped with all private aids to navigation required by the U.S. Coast Guard under 33 CFR Parts 62 and 66. The edge of the facility will be marked by marine marker lights on buoys and/or lights on the end of each raft. When the rafts are first floated into place, the Applicant will install two solar powered navigation lights to identify the width of the rafts. FEIS, Ex. 8 at p. 1-22.

N. Cumulative impacts.
160. The Conclusions below discuss the proper standard for analyses of cumulative impacts under the SMA and conclude that the proper test uses the definition of cumulative impacts in the National Environmental Policy Act (NEPA) and the criteria used by the Shorelines Hearings Board in Fladseth v. Mason County, SHB No. 05-026 (2007). The Findings below discuss the extent to which cumulative effects were analysed consistently with those standards.

161. The FEIS at Ex. 8, p. 1-24 states that the carrying capacity analysis performed for the project, together with its water column analysis, analyzes cumulative impacts under the broad NEPA definition. The principal study dealing with water column impacts and the carrying capacity of Totten Inlet is the 2009 NewFields Assessment at Ex. 7, Tab 9, although other studies in Ex. 7 may also bear on the question. The FEIS states at p. 1-24 that the results of the water column effects investigations were peer reviewed by the ITRC and are reported in the DEIS at Ex. 6, pp. 3-2 through 3-24.

162. The FEIS updated prior information on the extent of shellfish production in Totten Inlet and concluded at p. 1-24 that there would be no significant, adverse environmental impacts to the carrying capacity of Totten Inlet with this proposed new mussel facility.

163. The 2009 NewFields Assessment states that its purpose is to

"1) evaluate the probable effects of the proposed mussel rafts on the surrounding water column, and 2) evaluate impacts to the phytoplankton resource, including the effects this could have on other aquaculture and aquatic life in Totten Inlet."

Ex. 7, Tab 9 at p. 3. The report discusses water column effects in five areas: currents and flow, dissolved oxygen, nutrients, phytoplankton, and phytoplankton based carbon flow. Ex. 7, Tab 9 at p. 3.
164. The Findings in Part F, above summarize the effect of the proposal on phytoplankton, zooplankton, macroalgae and the food web. The food web analysis rested on the carbon flow model set out at pp. 76, et seq. of the NewFields Assessment at Ex. 7.

165. As found above, Dr. Rensel characterized excess phytoplankton production as that beyond what the food web requires and testified that the amount of phytoplankton removed by this proposal would represent 1.1% of the excess phytoplankton production in Totten Inlet. Calculating the amount of phytoplankton required by the food web in Totten Inlet requires consideration of other consumers of phytoplankton, not just this proposal. Calculating the amount of phytoplankton actually present in Totten Inlet also requires consideration of other consumers of phytoplankton, not just this proposal. As found, there are no pending applications for floating aquaculture facilities in Thurston, Mason or Pierce counties. Thus, the analysis of phytoplankton and the food web in NewFields at Ex. 7, as reviewed by the ITRC, did take into account other producers and consumers of phytoplankton in the Inlet and did not view this proposal in isolation. It properly considered cumulative effects as applicable to this application.

166. As found above, the evidence shows that mussels will ingest some zooplankton and copepods, but not forage fish larvae or herring eggs. As also noted above, the NewFields Assessment discusses water column effects in five areas: currents and flow, dissolved oxygen, nutrients, phytoplankton, and phytoplankton based carbon flow. Ex. 7, Tab 9 at p. 3. As noted above, the water column analysis did consider the consumption of phytoplankton by zooplankton, but not the direct consumption of zooplankton by mussels. See Newfields, Ex. 7 at Tab 9, p. vii p. 83. The statement of impacts to zooplankton at p. 3-31 of the DEIS focuses on the direct and indirect effects of this proposal alone on zooplankton.

167. However, the FEIS states at p. 1-29 that
"with such a small percentage of the total phytoplankton used by these bivalves, the risk that there would be a significant effect on zooplankton abundance (a forage fish prey species), and hence that forage fish would be affected, is discountable"

This statement shows that the principal effect of mussels on zooplankton is through their consumption of phytoplankton and that that effect is minimal. As found above, the evidence does consider the cumulative effect on phytoplankton. Thus, it also considers the cumulative effects on zooplankton through the consumption of phytoplankton.

168. Turning to nutrients, the evidence, as summarized in the Findings above, shows that this project would remove substantial amounts of excess nitrogen from Totten Inlet, thus helping to prevent eutrophication and the depletion of oxygen that it leads to. The effect of this project on nitrogen levels and eutrophication will be beneficial. When a proposal reduces a potential adverse impact of other activities, there is no adverse cumulative impact of the project to examine in that area.

169. The effect of this proposal on dissolved oxygen (DO) is discussed in detail in the Findings above. In summary, the evidence shows that in August and October, this proposal would cause DO levels to fall below the stress level of 5 mg/L. The data indicates that these levels could be well below 5. For example, applying the average reduction caused by the Deepwater facility to the minimum incoming DO level at the Deepwater site in August results in a DO level of 2.52. However, as also found, this number would be an undetermined amount higher with this project, since ambient DO is higher. As discussed in Finding 69, the duration of low DO would depend on water movement, lasting from a matter of minutes to six hours.

170. As found, the food web model and analysis in the NewFields report and the relevant discussions in the DEIS and FEIS show that this proposal will not have any adverse cumulative impact on phytoplankton or on any other species through reduction of the phytoplankton on which
the food web rests. Thus, it must also be concluded that this proposal's reduction of DO will not have any adverse cumulative impact on phytoplankton or on any other species through reduction of the phytoplankton.

171. However, neither NewFields, the DEIS nor the FEIS discuss the direct effect on sea life of the seasonal areas of deficient DO projected from this proposal, considered together with potential low DO created by other activities in Totten Inlet. Instead, the direct effects of low DO from this project are considered in isolation. For example, it may well be that fish could easily avoid the areas of low DO caused by this proposal. However, the evidence does not show whether the other aquaculture facilities in Totten Inlet also cause areas of deficient DO, how large those areas are, what levels of DO they may have, or how long they may persist. Without that evidence, it is impossible to know the effect of this proposal on fish and other sea life, when added to the effect of other operations.

172. This point is especially relevant to forage fish. As found, the beaches adjacent to the proposed facility are documented sand lance and surf smelt spawning areas. The Gallagher Cove mussel facility is in or very near a documented herring spawning area and not far from documented sand lance and surf smelt spawning areas. Cf. map at FEIS, Fig. 1-2 and map at Ex. 37. The evidence does not disclose whether the Deepwater facility is near any of these spawning areas. The evidence not discuss whether this proposal, considered with other aquaculture operations in the Inlet, may harm forage fish by creating areas of low DO so close to spawning areas. The statement above that this proposal would have a discountable effect on zooplankton and forage fish was based on an analysis of phytoplankton abundance and the food web. It did not consider the direct effects of low DO.

173. Each project, considered alone, could be benign in its reductions of DO. At some point, though, the accumulation of pockets of low DO in the Inlet, although transient, may do harm.
The evidence is silent as to how close or far this proposal may be from that point. The evidence does not consider the cumulative impacts of this proposal through its effects on DO.

174. Turning to effects on the benthic community, the study by Dr. Brooks at Ex. 7, Tab 4 was designed to assess the carrying capacity of Totten Inlet with respect to the effects of the proposed mussel facility on certain elements of the environment. See Ex. 7, Tab 4, p. 1. The report concluded that

"Totten Inlet will be at approximately ten percent of its carrying capacity when the North Totten Inlet mussel farm reaches full production. These results indicate that any negative benthic effects in the immediate vicinity of the proposed mussel farm will be minor and ephemeral. It is quite possible that biodeposits from the farm will actually increase the abundance, diversity and biomass of the macrobenthic community near the farm."

Ex. 7, Tab 4, p. 11.

175. As discussed above, "carrying capacity" in the NewFields Report focuses largely on phytoplankton production and its effect on the food web. However, the Brooks Study reviewed "benthic environments in Totten Inlet and their response to the intensive cultivation of mussels on rafts." Ex. 7, Tab 4, p. 11. Immediately after the reference to "carrying capacity" in the excerpt above, the report stated that "[t]hese results indicate that any negative benthic effects in the immediate vicinity of the proposed mussel farm will be minor and ephemeral." This study concludes that this proposal's effect on benthos will approach only about ten percent of the carrying capacity of the Inlet. Although not stated expressly, this characterization implies that its conclusion takes into account the cumulative effect of at least mussel production in Totten Inlet.

176. However, neither the Brooks' studies nor the DEIS or FEIS discussed the extent of Beggiatoa under these or other raft facilities or their effect on benthos. It is also not clear whether
the high sulfide readings under the Deepwater rafts, which the evidence showed were sufficient nearly to extirpate benthic life for a period of months, are expected to be exceeded over the finer sediment at the project site or are found under other mussel raft facilities in the Inlet. Until adequate evidence is presented on each of these points, it cannot be found that cumulative effects on benthic life have been covered.

177. Next, the evidence summarized in the Findings above makes clear that the tunicate D. vexillum is spreading in Puget Sound areas and has the potential to cause substantial ecological damage. The evidence also shows that it can grow on hard surfaces such as hulls, ropes, docks and structures and can form extensive encrusting mats over gravelly bottoms. It has been observed on Taylor shellfish mussel lines in Totten Inlet and one communication in the evidence described the Gallagher Cove mussel facility as a heavily fouled with it.

178. The FEIS acknowledges on p. 2-47 that the proposed mussel facility could be a substrate for this organism. The evidence set out in the Findings shows that it almost certainly would be. However, the FEIS also concludes that given its life history and all the current natural and human-made structures in Totten Inlet, "the problem can be expected to remain at about the same level with or without the project." Even with the uncertainty about times of reattachment described above, the large number of docks, boats, ropes, and various natural hard surfaces in the Inlet support this conclusion. The evidence does adequately discuss cumulative effects concerning tunicates.

179. In deciding whether cumulative effects were properly weighed in considering potential spread of Gallo mussels, a number of facts from the Findings above are important. First, because the waters of Puget Sound are relatively cold and experience large reductions in salinity during the winter peak spawning period of Gallos, successful recruitment of this species would likely be inhibited, but not extinguished. However, Gallo mussels have superior growth under the conditions to which they're adapted. North Totten Inlet is one of the few places in Puget Sound where Gallo
mussels grow particularly well. The Findings also discuss the results of the random sampling of non-cultured, naturally occurring mussels in Totten Inlet and random samplings showing much higher percentages of Gallos and hybrids. As also found, the ITRC reviewed Professor Wimberger’s challenges to Dr. Brooks’ genetic sampling method and made recommendations to Dr. Brooks on his methodology. Dr. Brooks incorporated the ITRC’s recommendations and used some of the methods proposed by Mr. Wimberger, a methodology accepted by the ITRC. The DEIS concluded that in Totten Inlet M. e. trossulus is still the dominant species in the naturally recruiting population and that there is little evidence that this natural mussel population may contain Gallo genes. The FEIS was consistent with this.

180. Apart from the U.S Fish and Wildlife letter on Gallos, which is discussed above and in the Conclusions, this evidence shows by a preponderance that this proposal, considered by itself, would not cause any significant spreading of or genetic pollution by Gallo mussels. The evidence shows the same about the mussel facilities existing in 2002 in Totten Inlet. What the evidence does not show is the combined effect when all mussel facilities in Totten Inlet are considered, including that proposed. This proposal would have 58 rafts. The Deepwater facility is described by NewFields at Ex. 7, Tab 9, p. 23 as very similar to this proposal. The Gallagher Cove facility has 21 rafts. FEIS, Ex. 8 at p. 1-1. If Deepwater and Gallagher together resulted in up to 3% Gallos and 10% hybrids in 2002, as the Brooks Study states, would the addition of the 58 rafts of this proposal increase those percentages proportionately? If so, what effect would that increase have? Or, would the addition of the 58 rafts accelerate the spread of Gallos so that these percentages would increase more than the proportionate increase in Gallo culture in Totten Inlet represented by this proposal? The evidence does not address these questions. It shows only that the status quo in 2002 was not troublesome.

181. These questions are not addressed by NWP 48. As Mr. Pedersen testified, the Biological Opinion prepared for NWP 48 in 2009 by the U.S.F.W.S. would have examined the invasiveness of Gallo mussels and did not recommend any conservation measures concerning their
cultivation. NWP 48, however, covers existing shellfish operations, not future facilities such as that here proposed. Thus, it does not address the combined effect of this and existing mussel cultivation in the Inlet.

II. CONCLUSIONS OF LAW

A. The legal standards governing the requested shoreline substantial development permit.

1. With exceptions not pertinent to this proposal, the state Shoreline Management Act (SMA), Chap. 90.58 RCW, defines shorelines of the state to include "all of the water areas of the state, including reservoirs, and their associated shorelands, together with the lands underlying them . . ." RCW 90.58.030 (2) (d). Shorelands, in turn, are defined as "those lands extending landward for two hundred feet . . . from the ordinary high water mark . . ." RCW 90.58.030 (2) (f). The SMA requires a substantial development permit for any "substantial development" on the shorelines of the state. RCW 90.58.140 (2). "Substantial development" is defined to include any development "of which the total cost or fair market value exceeds five thousand dollars . . ." RCW 90.58.030 (3) (e). By operation of statute, that threshold is now $5718. The proposal here at issue is in the shorelines of the state, and its fair market value exceeds that amount. Therefore, the proposal may be carried out only if a substantial development permit is issued.

2. A substantial development permit (SDP) may be granted only if the proposal is consistent with the SMA and the local shoreline master program (SMP). RCW 90.58.140 (2) (b). The SMP for Thurston County is the Thurston Region Shoreline Master Program, as amended by Thurston County Code (TCC) 19.01.010.
3. The proposed mussel facility is deemed aquaculture under the definition in SMP Section 3, II, A. That definition also includes the "processing of aquatic plants and animals, and the maintenance and construction of necessary equipment, buildings and growing areas . . . " Under this definition, the actions proposed for the Old Plant site described in the Findings also count as aquaculture.

4. Industrial development is defined by SMP Section 3, VIII, A as

". . . the fabrication, assembly, manufacturing, processing or storage of goods. This category also includes the facilities for the transfer of cargo and/or passengers from water-borne craft."

Commercial aquaculture such as that proposed may accurately be called industrial under ordinary English usage. However, the specific references in this definition to fabrication, assembly, manufacture, processing and storage of goods and the transfer of cargo and passengers strongly suggest that it is restricted to this type of activity and does not capture agriculture, aquaculture or other commercial activities that may be deemed an industry. This conclusion is reinforced by the specific policies and regulations in the SMP. Legislative intent is plain that aquaculture is governed by the provisions governing aquaculture, not by provisions applying to these other industrial activities.

5. Under SMP, Section 3, II, D. all types of aquaculture are allowed in the Conservancy environment, "provided the operation is consistent with the policies and regulations of this program and chapter."

6. The policies of the SMP governing aquaculture are set out in Section 3, II, B, which states:
"1. The Region should strengthen and diversify the local economy by encouraging aquacultural uses.

2. Aquacultural use of areas with high aquacultural potential should be encouraged.

3. Flexibility to experiment with new aquaculture techniques should be allowed.

4. Aquacultural enterprises should be operated in a manner that allows navigational access of shoreline owners and commercial traffic.

5. Aquacultural development should consider and minimize the detrimental impact it might have on views from upland property.

6. Proposed surface installations should be reviewed for conflicts with other uses in areas that are utilized for moorage, recreational boating, sport fishing, commercial fishing or commercial navigation. Such surface installations should incorporate features to reduce use conflicts. Unlimited recreational boating should not be construed as normal public use.

7. Areas with high potential for aquacultural activities should be protected from degradation by other types of uses which may locate on the adjacent upland.

8. Proposed aquacultural activities should be reviewed for impacts on the existing plants, animals and physical characteristics of the shorelines.

9. Proposed uses located adjacent to existing aquaculture areas which are found to be incompatible should not be allowed."
7. The general regulations of the SMP governing aquaculture are set out in Section 3, II, B, which states:

1. Aquaculture development shall not cause extensive erosion or accretion along adjacent shorelines.

2. Aquacultural structures and activities that are not shoreline dependent (e.g., warehouses for storage of products, parking lots) shall be located to minimize the detrimental impact to the shoreline.

3. Proposed aquaculture processing plants shall provide adequate buffers to screen operations from adjacent residential uses.

4. Proposed residential and other developments in the vicinity of aquaculture operations shall install drainage and waste water treatment facilities to prevent any adverse water quality impacts to aquaculture operations.

5. Land clearing in the vicinity of aquaculture operations shall not result in offsite erosion, siltation or other reductions in water quality.

6. For nonaquacultural development or uses proposed within or adjacent to an Aquacultural District, or which may be adversely affected by the aquaculture operation, restrictive covenants shall be filed which will inform prospective buyers of the proximity of the Aquacultural District. ¹

¹ Paragraph 7 contains regulations concerning aquaculture districts and is not relevant to this matter.

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8. Apart from the more specific policies and regulations discussed above, Section 2 V of the SMP sets out a number of Regional Criteria which also apply to this proposal. That provision states in relevant part:

"All development within the jurisdiction of this Master Program shall demonstrate compliance with the following policies:

\[ \ldots \]

B. Protection of water quality and aquatic habitat is recognized as a primary goal. All applications for development of shorelines and use of public waters shall be closely analyzed for their effect on the aquatic environment. Of particular concern will be the preservation of the larger ecological system when a change is proposed to a lesser part of the system, like a marshland or tideland.

\[ \ldots \]

F. Applicants for permits shall have the burden of proving that a proposed substantial development is consistent with the criteria which must be met before a permit is granted. In any review of the granting or denial of an application for a permit as provided in RCW 90.58.180 (1), the person requesting the review shall have the burden of proof.

G. Shorelines of this Region which are notable for their aesthetic, scenic, historic or ecological qualities shall be preserved. Any private or public development which would degrade such shoreline qualities shall be discouraged. Inappropriate shoreline uses and poor quality shoreline conditions shall be eliminated when a new shoreline development or activity is authorized.
H. Protection of public health is recognized as a primary goal. All applications for
development or use of shorelines shall be closely analyzed for their effect on the
public health."

9. The parties sharply disagree whether the state Water Pollution Control Act, Chap.
90.48, and its implementing rules must be met to obtain this shoreline substantial development
permit. Given the conclusions below, it is not necessary to decide this issue.

10. This proceeding does not involve any challenge to a threshold determination or to the
adequacy of an EIS under the State Environmental Policy Act (SEPA), Chap. 43.21C RCW. This
decision does not exercise substantive SEPA authority under RCW 43.21C.060.

B. Analysis of specific legal issues.

11. This analysis turns first to a discussion of the principle legal issues raised in this
proceeding and then to a discussion of compliance with governing standards, given the resolution
of the principle issues.

1. Cumulative impacts.

12. The notion of cumulative impacts arises often in land use law. At its core is the
consideration of a project’s effects together with the effects of other activities. Disputes tend to
crop up in two areas: whether cumulative effects should be considered in a specific case, and, if
so, what other uses or proposals should be considered. This case is no exception.
13. These issues are nicely illustrated by the contrasting approach of two statutes which do not directly apply to this proceeding. First, certain actions under SEPA require the consideration of cumulative impacts. In cases dealing with challenges to an EIS, the courts have held that

"[a]dditional projects do not require review in an EIS for cumulative impacts if they are either substantially independent from the proposed action or are not necessary to meet the project's purpose and need. Cheney, 87 Wn.2d at 345 (explaining dependent actions); SEAPC v. Cammack II Orchards, 49 Wn. App. 609, 614, 744 P.2d 1101 (1987) . . ."


14. In a case involving a challenge to a mitigated determination of nonsignificance under SEPA, the court held that

". . . as a general proposition, the nature of cumulative impacts is prospective and not retrospective. A cumulative impact analysis need only occur when there is some evidence that the project under review will facilitate future action that will result in additional impacts. Tucker v. Columbia River Gorge Comm'n, 73 Wn. App. 74, 81-83, 867 P.2d 686 (1994) . . ."

We also hold that the cumulative impact argument must fail unless the Boehms can demonstrate that the project is dependent on subsequent proposed development . . .

Boehm v. City of Vancouver, 111 Wn. App. 711, 720 (2002). Thus, in challenges to EISs or threshold determinations, SEPA takes a narrow view of cumulative impacts.

15. In contrast, cumulative impacts are defined under the National Environmental Policy Act (NEPA) as
"[t]he impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time."

Although NEPA may apply to federal approvals needed for this project, it does not apply to the SDP here at issue.

16. The SMA, which does apply to this proceeding, recognizes that

"coordinated planning is necessary in order to protect the public interest associated with the shorelines of the state while, at the same time, recognizing and protecting private property rights consistent with the public interest. There is, therefore, a clear and urgent demand for a planned, rational, and concerted effort, jointly performed by federal, state, and local governments, to prevent the inherent harm in an uncoordinated and piecemeal development of the state's shorelines."

RCW 90.58.020. In Hayes v. Yount, 87 Wn.2d 280, 288 (1976), the Supreme Court held that with this language,

"the legislature and people of this state recognized the necessity of controlling the cumulative adverse effect of "piece-meal development of the state's shorelines" through "coordinated planning" of all development, not only "substantial development."

The Court held further that

"[t]he fact that respondent himself cannot control future filling in the Snohomish River estuary does not, in itself, render arbitrary and capricious the board's concern over the
ultimate impact of such development in light of its statutory duties. See RCW 90.58.140; 90.58.020."

Hayes, 87 Wn.2d at 288.

17. In Skagit County v. Department of Ecology, 93 Wn.2d 742, 750 (1980), the Court cited its observation in Hayes that

"[I]logic and common sense suggest that numerous projects, each having no significant effect individually, may well have very significant effects when taken together"

and concluded that

"[T]he SMA recognizes the necessity for controlling the cumulative detrimental impact of piecemeal development through coordinated planning of all development. RCW 90.58.020."

The Court also held there was nothing inconsistent "in the board's decision to vacate a permit allowing fill and in its finding the fill would not significantly affect the total estuary." Skagit County, 93 Wn.2d at 750.

18. Our court's recognition that individually insignificant projects may do significant harm taken together, its condemnation of uncoordinated and piecemeal development of the shorelines, and its concern with cumulative impacts viewed prospectively and retrospectively, announces a cumulative impacts policy for our shorelines indistinguishable from that followed by NEPA.

19. A number of decisions of the Shorelines Hearings Board (SHB) also deal with cumulative impacts. In Fladseth v. Mason County, SHB No. 05-026 (2007), the County had

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denied an SDP for a residential pier, ramp and float on the north shore of the southern hook of Hood Canal. In upholding the denial, the SHB held that

"consideration of potential cumulative effects and precedential effects is warranted in any case where there is proof of impacts that risk harm to habitat, loss of community use, or a significant degradation of views and aesthetic values. In such cases, a balancing of the interests of project proponents, adjacent shoreline property owners, and those of the public is necessary."

20. The Board applied the Fladseth rule in Overaa v. Bauer, et al., SHB No. 10-015, a case also involving a residential pier, ramp and float on Hood Canal, but on the more developed western shore near Hoodsport. The County had granted the permit subject to a condition requiring a study comparing impacts to epibenthic prey resources at the site and at a nearby existing pier. Overaa, at Finding 17. The condition was adopted to consider cumulative impacts. Overaa, at Finding 11.

21. The Board upheld the permit and required the condition to be stricken or modified. It held that the circumstances of this location did not warrant a cumulative effects study, because the project is consistent with nearby uses and development, will not significantly change the character of the shoreline or the nearshore environment and will not adversely affect fish or their habitat. Overaa, at Findings 13 and 14.

22. The Board held also that

"[t]he general policies of RCW 90.58.020 present no bar to this type of project situated in an area where docks are allowed by the local Master Program and where harm to the nearshore environment and migrating salmon has not been demonstrated."

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Overaa, at Finding 14. If this is intended to hold that RCW 90.58.020 and the SMA only require an examination of cumulative impacts when it is demonstrated that the project at issue alone will harm the environment, it is contrary to Hayes and cannot be followed. However, the Board’s citation of Fladseth indicates that it is following that test in Overaa. Thus, reading this statement consistently with the Fladseth test is consistent with the Board’s intention and avoids a conflict with Hayes.²

23. In summary, the characterization of cumulative impacts in the NEPA test above is most consistent with Hayes and Skagit County and will be followed. The Fladseth test will also be followed, requiring examination of cumulative impacts, "where there is proof of impacts that risk harm to habitat". (Emph. added.)

24. The Findings in Part N, above, make factual determinations of the extent of potential cumulative impacts and the extent to which they were analysed by the evidence. Before deciding whether these analyses of specific cumulative impacts meet the legal standards just discussed, two general points may be made. The discussion above shows that cumulative impacts can stem from both other existing uses and from potential future uses. As found, the uncontroverted evidence is that there are no pending applications for floating aquaculture facilities in Thurston, Mason or Pierce counties. No evidence of any plans for such facilities was offered. Given this, it would be wholly speculative and largely unproductive to require the applicant to analyse the effects of this proposal combined with those of potential unknown, unplanned future uses. More importantly, as long as the approach to cumulative impacts of this decision is followed, any new aquaculture facility would be reviewed for the cumulative impact of its own effects together with the effects of existing facilities. Done properly, this should avoid piecemeal consideration and ensure that the

² Overaa did not hold, as the Applicant states at Ex. 54, p. 24, that claims of cumulative effects are speculative and must be rejected, "unless there is proof that additional, similar projects will be proposed and approved under applicable regulatory criteria near the subject proposal".

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"tipping point" to which some testified is not approached. For these reasons, the effects of this proposal should be examined together with those of existing and proposed uses. It is not necessary otherwise to attempt to project possible future uses in the area.

25. The second general point is that under RCW 90.58.030 this facility is proposed in a shoreline of statewide significance, since it is seaward of the line of extreme low tide. RCW 90.58.020 states that "the interest of all of the people shall be paramount in the management of shorelines of statewide significance" and imposes a mandatory preference of uses on those shorelines. The most highly preferred uses are those which

"(1) Recognize and protect the statewide interest over local interest;

(2) Preserve the natural character of the shoreline; [and]

(3) Result in long term over short term benefit . . ."

The more comprehensive view of cumulative impacts followed by this decision is more consistent with these policies than is the more restrictive SEPA version. It is also more consistent with the recognition in Fladseth, at Conclusion 15 that it is less likely that cumulative effects will need to be considered on a shoreline that is not a shoreline of statewide significance.

26. Turning now to specific areas, the Findings above show that the analysis of phytoplankton and the food web did take into account other producers and consumers of phytoplankton in the Inlet and did not view this proposal in isolation. It properly considered cumulative effects under the applicable standards. The Findings also show that the principal effect of mussels on zooplankton is through their consumption of phytoplankton and that that effect is minimal. Because the evidence does consider the cumulative effect on phytoplankton, it also
considers the cumulative effects on zooplankton through the consumption of phytoplankton. The cumulative effects on zooplankton are also properly considered.

27. Next, the Findings show that this project would remove substantial amounts of excess nitrogen from Totten Inlet, thus helping to prevent eutrophication and the depletion of oxygen that it leads to. The effect of this project on nitrogen levels and eutrophication will be beneficial. When a proposal reduces a potential adverse impact of other activities, there is no adverse cumulative impact of the project to examine in that area.

28. The Findings concerning dissolved oxygen (DO), though, showed that even though fish may be able to avoid the areas of low DO caused by this proposal, the evidence does not show whether the other aquaculture facilities in Totten Inlet also cause areas of deficient DO, how large those areas are, approximately what levels of DO they may have, or about how long they may persist. Instead, the direct effects of low DO from this project are considered in isolation, and we do not know their consequences when added to the effect of other operations. For the reasons set out in the Findings, this point is especially relevant to forage fish, given their nearby spawning areas.

29. This project, considered alone, could be benign in its reductions of DO, although it plainly poses a "risk" of harm under Fladseth. At some point, though, the accumulation of pockets of low DO in the Inlet, although transient, may do harm. The evidence is silent as to whether this proposal is approaching or crossing that point. Under RCW 90.58.020, Hayes, Skagit County and Fladseth, this does not properly consider cumulative impacts on DO or the cumulative impacts of low DO on aquatic life and habitat.

30. Next, the Findings show that the study by Dr. Brooks at Ex. 7, Tab 4 takes into account the cumulative effect of mussel production in Totten Inlet on benthic life. However, the evidence, as found, did not discuss the extent of Beggiatoa under the rafts or its effect on benthic life. Nor does the evidence make clear whether the high sulfide readings under the Deepwater
rafts, which the evidence showed were sufficient nearly to exclude or extirpate benthic life for a
period of months, are expected to be exceeded over the finer sediments at the project site.
Without evidence on the cumulative effects of Beggiatoa and sulfide levels beneath this proposal
and other existing mussel facilities in the Inlet, cumulative effects on benthic life have not been
covered under the standards above.

31. For the reasons set out in the Findings, the evidence adequately discusses cumulative
effects concerning tunicates.

32. The Findings in Part N, above, discuss whether cumulative effects were properly
weighed in considering potential spread of Gallo mussels or its hybrids. The Findings also note
the concerns in an undated letter from the U.S Fish and Wildlife Service, which is set out in the
FEIS comments.

33. Apart from the U.S.F.W.S. letter, the Findings determined that the evidence shows by
a preponderance that this proposal, considered by itself, would not cause any significant spreading
of or genetic pollution by Gallo mussels. The evidence also shows the same about the mussel
facilities existing in 2002 in Totten Inlet, those at Deepwater and Gallagher Cove. The evidence
does not show, however, the combined effect of potential Gallo dissemination when all mussel
facilities in Totten Inlet are considered, including this proposal. As the Findings noted, if
Deepwater and Gallagher together resulted in up to 3% Gallos and 10% hybrids in 2002, as the
Brooks Study states, would the addition of the 58 rafts of this proposal increase those percentages
proportionately? If so, what effect would that increase have? Or, would the addition of the 58
rafts of this proposal accelerate the spread of Gallos beyond a simple proportionate increase?

34. The evidence does not address the combined effect of this proposal and existing
mussel cultivation in the Inlet on the spread of Gallos and hybrids. Without that, cumulative effects
are not adequately addressed under the standards above.
35. Aside from the deficient areas identified above, the evidence shows that cumulative effects were adequately examined under the applicable standards.

2. The effect on views.

36. RCW 90.58.020 states that in the implementation of SMA policies,

"the public's opportunity to enjoy the physical and aesthetic qualities of natural shorelines of the state shall be preserved to the greatest extent feasible consistent with the overall best interest of the state and the people generally."

37. As relevant to views and aesthetics, the SMP implements these policies through a number of provisions. First, the SMP allows aquaculture in Conservancy shorelines such as this, "provided the operation is consistent with the policies and regulations of this program and chapter." SMP, Section 3, II, D. This is a legislative determination that even with their inherent effect on views, facilities such as this are allowed in the proposed location, as long as consistent with the SMP's policies and regulations. The validity of this legislative determination is not here at issue. Therefore, it must be accepted.

38. The SMP policies and regulations listed above specifically governing aquaculture contain only one provision dealing with views, the policy at Section 3, II, B, 5 that "[a]quacultural development should consider and minimize the detrimental impact it might have on views from upland property." Also applicable is the Regional Criterion at SMP Section 2, V, G, which states:

"Shorelines of this Region which are notable for their aesthetic, scenic, historic or ecological qualities shall be preserved. Any private or public development which would degrade such shoreline qualities shall be discouraged . . ."

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39. One of the conditions of approval proposed by the Staff Report requires that

"The mussel rafts shall be kept in a neat and orderly manner. Materials that are not part of the rafts shall not be stored on the rafts."

40. The dueling visual analyses described in the Findings disagree in many ways. The Applicant's analysis states that from 10 to 15 residences would have sustained views of the raft array, but that the rafts would not be in the center of the view of the majority of those residences. APHETI's analysis states that at least 25 to 30 residences would have sustained views and that the facility would be directly in line with typical viewing corridors. The analyses disagree about the elevation of affected residences and the severity of the effect on views. The Applicant's analysis concluded it would have a moderate visual impact, while APHETI's analysis concluded the visual impact would be high.

41. What can be distilled from this is that from 10 to 30 residences will have views of this large raft array not far from the shore where now lies open water. The evidence also shows through testimony and photographs that other mussel rafts operated by the Applicant in the area have been piled with unsightly collections of equipment and other objects, some of which appear three to four times as high above the water line as the raft itself. The testimony indicated that the rafts are cleaned only when complaints are made. None of this evidence was rebutted. See Findings 36, et seq.

42. The first policy dealing with views is that aquaculture should "consider and minimize" any detrimental impact on views from upland properties. On pp. 20 and 21 of its post-hearing brief at Ex. 54, the Applicant lists a number of ways in which it has minimized visual impact. The first two of these note that the Applicant reduced the size of the current proposal by over 55% and dropped its proposal to expand the nearby Gallagher Cove raft array. Abandoning plans to expand
the Gallagher Cove facility, though, does nothing to reduce the effect on views of the proposed facility. More importantly, allowing reductions in scope alone to satisfy the minimization policy would create an incentive to initially propose larger projects than are likely needed and then to reduce them to the planned size. There is no evidence that the Applicant here engaged in such a strategy. However, this possibility in other cases counsels against allowing reductions in project scope alone to meet this policy.

43. Other points listed by the Applicant, though, do constitute legitimate minimization: measures affecting alignment, spacing, profile, materials and colors of the raft facility. Most important, though, is the unrebuted evidence that other raft arrays have contained large collections of prominent and unsightly materials. Without effectively preventing that in this proposal, it cannot be said that visual impact has been effectively minimized. The proposed condition would require the rafts to be kept "in a neat and orderly manner", without storage of materials that are not part of the rafts. The Applicant has represented under oath that it will comply with this condition. However, the past unsightly storage and the reduced scope of the County's ability to monitor and enforce due to severe budget cuts call into question the practical enforceability of this condition. It is neither fair nor efficient to require nearby residents to fund enforcement of this condition by hiring their own lawyers.

44. There are other enforcement mechanisms, though, which should be effective in enforcing this condition. RCW 90.58.210 (2) states that any person who fails to conform to the terms of a shoreline permit

"shall also be subject to a civil penalty not to exceed one thousand dollars for each violation. Each permit violation or each day of continued development without a required permit shall constitute a separate violation."

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Both Thurston County and the Department of Ecology have the authority to impose these civil penalties under RCW 90.58.210.

45. In addition, RCW 90.58.210 states that the attorney general and the County prosecutor

"shall bring such injunctive, declaratory, or other actions as are necessary to ensure that no uses are made of the shorelines of the state in conflict with the provisions and programs of this chapter, and to otherwise enforce the provisions of this chapter."

Further, under RCW 90.58.220 violations of the SMA or an SMP are punishable as gross misdemeanors.

46. With these enforcement mechanisms, the following additional conditions will help assure the enforcement of the condition concerning storage on the rafts:

The condition concerning storage on the rafts shall be strictly interpreted and implemented;

The Applicant shall provide to any nearby upland property owner who requests an updated telephone number and e-mail address through which complaints may be lodged with the Applicant about the upkeep and condition of the rafts and compliance with this condition;

The Applicant shall promptly respond to any such complaints and take all measures needed to comply with the condition concerning storage on the rafts;

If any person believes the Applicant is not complying with this condition, he or she may request the County or the Department of Ecology to assess daily civil penalties under the authority above.

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These conditions will be included in any approval of this permit.

47. The second policy noted above is the Regional Criterion at SMP Section 2, V, G, which states:

"Shorelines of this Region which are notable for their aesthetic, scenic, historic or ecological qualities shall be preserved. Any private or public development which would degrade such shoreline qualities shall be discouraged . . . ."

48. As described in the Findings, Totten Inlet is not pristine and undisturbed, but remains a place of natural beauty. Although a somewhat subjective judgment, the evidence described in the Findings, especially the descriptions in some of the comments in Ex. 15, show that this part of Totten Inlet is notable for its aesthetic and scenic qualities. Thus, SMP Section 2, V, G requires that these shorelines be "preserved" and that development which would degrade those qualities be "discouraged".

49. The Regional Criteria begin with the statement that "[a]ll development within the jurisdiction of this Master Program shall demonstrate compliance" with them. By their nature, the proposed mussel rafts would degrade the aesthetic and scenic qualities of these shorelines and thus would not preserve those qualities as they now are. Thus, this Regional Criterion indicates that the proposal should be denied.

50. However, denying this proposal on this basis would effectively prohibit mussel rafts in Totten Inlet. Virtually no matter where located in the Inlet, a mussel raft facility would be visible from some upland properties and by users of the Inlet. No matter how neatly kept or well camouflaged, mussel rafts would inherently have the characteristics which are inconsistent with this Regional Criterion. As noted, all types of aquaculture are allowed in the Conservancy environment,
"provided the operation is consistent with the policies and regulations of this program and chapter." SMP, Section 3, II, D. Almost the entire Thurston County shoreline of Totten Inlet is designated Conservancy. To read this Regional Criterion effectively to prohibit mussel rafts, a type of aquaculture, in Totten Inlet would conflict with the provision expressly allowing it in the Conservancy environment. It would also conflict with the policies in SMP Section 3, II, B, which expressly encourage aquacultural uses in this shoreline environment.

51. A standard rule of statutory construction is that all of the provisions of an act must be considered in relation to one another and, if possible, harmonized to insure the proper construction of each. Willis v. Simpson Investment Co., 79 Wn. App. 405, 411 (1995). When the SMP expressly allows and encourages aquaculture, including mussel rafts, in the Conservancy environment, it does not constitute harmonization to read the Regional Criterion to prohibit mussel rafts in the Conservancy environment due to their effect on views. Stated another way, the SMP contains a legislative determination that mussel rafts are an allowed use in the Conservancy environment and are not prohibited by the ineluctable, inherent appearance of such rafts. The Regional Criterion at issue can require modifications to the size, array, color, construction, and upkeep of the rafts. However, since these facilities are permitted, it cannot be read to prohibit them due to an inescapable characteristic of their appearance.

52. Subject to the conditions below, this proposal complies with the standards and policies of the SMP concerning views and aesthetics.

3. The meaning of the term "significant".

53. Beginning on p. 1-15, the FEIS discusses a list of potential environmental effects and concludes for each that this proposal will have no significant unavoidable adverse impacts. The FEIS also lists mitigation measures that will avoid, minimize or compensate for potential adverse effects of the proposal. See Ex. 8, pp. 1-15 and following.
54. In ordinary English, to say that an impact is insignificant suggests that it is minimal, even trivial; and that no further attention need be paid to it. With this sense of the word, the conclusions of the FEIS imply that the environmental effects of the project are not cause for further concern.

55. "Significant" is defined under SEPA by WAC 197-11-794 and Norway Hill v. King County, 87 Wn.2d 267, 278 (1976), as a reasonable likelihood of more than a moderate adverse impact on environmental quality. The determination of significance includes

"the examination of at least two relevant factors: (1) the extent to which the action will cause adverse environmental effects in excess of those created by existing uses in the area, and (2) the absolute quantitative adverse environmental effects of the action itself, including the cumulative harm that results from its contribution to existing adverse conditions or uses in the affected area."

Norway Hill v. King County, 87 Wn.2d at 277.

56. Perhaps of most guidance is the fact that the presence of probable, significant adverse effects under SEPA is the litmus for requiring an EIS. See WAC 197-11-310 and following. Only when an impact is severe enough to warrant an EIS, an unusual event, can it be significant under SEPA. Thus, if "significance" is given the more common meaning noted above, impacts would warrant conditioning or denial under the underlying permit standards only if an EIS were prepared. SEPA, however, plainly preserves the authority to condition or deny permits through the underlying standards, even when an EIS is not required (as long as substantive SEPA is not used for denial). Therefore, the more ordinary meaning of "significant" noted above cannot be used in interpreting the statements in the FEIS that there are no significant unavoidable adverse impacts. As Mr. Pedersen testified and the Applicant pointed out at Ex. 54, p. 28, the inquiry into

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significance under SEPA is certainly relevant in determining whether a proposal meets applicable standards. However, the finding of no significant impact does not necessarily mean that all standards relating to that impact are met.

C. Summary of areas of compliance and noncompliance with the governing standards.

57. The following Conclusions describe compliance with the governing standards by examining the principal impacts of the proposal.

58. As far as the effect on nutrients and DIN is concerned, the proposal complies with the standards noted above. The evidence properly considers cumulative impacts in this area and no further analysis of cumulative impacts is required.

59. As far as the effect on phytoplankton, zooplankton, macroalgae and the food web is concerned, the proposal complies with the standards noted above. The evidence properly considers cumulative impacts in this area and no further analysis of cumulative impacts is required.

60. As far as the effect on views and aesthetics is concerned, the proposal complies with the standards noted above. The evidence properly considers cumulative impacts in this area and no further analysis of cumulative impacts is required.

61. As held above, under RCW 90.58.020, Hayes, Skagit County and Fladseth, the evidence submitted does not properly consider cumulative impacts of this project on dissolved oxygen (DO). In the absence of an adequate cumulative effects analysis, it cannot be concluded that this proposal complies with governing standards as far as its effect on DO is concerned.

62. The need for a cumulative analysis of the effects on DO is especially relevant to forage fish, given their nearby spawning areas and the widespread spawning areas for surf smelt.
and sand lance in Totten Inlet, as shown on Ex. 37. The evidence discussed in the Findings also establishes the need for a forage fish spawning survey at the Old Plant site and conditions requiring that all raft assembly activities, including associated walking and transport, be kept off the documented herring spawning area and any other forage fish spawning area disclosed by the survey at the Old Plant site.

63. Turning to the benthic community, the analysis of compliance is more involved. As set out above in Part B, 1 of the Conclusions, the study at Ex. 7, Tab 4 does discuss the cumulative effect of mussel production in Totten Inlet on benthic life. However, the evidence did not examine the extent of Beggiatoa under these or other raft facilities or its effect on benthos. It is also not clear whether the high sulfide readings under the Deepwater rafts, which the evidence showed were sufficient nearly to exclude or extirpate benthic life for a period of months, are expected to be exceeded over the finer sediment at the project site or are found under other mussel raft facilities in the Inlet. The cumulative effects on benthic life of Beggiatoa and sulfide levels beneath this proposal and other existing mussel facilities in the Inlet have not been covered under the standards above.

64. Apart from the question of cumulative impacts, the evidence showed high sulfide concentrations under the Deepwater rafts in the summer of 2002 just before harvest from 12,800 to 15,300 micromoles, as found above. This was deemed "significant" and "sufficiently high to exclude most infaunal organisms", as also found. Even higher sulfide concentrations were apparently recorded in November 2002. The Brooks Study at Ex. 7, Tab 3, p. 40 states that

"if sediments under the rafts had contained higher concentrations of fine material (silts and clays), the moderately high sulfide concentrations observed in July would have excluded sensitive infauna and the very high sulfide concentrations observed in November 2002 would have excluded all but a few opportunistic annelids."

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As also found, the evidence suggests that the sea bed beneath the project site has higher concentrations of silts and clays than does the coarse sediment grain beneath Deepwater. This suggests that, consistently with the excerpts from Ex. 7, Tab 3, pp. 38 and 40, above, the sulfide concentrations observed in 2002 would likely have excluded most infaunal organisms if they occurred at the project site.

65. Even though temporary and limited in area, the apparent likely near extirpation of benthic life under the rafts is troubling, and it is not certain whether that consequence was specifically examined by the ITRC. Further, the evidence discussed at Finding 95 disclosed a three-inch layer of "sludge" covering the sea bed beneath the rafts at Gallagher Cove, to which the FEIS responded that the project site

"is better suited for mussel farming due primarily to better circulation that allows for the distribution of wastes in a manner to optimize aerobic assimilation into the existing food web instead of anaerobic decomposition that would, at higher levels, result in die-off of benthic infauna."

See Finding 97. In addition, Dr. Brooks concluded that biological characteristics under the rafts would be remediated within about seven months. Finding 103. Finally, as discussed in the Findings, there is very little evidence about the extent or effect of the Beggiatoa that may be caused by this proposal.

66. To determine compliance with the requirements to protect habitat found in Section B of the Regional Criteria of the SMP, additional information on the effect on benthic life is needed on at least the following points:

a. Approximately how long will the high sulfide concentrations described in Finding 100 typically persist in a mussel raft growth cycle?
b. Approximately how long will these levels exclude or extirpate benthic infauna as described in the materials cited in Findings 100 through 102?

c. Finding 103 cites evidence that it will take about seven months for the benthic infauna to recover from the effects of the high sulfide levels. Given the length of the growth cycle, does this comply with the Regional Criteria?

d. What effect will the deposition of organic material, as described in Findings 94 through 97, have on benthic life at this site?

e. Finding 104 points out the absence of technical analysis of the extent or effect of Beggia toa. Approximately how long will Beggia toa typically persist under the rafts in each growth cycle and what effect does that have on benthic organisms?

f. Are the high sulfide levels, deposition of organic material, and generation of Beggia toa, and the resulting effect on benthos, an inherent or inevitable aspect of mussel raft culture in Totten Inlet? Can these effects be reduced or avoided through changes in location of the facility or in its method of operation?

67. As far as the effect on salmonids and whales is concerned, the proposal complies with the standards noted above. The evidence properly considers cumulative impacts in this area and no further analysis of cumulative impacts is required.

68. As far as the effect on the spread of tunicates is concerned, the proposal complies with the standards noted above. The evidence properly considers cumulative impacts in this area and no further analysis of cumulative impacts is required.
69. Turning to the potential spread or hybridization of Gallo mussels, two points are important. First, the Findings note a letter at Ex. 8, p. 2-126 from the U.S. Fish and Wildlife Service to the Corps of Engineers which opposes growing Gallo mussels on rafts in Totten Inlet, because of the risk to the native mussel and the wildlife species that feed on it. The only responses to this letter are the statements in the FEIS that no date is given for the letter and that the Applicant’s Director of Regulatory Affairs believes it was prepared in response to a proposed mussel facility on Whidbey Island over 15 years ago and is outdated. The FEIS also states that more recent review by the U.S.F.W.S. is in the Biological Opinion prepared for NWP 48 in 2009, which did not recommend any conservation measures relative to cultivating Gallo mussels. However, as found, NWP 48 covers existing shellfish operations, not proposals for future facilities such as this.

70. Speculation that the U.S.F.W.S. letter is old or applies to something else is not a sufficient response to its opposition to growing Gallo mussels on rafts in Totten Inlet. Without evidence as to the date and purpose of the letter, or a superseding statement from U.S.F.W.S., or other relevant response, it is questionable whether this proposal is consistent with SMP Section 2 V B, above, or the policies of RCW 90.58.020 expressing concern about the "utilization, protection, restoration, and preservation" of the shorelines" and expressing "a clear and urgent demand for a planned, rational, and concerted effort . . . to prevent the inherent harm in an uncoordinated and piecemeal development of the state’s shorelines."

71. Second, as concluded above, the evidence shows by a preponderance that this proposal, considered by itself, would not cause any significant spreading of or genetic pollution by Gallo mussels. The evidence also shows the same about the mussel facilities existing in 2002 in Totten Inlet, those at Deepwater and Gallagher Cove. The evidence does not show, however, the combined effect of potential Gallo dissemination when all mussel facilities in Totten Inlet are considered, including this proposal. For that reason, the evidence does not properly consider the cumulative effects of this proposal on the spreading of or genetic pollution by Gallo mussels.
72. As found, evidence was submitted that a strong unpleasant odor is created by mussel rafts, their predator nets, and seals and sea lions using the rafts as a rookery. The Applicant testified that nets smell when stored on the beach and that the Applicant will no longer store them there. Odors are not covered by the SMP’s aquaculture policies or regulations or by its Regional Criteria. However, the policies of RCW 90.58.020 recognize and protect private property rights consistent with the public interest, and SMP Section Two, III states that permitted uses shall be conducted in a manner to minimize, to the extent feasible, any resultant damage to the ecology and environment of the shoreline area and any interference with the public’s use of the water.

73. Since aquaculture is expressly allowed by the SMP in this area, it is clear that the SMP does not prohibit aquaculture due to odors which are inherent and inevitable in its nature. The policies above are equally clear that proposals should be conditioned to minimize offensive odors. Therefore, the Applicant should be required to not store nets on the beach or the rafts and to take measures needed to prevent seals and sea lion from using the rafts as a rookery. The Applicant should also be required to keep the rafts clean, especially of odor causing substances. These measures, together with the condition governing storage on the rafts, should reduce odors to the extent practicable.

74. On the question of plastics, the evidence showed that aquacultural activities in Totten Inlet generate plastic debris that drifts on the water and washes up on shore. The preponderance of the evidence is that this debris poses a danger to fish and other sea life. The principal plastic debris the evidence attributed to mussel rafts were plastic disks of the type found at Ex. 23. The Applicant testified that it has stored disks on scows and that from now on they will be stored on land, that retaining nets around the rafts will generally catch any disks that fall off, and that the condition proposed by the Staff concerning storage on the rafts should eliminate plastic materials falling off a raft. Ms. Schoof, a toxicologist, stated that not storing extra equipment on the rafts
and removing plastic items upon evidence they are becoming brittle or subject to degradation "is anticipated to reduce or eliminate the risk that the aquaculture gear will release microplastics.

75. On this evidence, any approval of this proposal should be conditioned on requiring the Applicant to store all plastic disks on land, not on scows or on other water craft or on the rafts; to install and maintain retaining nets around the rafts which will catch any disks that fall off; to comply with the condition proposed by the Staff concerning storage on the rafts; and to remove plastic items upon evidence they are becoming brittle or subject to degradation.

76. As far as all other impacts and issues are concerned, the proposal complies with the standards noted above.

77. The remaining question is the proper response to the deficiencies described above. The law requires an adequate analysis of cumulative impacts before an SDP may be issued. As shown, that was not carried out for this proposal in three areas, dissolved oxygen, the effect on the benthic community, and the spreading of or genetic pollution by Gallo mussels. Therefore, the application could be denied at this stage on that basis. As also shown, however, this proposal has undergone an extraordinary amount of review, including an evaluation of the Applicant's technical reports by an independent panel of high qualifications. The deficiencies in the review of cumulative impacts are ones of process, not substance; that is, until this review is carried out, we do not know whether the cumulative impacts in fact will allow approval or require denial. Under these circumstances, it would serve neither fairness nor efficiency to deny the entire project and require the Applicant to appeal to obtain the right to carry out the required cumulative impacts analysis.

78. Therefore, this decision will give the Applicant a choice. It may inform the Hearing Examiner that it wishes to challenge the determination that the present analysis of cumulative impacts is deficient and the requirement to perform an additional analysis under the standards above. In that case, I will issue a supplemental decision denying the application on that basis,
and the Applicant may appeal. Alternatively, the Applicant may inform the Examiner that it wishes to carry out the analysis of cumulative effects required by this decision. In that case, the Examiner and the parties will confer about the timing and nature of that analysis.

79. In addition, the discussion above discloses two areas apart from cumulative effects where the preponderance of the evidence is insufficient to show compliance with the governing standards. First, whether the apparent near exclusion or extirpation of benthic life under the rafts, although temporary and limited in area, is consistent with the governing standards, and second, whether the position stated in the letter from the U.S.F.W.S. on the spread or hybridization of Gallo mussels is applicable to this proposal.

80. If the Applicant chooses to undertake further examination of cumulative impacts, then it is fairest and most efficient to allow it and other parties to submit supplemental evidence and argument on these two issues. If the Applicant chooses not to do so, then I would make a decision on these two issues on the basis of the evidence already submitted.

III. DECISION

An adequate analysis of cumulative impacts was not carried out as required by governing standards in three areas, dissolved oxygen, the effect on the benthic community, and the potential spreading of or genetic pollution by Gallo mussels. For this reason, the application does not comply with the standards governing issuance of the SDP. An adequate examination of cumulative impacts does not necessarily require examining other aquaculture facilities to the same degree this proposal was examined. It does, however, require an examination consistent with the Conclusions, above.

Apart from cumulative impacts, additional evidence is needed in two other areas. First, as discussed in Conclusions 64 through 66, additional information is needed to determine whether the
proposal's effect on benthic life is consistent with the governing standards. Specifically, additional information would be helpful on at least the following points:

a. Approximately how long will the high sulfide concentrations described in Finding 100 typically persist in a mussel raft growth cycle?

b. Approximately how long will these levels exclude or extirpate benthic infauna as described in the materials cited in Findings 100 through 102?

c. Finding 103 cites evidence that it will take about seven months for the benthic infauna to recover from the effects of the high sulfide levels. Given the length of the growth cycle, does this comply with the Regional Criteria?

d. What effect will the deposition of organic material, as described in Findings 94 through 97, have on benthic life at this site? Does that effect comply with the Regional Criteria?

e. Finding 104 points out the absence of technical analysis of the extent or effect of Beggiatoa. Approximately how long will Beggiatoa typically persist under the rafts in each growth cycle and what effect does that have on benthic organisms?

f. Are the high sulfide levels, deposition of organic material, and generation of Beggiatoa, and the resulting effect on benthos, an inherent or inevitable aspect of mussel raft culture in Totten Inlet? Can these effects be reduced or avoided through changes in location of the facility or in its method of operation?

Second, on the issue of possible spreading and/or hybridization of Gallo mussels, evidence is needed whether the position stated in the letter from the U.S.F.W.S. in Finding 140 concerning the
spread of Gallo mussels applies to this proposal and, if so, whether it affects the determination of compliance with the Regional Criteria.

In all other areas, the proposal complies with the standards noted above. The evidence properly considers cumulative impacts in these other areas and no further analysis of cumulative impacts is required for them.

For the reasons set out in Conclusions 77 through 80, above, the Applicant is given two options for proceeding. First, it may inform the Hearing Examiner that it wishes to challenge the determination that the present analysis of cumulative impacts is deficient and the requirement to perform an additional cumulative analysis. In that case, I will issue a supplemental decision denying the application on that basis, and the Applicant may appeal. Alternatively, the Applicant may inform the Examiner that it wishes to carry out the analysis of cumulative effects required by this decision. In that case, the Examiner and the parties will confer about the timing and nature of that analysis.

If the Applicant chooses to undertake further examination of cumulative impacts, then it and other parties may submit supplemental evidence and argument on the two other issues just noted: that relating to benthic life and that relating to the effect of the U.S.F.W.S. letter. If the Applicant chooses not to undertake the additional cumulative impacts analysis, then I would make a decision on these two issues on the basis of the evidence already submitted.

Due to the length of this decision and the detailed nature of the issues, the Applicant will have 30 days from the date of this decision to decide which of the two options it desires. If the Applicant desires more time, that will be allowed.

The following conditions do not relate to the issues above on which further proceedings may be held, and they will be imposed on any project approval:

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A. Conditions 1 through 4 on Page 11 of the Staff Report at Ex. 14 are incorporated by reference.

B. One of these incorporated conditions requires that

"The mussel rafts shall be kept in a neat and orderly manner. Materials that are not part of the rafts shall not be stored on the rafts."

For the reasons discussed in Conclusions 43 through 46, the following additional conditions are imposed to implement this condition:

1. This condition shall be strictly interpreted and implemented;

2. The Applicant shall provide to any nearby upland property owner who requests an updated telephone number and e-mail address through which complaints may be lodged with the Applicant about the upkeep and condition of the rafts and compliance with this condition;

3. The Applicant shall promptly respond to any such complaints and take all measures needed to comply with this condition;

4. If any person believes the Applicant is not complying with this condition, he or she may request the County or the Department of Ecology to assess daily civil penalties under RCW 90.58.210 (2).

C. The Applicant shall conduct a forage fish spawning survey at the Old Plant site, consistently with accepted scientific standards. The Applicant shall inform Mr. Pentilla of the date of any site visit associated with the survey and allow him to be present. The Applicant shall submit the
results of this survey to Mr. Pentilla, Mr. Donckers, Mr. Smith and to any other party to this proceeding who requests.

D. All raft assembly activities, including associated walking and transport, shall be kept off the documented herring spawning area at the Old Plant site and any other forage fish spawning area disclosed by the survey at the Old Plant site.

E. The Applicant is required to store all plastic disks on land, not on scows or on other water craft or on the rafts; to install and maintain retaining nets around the rafts which will catch any disks that fall off; to comply with Condition B noted above concerning storage on the rafts; and to remove plastic items upon evidence they are becoming brittle or subject to degradation.

F. The Applicant shall not store nets on the beach or on the rafts and shall take measures needed to prevent seals and sea lions from using the rafts as a rookery. The Applicant shall keep the rafts clean, especially of odor causing substances.

G. References to the Applicant in these conditions apply also to any person acting on behalf of the Applicant and to any successor.

Dated this 19th day of July, 2012.

______________________________
Thomas R. Bjorgen
Thurston County Hearing Examiner

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Exhibit B
SUPPLEMENTAL FINDINGS, CONCLUSIONS AND DECISION
OF THE HEARING EXAMINER FOR
THURSTON COUNTY

CASE NO: 961372 (Application by Taylor Shellfish Company for a shoreline substantial development permit to construct and operate mussel rafts in Totten Inlet)

APPLICANT: Taylor Shellfish Company

SUMMARY OF REQUEST:

The Applicant requests a substantial development permit under the state Shoreline Management Act to construct and operate a mussel facility consisting of 58 rafts anchored off-shore along the eastern shoreline of north Totten Inlet.

LOCATION OF PROPOSAL:

A portion of the south half of Section 5, T19N, R2W, W.M., which is approximately 600 feet waterward of the mean lower low water mark of the western shore of the Steamboat Island Peninsula, between approximately 85th Avenue NW and 90th Avenue NW.

SUMMARY OF DECISION:

SUPPLEMENTAL DECISION IN NO. 961372
PAGE 1
The requested substantial development permit is denied.

HEARING AND RECORD:

The hearing on this request was held before the undersigned Hearing Examiner on February 13 and 17, 2012. The record was held open until April 9, 2012 for submission of post-hearing briefing by the parties. Due to the amount of evidence and the nature of the issues, the Hearing Examiner requested a number of extensions in the time for decision. The final extension, to which the Applicant agreed, was until July 19, 2012.

The Hearing Examiner decision on this application was issued on July 19, 2012. As described in detail below, this decision held that the evidence was insufficient to show compliance with governing standards in a number of areas and gave the Applicant options for proceeding. The decision gave the Applicant 30 days to decide which option it would choose and stated additional time would be granted for this purpose on request. By letter dated August 16, 2012 to the Hearing Examiner, the Applicant chose how it wished to proceed.

The July 19, 2012 Hearing Examiner decision listed Exhibits 1 through 55 which were admitted into the record in this matter. That decision also listed the individuals who testified. This Supplemental Decision admits the following two additional exhibits into the record:


Exhibit 57. E-mail sent August 27, 2012 from Tom Bjorgen to Brendan Donkers, Jeff Fancher, Billy Plauche, Laura Kisielius, Michael Witek, Robert Smith and Cami Petersen.

No testimony was taken in reaching this Supplemental Decision.

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SUPPLEMENTAL FINDINGS OF FACT

182. The 181 Findings of Fact entered as part of the July 19, 2012 Hearing Examiner decision in this matter remain in effect. These supplemental findings continue the numbering in that decision.

183. The nature of the Applicant’s proposal is set out in detail in the Findings in the July 19, 2012 Hearing Examiner decision. To summarize, the Applicant, Taylor Shellfish Company, requests a substantial development permit under the Shoreline Management Act, Chap. 90.58 RCW, to install and operate a facility in northern Totten Inlet for the raising of Mytilus edulis galloprovincialis, popularly referred to as Gallo mussels. The facility would consist of 58 separate rafts anchored to the sea floor in water depths of 15 to 70 feet mean lower low water. Each raft would be 30 by 34 feet in size. The rafts would be attached end to end, with two feet in between, in two lines of eight rafts each and six lines of seven rafts each. Each line of eight rafts would 256 feet long. Each line of seven rafts would be 224 feet long. These groups of rafts would be aligned with their long axis parallel to the shore in the general configuration shown at Exhibit (Ex.) 1, Attachment (Att.) e.

184. The rafts will be constructed of untreated lumber (Douglas fir), welded aluminum cross beams, and 55-gallon recycled food product barrels for floatation devices. Synthetic “socks” made of a polypropylene or polyethylene mesh will be suspended from the raft structure, as shown in Ex. 1, Att. g. Each raft will have approximately 720, 16-foot long lines of socks suspended from it. The distance from the bottom of the lines to the sea bed will range from approximately three feet to forty eight feet. The socks will be seeded with immature mussels at a density of approximately 150 mussels per foot. The mussels will require approximately 14 to 18 months to reach harvestable size. Predator nets will enclose the underwater features of the rafts to exclude
fish, marine birds, and marine mammals until the mussels are large enough to no longer be vulnerable to predation.

185. After making detailed Findings of Fact and discussing the governing legal standards, the July 19, 2012 decision concluded that the proposal does not comply with the standards for issuance of a substantial development permit in the following ways:

(a) The evidence submitted does not properly consider cumulative impacts of this project on dissolved oxygen (DO). In the absence of an adequate cumulative effects analysis, it cannot be concluded that this proposal complies with governing standards as far as its effect on DO is concerned.

(b) The evidence did not examine the extent of Beggiatoa under these or other raft facilities or its effect on benthos. It is also not clear whether the high sulfide readings under the Deepwater rafts, which the evidence showed were sufficient nearly to exclude or extirpate benthic life for a period of months, are expected to be exceeded over the finer sediment at the project site or are found under other mussel raft facilities in the Inlet. For these reasons, the cumulative effects on benthic life of Beggiatoa and sulfide levels beneath this proposal and other existing mussel facilities in the Inlet have not been covered under applicable standards. In the absence of an adequate analysis of these cumulative effects, it cannot be concluded that this proposal complies with governing standards.

(c) The evidence shows by a preponderance that this proposal, considered by itself, would not cause any significant spreading of or genetic pollution by Gallo mussels. The evidence also shows the same about the mussel facilities existing in 2002 in Totten Inlet, those at Deepwater and Gallagher Cove. The evidence does not show, however, the combined effect of potential Gallo dissemination when all mussel facilities in Totten Inlet are considered, including this proposal. For that reason, the evidence does not properly
consider the cumulative effects of this proposal on the spreading of or genetic pollution by Gallo mussels. In the absence of an adequate analysis of these cumulative effects, it cannot be concluded that this proposal complies with governing standards.

(d) Apart from cumulative impacts, the evidence was insufficient to show that the proposal’s effect on benthic life through sulfide levels, deposition of organic material and generation of Beggiatoa complies with the requirements to protect habitat found in Section B of the Regional Criteria of the Shoreline Master Program for the Thurston Region.

(e) Given the letter at Ex. 8, p. 2-126 from the U.S. Fish and Wildlife Service opposing growing Gallo mussels on rafts in Totten Inlet because of the risk to the native mussel and the wildlife species that feed on it, and the responses to that letter, the evidence is insufficient to show consistency with SMP Section 2 V B, or the policies of RCW 90.58.020 as they relate to potential spread or hybridization of Gallo mussels.

186. The bases for each of these holdings are set out in detail in Conclusions of Law 12 through 35 and 57 through 71 of the July 19, 2012 decision.

187. The July 19, 2012 decision concluded also that in all matters other than those just listed, the proposal complies with governing standards, subject to the conditions set out in that decision.

188. Against this background, the decision settled on its specific directions in the following four Conclusions of Law:

"77. The remaining question is the proper response to the deficiencies described above. The law requires an adequate analysis of cumulative impacts before an SDP may be issued. As shown, that was not carried out for this proposal in three areas, dissolved
oxygen, the effect on the benthic community, and the spreading of or genetic pollution by Gallo mussels. Therefore, the application could be denied at this stage on that basis. As also shown, however, this proposal has undergone an extraordinary amount of review, including an evaluation of the Applicant’s technical reports by an independent panel of high qualifications. The deficiencies in the review of cumulative impacts are ones of process, not substance; that is, until this review is carried out, we do not know whether the cumulative impacts in fact will allow approval or require denial. Under these circumstances, it would serve neither fairness nor efficiency to deny the entire project and require the Applicant to appeal to obtain the right to carry out the required cumulative impacts analysis.

78. Therefore, this decision will give the Applicant a choice. It may inform the Hearing Examiner that it wishes to challenge the determination that the present analysis of cumulative impacts is deficient and the requirement to perform an additional analysis under the standards above. In that case, I will issue a supplemental decision denying the application on that basis, and the Applicant may appeal. Alternatively, the Applicant may inform the Examiner that it wishes to carry out the analysis of cumulative effects required by this decision. In that case, the Examiner and the parties will confer about the timing and nature of that analysis.

79. In addition, the discussion above discloses two areas apart from cumulative effects where the preponderance of the evidence is insufficient to show compliance with the governing standards. First, whether the apparent near exclusion or extirpation of benthic life under the rafts, although temporary and limited in area, is consistent with the governing standards, and second, whether the position stated in the letter from the U.S.F.W.S. on the spread or hybridization of Gallo mussels is applicable to this proposal.

80. If the Applicant chooses to undertake further examination of cumulative impacts, then it is fairest and most efficient to allow it and other parties to submit supplemental evidence.
and argument on these two issues. If the Applicant chooses not to do so, then I would make a decision on these two issues on the basis of the evidence already submitted."

189. The Applicant responded to these options through Exhibit 56, choosing not to submit additional evidence on cumulative impacts or other issues. This exhibit also sets out the Applicant's reasons for its decision.

SUPPLEMENTAL CONCLUSIONS OF LAW

81. The 80 Conclusions of Law entered as part of the July 19, 2012 Hearing Examiner decision in this matter remain in effect. These supplemental conclusions continue the numbering in that decision.

82. The July 19, 2012 Hearing Examiner decision held that the evidence was insufficient to show compliance with governing standards in the five areas summarized in Conclusion No. 185 (a) through (e), above. This analysis was not challenged through motions to reconsider. Therefore, this analysis and the Conclusions of Law embodying it in the July 19 decision remain in effect.

83. As described above, the July 19 decision gave the Applicant a choice between two options. First, it could present additional evidence in the areas in which the evidence was held to be insufficient. After considering that and any evidence submitted by the other parties, a supplemental decision on the merits would be issued. Second, the Applicant could decline to present additional evidence and could proceed to an appeal of the holdings of the July 19 decision as it desired. The Applicant chose the second option.

84. With this choice, the five areas remain in which the evidence is insufficient to show compliance with governing standards. The burden of proof respecting the issuance of permits
before local government is on the applicant. Batchelder v. Seattle, 77 Wn. App. 154, 159 (1995). Therefore, the requested substantial development permit must be denied for noncompliance with the governing standards set out in the July 19, 2012 Hearing Examiner decision in these five areas.

SUPPLEMENTAL DECISION

For the reasons set out above and in the July 19, 2012 Hearing Examiner decision in this matter, the requested substantial development permit is denied.

Dated this 14th day of September, 2012.

Thomas R. Bjorgo
Thurston County Hearing Examiner
Exhibit C
Analysis of Project Consistency with the SMA and SMPTR

The North Totten Mussel Farm ("Proposal"), as described in the Project Description of Thurston County Resource Stewardship’s Land Use & Environmental Review Section Report ("Staff Report"), is located within the Conservancy Environment as designated in the Shoreline Master Program for the Thurston Region ("SMPTR"). The adjacent uplands are zoned Rural Residential/Resource 1/5 (one unit per five acres). Aquaculture facilities in the Conservancy Environment are allowed pursuant to a Shoreline Substantial Development Permit ("SDDP"). SMPTR, Section Three, II.D.1. This memorandum addresses the Proposal’s compliance with the approval criteria for a SSDP.

I. Substantial Development Permit (SMPTR, Section One, II.A)

State law provides that permits shall be granted only when the development proposed is consistent with the policy of the Shoreline Management Act, the state shoreline regulations (WACs) and the local Master Program (refer to WAC 173-14).\(^1\) SMPTR, Section One, II.A.

A. Consistency with the Policies and Procedures of the Shoreline Management Act (chapter 90.58 RCW) ("SMA").

The Proposal is consistent with the policies and procedures of the SMA. The policy of the SMA is “to provide for the management of the shorelines of the state by planning for and fostering all reasonable and appropriate uses.” RCW 90.58.020. To achieve this policy, the SMA expresses a preference for uses which “are consistent with control of pollution and prevention of damage to the natural environment, or are unique to or dependent upon use of the state’s shorelines.” Id. (Emphasis added.) The Proposal satisfies both of these components. The Proposal is for the cultivation of mussels; mussels depend on nutrient-rich marine waters for food. The Proposal “cannot logically exist in any other location and is dependent on the water by reason of the intrinsic nature of its operation.” SMPTR, Section Four. See also WAC 173-26-020. Therefore, the Proposal is a preferred use and implements the policies of the SMA.

The Proposal is also designed to minimize potential damage to the ecology and environment of the shoreline area consistent with the policies of the SMA. RCW 90.58.020. As described in the County’s Staff Report, the Proposal was scrutinized during an extensive environmental review process to fully analyze and disclose its likely environmental impacts. The environmental impact statement ("EIS") prepared for the Proposal concluded the Proposal would not result in any significant unavoidable adverse impacts. The EIS contains a list of mitigation measures associated with the Proposal. Final EIS ("FEIS"), 1-15 through 1-22. Implementation of these

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\(^1\) At the time the 1990 SMP for the Thurston Region was adopted, the criteria for SDP approval were codified at WAC 173-14-100. The SDP approval criteria have since been recodified at WAC 173-27-150. The criteria at WAC 173-14-100 and WAC 173-27-150 are virtually identical, although the latter regulation adds a provision granting the local government authority to attach conditions to the approval of permits as necessary to assure consistency with the SMA and the local SMP.
mitigations measures was recommended as a condition of approval in the Staff Report. The mitigation measures are feasible and reasonable, and Taylor Shellfish will comply with them.

The current Proposal is less than half the size of that originally proposed in the permit application. Initially Taylor Shellfish proposed to expand its existing mussel farm in Gallagher Cove from 21 to 42 rafts and install 108 new rafts at the North Totten site ("Site"), for a total of 129 new mussel rafts. In response to concerns raised by the County and APHETI, however, Taylor eliminated the Gallagher Cove expansion and reduced the number of mussel rafts at the site to 58. Taylor also reconfigured the proposed rafts into a single-row alignment to avoid potential impacts to geoduck beds managed by the Washington Department of Natural Resources ("DNR") and reduce the visibility of the proposed rafts from homes along the shoreline. As documented in the FEIS, with the reduced scope and mitigation measures the Proposal has no significant adverse environmental impacts and will benefit the environment by removing 40% of the nitrogen introduced to Totten Inlet by human activities. FEIS, 1-16.

Consistent with the SMA’s expressed preference of aquaculture as a shoreline use, Washington State Governor Chris Gregoire recently unveiled the Washington Shellfish Initiative— an agreement among federal and state government, tribes, and the shellfish industry to restore and expand Washington’s shellfish resources to promote clean-water commerce and create family wage jobs. This initiative calls for:

- Expanding, promoting and improving shellfish aquaculture in Washington;
- Increasing opportunities for and improving access to public tidelands for recreational shellfish harvesting;
- Restoring native shellfish habitat and populations such as the Olympia oyster and pinto abalone; and
- Improving and protecting water quality to help ensure healthy and safe shellfish for consumers.

(See Attachment A.) The Washington State Shellfish Initiative is in line with the National Oceanic and Atmospheric Administration’s National Shellfish Initiative, which also seeks to stimulate coastal economies and improve the health of ailing estuaries through increasing commercial shellfish production. (See Attachment B.)

The Proposal, therefore, is not only consistent with the SMA, advances its goals and policies.

B. Consistency with State Shoreline Regulations.

State shoreline regulations also express a preference for water-dependent uses which utilize the shoreline for economically productive uses and protect the ecological functions of shorelines. WAC 173-26-176(3). The Proposal is consistent with these regulations as it is water-dependent, economically productive, and protects the ecological functions of shorelines. Further, state regulations acknowledge aquaculture is an activity of statewide interest and that properly managed, can result in long-term over short-term benefit and protect the resources and ecology of the shoreline. WAC 173-26-241(3)(b).
C. Consistency with the SMPTR.

*As described below, the Proposal is consistent with the SMPTR. Therefore, the SSDP for the Proposal should be approved.*

II. Regional Criteria (SMPTR, Section Two, V)

All development within the jurisdiction of this Master Program shall demonstrate compliance with the following policies:

A. Public access to shorelines shall be permitted only in a manner which preserves or enhances the characteristics of the shoreline which existed prior to establishment of public access.

*No new public shoreline access is included with the Proposal, nor will the Proposal alter existing means of public access.*

B. Protection of water quality and aquatic habitat is recognized as a primary goal. All applications for development of shorelines and use of public waters shall be closely analyzed for their effect on the aquatic environment. Of particular concern will be the preservation of the larger ecological system when a change is proposed to a lesser part of the system, like a marshland or tideland.

*The Proposal was extensively analyzed in the EIS to ensure water quality and aquatic habitat will be protected. In particular, the EIS analyzed water circulation, dissolved oxygen, water nutrients, marine plants, and several types of marine animals. The EIS identifies various features which are incorporated into the Proposal to protect water quality and aquatic habitat and concludes the Proposal will not significantly impact these environmental elements. Protective features incorporated into the Proposal include the use of Best Management Practices for mussel raft culture, physical separation of the rafts to allow sunlight penetration, and strategic placement and arrangement of the rafts in relation to tidal currents, benthic organisms, and sensitive or shallow tidal zones. In addition, the rafts will be fabricated and assembled on land and constructed of natural, untreated lumber, welded aluminum cross beams, and recycled food product barrels for floating, which have no negative effect on water quality.*

*The Proposal, however, goes beyond preventing harm to the environment to positively impacting the environment. The mussel rafts will provide cover and food organisms for juvenile fish. Moreover, the mussels themselves will improve water quality by removing nitrogen through assimilation and removal via harvest, thereby reducing adverse ecological changes in South Puget Sound associated with over-enrichment by human-derived nitrogen and phosphorus inputs.*

C. Future water-dependent or water-related industrial uses shall be channeled into shoreline areas already so utilized or into those shoreline areas which lend themselves to suitable industrial development. Where industry is now located in shoreline areas that are more suited to other uses, it is the policy of this Master Program to minimize expansion of such industry.

*No industrial uses are proposed, as that term is defined by the SMPTR.*
D. Residential development shall be undertaken in a manner that will maintain existing public access to the publicly-owned shorelines and not interfere with the public use of water areas fronting such shorelines, nor shall it adversely affect aquatic habitat.

*No residential development is proposed.*

E. Governmental units shall be bound by the same requirements as private interests.

*This is a private proposal, not a proposal by a governmental unit, and this criterion does not apply.*

F. Applicants for permits shall have the burden of proving that a proposed substantial development is consistent with the criteria which must be met before a Permit is granted. In any review of the granting or denial of an application for a permit as provided in RCW 90.58.18.180 (1), the person requesting the review shall have the burden of proof.

*As described in this consistency analysis, the Proposal is consistent with all applicable criteria for SSDP approval.*

G. Shorelines of this Region which are notable for their aesthetic, scenic, historic or ecological qualities shall be preserved. Any private or public development which would degrade such shoreline qualities shall be discouraged. Inappropriate shoreline uses and poor quality shoreline conditions shall be eliminated when a new shoreline development or activity is authorized.

*The shorelines adjacent to the Proposal are not notable for their aesthetic, scenic, or historic or ecological qualities when compared to many other Thurston County shoreline areas. The tidelands adjacent to the Site of the Proposal are part of a farm 1.6 miles in length owned and operated by Taylor that includes the existing Gallagher Cove mussel farm to the south of the Site. Taylor’s Deepwater Point mussel farm is located further southwest in Totten Inlet. Therefore, the Proposal will be compatible with, and complement, the existing uses and character of the shoreline.*

Further, to the extent there are any notable aesthetic, scenic, historic or ecological qualities at the Site, the Proposal preserves them as documented in the EIS and other environmental documents prepared for the Proposal. With specific regard to the historic qualities of this shoreline area, the Taylor family has been growing and harvesting shellfish in Totten Inlet since statehood. Taylor Shellfish Company, incorporated in 1969, remains owned and operated by members of the Taylor family. Taylor Shellfish farms are in and of themselves part of the culture and history of Totten Inlet.

H. Protection of public health is recognized as a primary goal. All applications for development or use of shorelines shall be closely analyzed for their effect on the public health.

*Nutritionists encourage Americans to increase their seafood consumption for heart health. The primary goal of the Proposal is to cultivate additional mussels for harvest, sale, and distribution in local, national, and international markets. Market studies indicate a high demand for additional mussels grown in Washington State, and the Proposal will help meet this demand. Further, as discussed above and in more detail in the EIS, the Proposal will have beneficial ecological impacts by improving water quality and providing habitat for juvenile fish. Finally,*
the Staff Report references the recommended approval of the proposal by the Thurston County Public Health and Social Services Department.

III. Conservancy Environment (SMPTR, Section Two, VII.B)

Purpose. The intent of a Conservancy Environment designation is to protect, conserve, and manage existing resources and valuable historic and cultural areas in order to ensure a continuous flow of recreational benefits to the public and to achieve sustained resource utilization. The preferred uses are nonconsumptive of the physical and biological resources of the area and activities and uses of a nonpermanent nature which do not substantially degrade the existing character of the areas. Nonconsumptive uses are those uses which utilize resources on a sustained yield basis while minimally reducing opportunities for other future uses of the resources of the area.

The Proposal protects, conserves, and manages existing resources in order to achieve sustained resource utilization. The proposed mussel rafts are nonconsumptive because they utilize resources on a sustained yield basis while minimally reducing opportunities for other future uses of the resources of the area. The mussels will not require artificially adding feed or other nutrients because the mussels feed on algae filtered naturally from the water. In fact, because they filter nutrients from the water, the mussels actually improve water quality while they grow and remove nitrogen from Totten Inlet when they are harvested. This helps achieve sustained resource utilization and promote opportunities for other future uses of the resources of the area.

Indeed, Taylor Shellfish has been singled out for its sustainable farming practices. It recently was awarded Food Alliance Certification for its existing mussel operations. Certification to the Food Alliance Sustainability Standard for Farmed Shellfish Production means an operation is managed with a demonstrated focus on sustainability practices. Certification is determined by a rigorous third-party assessment that includes and on-site inspection for compliance with stringent evaluation criteria. (See Attachment C.) Taylor Shellfish has a vested interest in protecting water quality and aquatic habitat; without it, Taylor Shellfish could not cultivate its healthful product.

Further, the Proposal is compatible with the existing character of the area. The tidelands adjacent to the Site are part of a farm 1.6 miles in length owned and operated by Taylor Shellfish, and there are existing mussel rafts in the vicinity including Taylor Shellfish's Gallagher Cove and Deepwater Point mussel farms to the south of the Site.

Finally, the Proposal helps ensure a continuous flow of recreational activities due to its location and design. There is very little existing recreational activity in the vicinity of the Proposal due to the low density of residential development and because the Site is not located near a state park or other well-established recreational area. The Proposal's mussel rafts cover only 1.36 acres and will comply with federal requirements for marine marker lights, ensuring minimal potential impacts to recreational uses.

Definition. The "Conservancy Environment" designates shoreline areas for the protection, conservation and management of existing valuable natural resources and historic and cultural areas. This environment is characterized by low-intensity land use and moderate-intensity water use with moderate to little visual evidence of permanent structures and occupancy. Sustained management of the pastoral, aquatic and forest resources, as well as rigidly controlled utilization of nonrenewable and other nonmineral resources which do not result in long-term irreversible
impacts on the natural character of the environment are permitted. Intensity of recreation and public access may be limited by the capacity of the environment for sustained recreational use.

As previously noted, the Proposal protects, conserves, and manages existing natural resources on a sustained basis. The Proposal will not result in any long-term irreversible impacts, but will benefit the environment by filtering excess nitrogen, reducing nutrient pollution, and improving water quality. Further, shellfish aquaculture is recognized as an important to the Puget Sound’s history and culture, and the Taylor family has been growing shellfish for over 100 years. The Proposal helps keep this rich tradition and culture alive while promoting the local ecology and economy.

Goal Statements

1. Economic Development. The goal for this element is to reach a high level of renewable resource utilization on a sustained yield basis.

Taylor Shellfish is the leading producer of farmed shellfish on the West Coast of the United States and employs dozens of permanent and seasonal employees throughout Puget Sound. The Proposal will help support Taylor’s operations and increase operational efficiencies between its existing shellfish farms in the area. Totten Inlet has proven to be a productive environment for the cultivation of mussels; Taylor Shellfish’s existing mussel rafts produce approximately 1.2 million pounds of mussels a year. As previously described, Taylor Shellfish’s mussel cultivation practices have been third-party certified as sustainable. Further, the EIS specifically considered the potential impact of the mussel farm on the carrying capacity of Totten Inlet, and concluded no significant unavoidable adverse impacts will result. (See, e.g., FEIS, 1-24.)

The Proposal will create eight full-time jobs: four on-farm positions and four off-farm positions. Foreign aquaculture accounts for 84% of all seafood imported by the United States. The United States seafood trade deficit in 2010 was $10 billion. The Proposal, which ultimately aims to produce an average of 877,963 pounds (whole body, wet weight) of mussels for sale each growing season, will help reduce that deficit. The proposal is therefore consistent with the 2011 Marine Aquaculture Policy established by the U.S. Department of Commerce, National Oceanic and Atmospheric Administration, which seeks to encourage and foster sustainable aquaculture development that provides domestic jobs, products, and services and that is in harmony with healthy, productive, and resilient marine ecosystems. (See Attachment D.)

2. Public Access. It is a goal to maintain and improve the existing public access facilities to County shorelines, and to seek more facilities and devices to increase opportunities for public access to them. It is the intent of this goal to:

   a. Recognize and protect private property rights consistent with the public interest;

   b. Prevent the destruction of the more fragile recreation areas through excessive use; and

   c. Exercise due regard for the safety of the public.

The Proposal will not impact public access to the shoreline. All access to the Proposal and Site will be through Taylor’s existing Old Plant site to the south, and no improvements to the Old Plant site are required as part of the Proposal.
3. **Circulation.** Circulation systems in the Conservancy shorelines of the County should exist to serve the economic, aesthetic, health, safety and cultural needs of the area, but are to be designed to have a minimal adverse impact upon shorelines.

*No alterations to existing circulation systems are proposed.*

4. **Recreation.** Recreational opportunities are to be preserved and expanded through programs of development (public and private), and various means of public acquisition, such as purchase, leases, easements and donations. The intensity of the recreational use will be limited by the capacity of the environment to sustain it.

*As discussed above, the Proposal will not adversely impact existing recreational opportunities. The surrounding area is characterized by low density development, there are no parks or other well-established recreation areas in the immediate vicinity, the Proposal is compatible with other nearby aquaculture facilities, and the proposed mussel rafts will be equipped with marine navigational markers.*

5. **Shoreline Use.** A goal is to locate structures and uses in such a position that they are not highly visible from the water.

*As documented in the Visual Impact Assessment, the Proposal will not be highly visible and will be subordinate to the overall setting of the area. The Proposal has a very low vertical profile, projecting only one to two feet above the water surface. Further, the overall scope and size of the Proposal was substantially reduced from 129 mussel rafts to 58. The mussel rafts have been reconfigured in a single row, arranged in an orderly manner, and spaced apart from one another in order to allow water to be visible in between the rafts. Moreover, the rafts will be constructed with colors complementary to the surrounding environment, including blue, grey, and brown. Finally, the number of potential viewers to be impacted by the Proposal from the water is minimal given Totten Inlet has a very light amount of water traffic.*

6. **Conservation.** The goal of this element is to protect, conserve and manage existing natural resources and valuable historical and cultural areas in order to ensure a continuous flow of recreational benefits to the public, and to achieve sustained resource utilization.

*As previously described, the Proposal protects, conserves, and manages existing resources in order to achieve sustained resource utilization. Further, the Proposal will not impact valuable historical and cultural areas and will not disrupt existing recreational opportunities to the public.*

7. **Historical and Cultural Values.** This goal shall be to promote, protect and preserve historical, cultural, scientific or educational values on shorelines where these values are acknowledged.

*Aquaculture is recognized as an important part of the Puget Sound's history and culture. Taylor Shellfish has played a critical role in defining this history and culture, as the Taylor family has been growing shellfish in Puget Sound for over 100 years. The Proposal promotes, protects, and preserves these important values while managing existing resources in a sustainable manner and strengthening the local economy. Moreover, Taylor Shellfish is committed to utilizing its shellfish operations to advance scientific and educational values. It has made its shellfish farms available for use by various educational and scientific organizations, including The Evergreen*
State College, South Sound Estuary Association, Pacific Shellfish Institute, New Market Skills Center, South Sound Green, and Sea Grant.

8. **Restoration.** The goal of this element is to restore to a useful or original condition those areas (including waters) which are blighted by present uses and dilapidated or abandoned structures.

The Proposal implements this goal, as mussels filter nutrients such as nitrogen introduced to the water by human activities, thereby reducing pollution and improving water quality. This filtering improves water clarity, allowing more sunlight to penetrate, which can aid in the growth of eelgrass, thereby providing valuable habitat for salmon and other marine life. The US Army Corps of Engineers has stated “because shellfish require healthy ecosystems for their growth and productivity, in addition to providing the aquatic ecosystem services of improved water quality and increased food production, we believe that there is generally a net overall increase in aquatic resources in estuaries or bays where shellfish are produced.” Because they filter water and improve habitat, shellfish are used in restoration activities in many bays and estuaries nationwide.

IV. **Aquacultural Activities (SMPTR, Section Three, II)**

A. **Scope and Definition**

Aquaculture involves the culture and farming of food fish, shellfish, and other aquatic plants and animals in lakes, streams, inlets, bays and estuaries. Aquacultural practices include the hatching, cultivating, planting, feeding, raising, harvesting and processing of aquatic plants and animals, and the maintenance and construction of necessary equipment, buildings and growing areas. Methods of aquaculture include but are not limited to fish hatcheries, fish pens, shellfish rafts, racks and longlines, seaweed floats and the culture of clams and oysters on tidelands and subtidal areas.

The Proposal qualifies as aquaculture, as it involves the culture and farming of shellfish through the use of shellfish rafts.

B. **Policies**

1. The Region should strengthen and diversify the local economy by encouraging aquacultural uses.

The Proposal implements this policy by strengthening and diversifying the local economy through aquacultural uses. Taylor Shellfish employs dozens of permanent and seasonal employees throughout its farm sites in Thurston County and south Puget Sound. Taylor Shellfish's mussel farms help it maintain its diverse product line (mussels, oysters, Manila clams, geoduck and crab) and sustain both a domestic and international customer base. Taylor Shellfish currently operates two existing mussel farms in Totten Inlet. The addition of the 58-raft mussel culture Proposal will allow Taylor Shellfish to realize operational efficiencies in the form of labor, boat trips, truck trips, and maintenance work. The increase in production associated with the Proposal will create jobs for eight full-time employees; four on-farm positions, and four off-farm positions. It will also help reduce the existing $10 billion seafood trade deficit by producing shellfish for sale on the local, national, and international markets. Taylor Shellfish currently produces 300,000 pounds of mussels annually from Thurston County waters and
anticipates producing another 877,963 pounds on average for sale each growing season if the Proposal is approved.

2. Aquacultural use of areas with high aquacultural potential should be encouraged.

The Proposal is located in an area with high aquacultural potential. This area is currently and has historically been used for aquaculture activities, including mussel rafts and geoduck nurseries owned and operated by Taylor Shellfish in the immediate vicinity. Totten Inlet currently produces approximately 900,000 pounds of oysters, 1.2 million pounds of mussels, 500,000 pounds of Manila clams, and 500,000 pounds of geoduck, both wild and farmed. The area possesses the specific biophysical requirements of water quality, temperature, dissolved oxygen, and salinity necessary to support the Proposal. Further, a carrying capacity assessment was performed for the Proposal during preparation of the EIS, analyzing the capacity for Totten Inlet to accommodate additional shellfish aquaculture. This assessment concluded: “There is no scientific basis that the alleged cumulative water quality impact of shellfish aquaculture in Totten Inlet will result in a cumulative impact to forage fish or general water quality in Totten Inlet” FEIS, p. 1-30.

3. Flexibility to experiment with new aquaculture techniques should be allowed.

The Proposal will utilize aquacultural techniques which have proven to be effective and ecologically beneficial. No experimental techniques will be used.

4. Aquacultural enterprises should be operated in a manner that allows navigational access of shoreline owners and commercial traffic.

As confirmed in the EIS, the Proposal will not interfere with navigational access of shoreline owners and commercial traffic. The tidelands adjacent to the Site are part of a farm 1.6 miles in length owned and operated by Taylor, and there is no commercial traffic within Totten Inlet except for Taylor aquacultural operations. Further, the Proposal will be equipped with marine navigational markers to ensure any other users will be able to effectively recognize and avoid navigational conflicts with the mussel rafts. Taylor Shellfish will follow guidelines established by the U.S. Coast Guard for private aids to navigation (PATON). The U.S. Coast Guard will chart the farm once the rafts are installed.

5. Aquacultural development should consider and minimize the detrimental impact it might have on views from upland property.

In response to concerns raised by the public, the Proposal was substantially reduced and reconfigured in order to minimize potential adverse view impacts on upland property owners. As documented in the Visual Impact Assessment prepared for the Proposal, the Proposal will be subordinate to the overall setting of the area and will not have more than a moderate visual impact on the area’s visual resources. This conclusion is supported by the following considerations, as discussed in the Visual Impacts Assessment and EIS:

- Taylor reduced the overall scope and size of the Project by well over 50 percent. Taylor initially proposed 21 additional mussel rafts at the existing Gallagher Cove mussel farm and 108 new mussel rafts at the North Totten Site. Taylor eliminated the Gallagher Cove mussel farm expansion and reduced the number of rafts at the Site by 50. Therefore, only 38 of the original 129 mussel rafts included in the Proposal as originally presented remain.
Taylor aligned the remaining 58 mussel rafts in a single row extending waterward from a lower bank area of the shoreline. This configuration avoided potential impacts to geoduck beds managed by DNR and reduced the visibility of the proposed mussel farm from homes along the shoreline.

The rafts will be orderly arranged with spacing between the raft units. The spacing will allow water to be viewed between the rafts and avoids visual impacts caused by continuous surface coverage.

The mussel rafts will have a very low vertical profile, rising only one to two feet above the water surface.

The Proposal will use materials and colors which complement and blend into the marine environment. The mussel rafts will be constructed from untreated lumber, recycled barrels, and aluminum. When first installed, the untreated lumber will have a medium-brown color and will turn light brown after being exposed to the elements. This will match and complement existing materials in the marine environment, including docks, piers, and logs, and the brown color will blend into the color of the beach and banks on the other side of Totten Inlet. The barrels will be located almost completely underwater, particularly as the mussels mature. They will be blue in color, matching the predominant blue, green, and gray colors in the marine environment, and will turn a greenish-blue color as they accumulate marine biota and become mottled. The aluminum will also have a very low profile and will match prominent gray colors existing in the environment.

The Proposal has a very minor visual footprint, given it is located in a large embayment and only covers 1.36 acres of surface area. Further, the Proposal was moved to the southwest from its original proposed location. The revised Site location is off shore of a lower bank area of the upland property (15-40 feet), reducing the size of the Proposal in viewers’ field of vision.

The surrounding environment is not undeveloped, but characterized by other aquaculture facilities, including Taylor’s Gallagher Cove and Deepwater Point sites. The Proposal is therefore consistent with, and will complement, existing shoreline development.

There are no parks, designated public spaces, or scenic viewing highways adjacent to the Proposal, minimizing the number of viewers potentially impacted by the Proposal.

The surrounding uplands are characterized by low-density residential development. Further, these areas are zoned Rural Residential/Resource 1/5 (one unit per five acres), which places a very restrictive cap on the potential build-out for the area. Given the development pattern and applicable land use restrictions in the area, the number of potential upland residences to be impacted by views of the Proposal is limited.

The Proposal is located to the north of primary residential views. Therefore, primary residential views are focused away from the Proposal’s mussel rafts.

Further, the Staff Report recommends conditioning project approval on the following: “The mussel rafts shall be kept in a neat and orderly manner. Materials that are not part of the raft shall not be stored on the rafts.” Taylor Shellfish will comply with this condition, ensuring the
rafts will maintain a low profile and their day-to-day appearance will not offend notions of tidiness.

6. Proposed surface installations should be reviewed for conflicts with other uses in areas that are utilized for moorage, recreational boating, sport fishing, commercial fishing or commercial navigation. Such surface installations should incorporate features to reduce use conflicts. Unlimited recreational boating should not be construed as normal public use.

The North Totten Site was selected in part because its location minimizes the chance use conflicts will occur. There is minimal moorage, recreational boating, sport fishing, commercial fishing, or commercial navigation at the Site and in the general vicinity. There is no commercial fishing or navigation in this area of Totten Inlet with which the Proposal could potentially conflict. There is very little recreational activity near the Site as it is not located in the vicinity of state parks or other well-established recreational areas. Aside from the small surface water footprint of the Proposal's mussel rafts, the Proposal will not interfere with any recreational activities that do or could take place around the Site, and this policy makes clear that unlimited recreational boating is not a normal public use. Further, the Proposal reduces use conflicts by locating the mussel rafts near other Taylor Shellfish aquaculture operations, as opposed to areas currently open and characterized by recreational uses.

7. Areas with high potential for aquacultural activities should be protected from degradation by other types of uses which may locate on the adjacent upland.

The Site has a high potential for aquacultural activities and warrants protection from upland activities under this policy. The upland area adjacent to this Site was acquired by Capitol Land Trust for perpetual conservation. Because the adjacent uplands are protected against future development, the Site is the ideal location for an aquacultural activity such as the Proposal. Further, there are no residences on the adjacent uplands which could cause degradation and harm the Proposal.

8. Proposed aquacultural activities should be reviewed for impacts on the existing plants, animals and physical characteristics of the shorelines.

The County thoroughly reviewed the Proposal’s environmental impacts over a period of 16 years. The County has required several evaluations of the Proposal, including the EIS, the Visual Impacts Assessment (which also analyzed several ecological concerns and cumulative impacts), an Environmental Assessment in 1998, and a Biological Evaluation for addressing federally listed species and essential fish habitat in 2012. The EIS was specifically tailored to analyze the Proposal’s impacts to plants, animals, and the physical characteristics of the shorelines. The EIS concludes the Proposal will not have any significant environmental impact. In fact, the Proposal will benefit plants and animals by removing excess nitrogen, improving water quality, promoting increased sunlight penetration, and encouraging plant growth. Shellfish are a keystone species and help moderate algae production in the marine environment, thereby preventing algae bloom die-offs and the subsequent decrease in dissolved oxygen that causes fish kills. Further, shellfish support a rich and diverse composition of species, as many animals use raft systems to feed and forage, seek refuge from predators, settle, and reproduce.
9. Proposed uses located adjacent to existing aquaculture areas which are found to be incompatible should not be allowed.

As discussed in number 7 above, the Site is an ideal location for an aquaculture facility, as surrounding uses include existing aquaculture. Further, the adjacent uplands will be preserved in perpetuity through their recent purchase by Capitol Land Trust, ensuring upland activities will not degrade the water quality necessary for growing edible shellfish.

C. General Regulations

1. Aquaculture development shall not cause extensive erosion or accretion along adjacent shorelines.

The Proposal will not cause extensive erosion or accretion along adjacent shorelines. The adjacent shorelines are gently sloped and there are no surface indications or history of unstable soils in the Proposal's immediate vicinity. In addition, no erosion will occur as a result of clearing, construction, or use. The proposed rafts will be located in a sub-tidal area approximately 600-700 feet waterward of the mean lower, low water mark.

2. Aquacultural structures and activities that are not shoreline dependent (e.g., warehouses for storage of products, parking lots) shall be located to minimize the detrimental impact to the shoreline.

The Proposal is shoreline dependent and this criterion does not apply.

3. Proposed aquaculture processing plants shall provide adequate buffers to screen operations from adjacent residential uses.

No new processing plants are proposed. All processing of mussels from the Proposal will occur off-site at a plant owned and operated by Taylor. This criterion does not apply.

4. Proposed residential and other developments in the vicinity of aquaculture operations shall install drainage and waste water treatment facilities to prevent any adverse water quality impacts to aquaculture operations.

No residential or other developments are proposed. This criterion does not apply.

5. Land clearing in the vicinity of aquaculture operations shall not result in offsite erosion, siltation or other reductions in water quality.

No land clearing is proposed. This criterion does not apply.

6. For nonaquacultural development or uses proposed within or adjacent to an Aquacultural District, or which may be adversely affected by the aquaculture operation, restrictive covenants shall be filed which will inform prospective buyers of the proximity of the Aquacultural District.

No nonaquacultural development or uses are proposed. This criterion does not apply.

7. Establishment of Aquacultural District. Due to the importance of aquaculture to the Thurston County economy and the unique physical characteristics required to initiate or continue an operation, this section allows for the establishment of an Aquacultural District. The permit for an Aquacultural District will be issued for a specific area. Development authorized within the District will be generally
described and located to provide for the range of development associated with the aquaculture operation. The applicant for a District will provide the boundaries of the use area, location and size of upland structures, maximum size, height and surface area coverage of in-water structures, and a description of activities in sufficient detail to determine possible impacts. The activities within an Aquacultural District shall be reviewed on a periodic basis to assure compliance with the permit. If the Administrator finds that an activity or environmental impact is substantially different than that considered in the permit approval then action shall be taken to bring the operation into compliance with the permit. The applicant must be the lessee or owner of the property proposed for inclusion within an Aquacultural District.

*This criterion does not apply.*

D. Environmental Designations and Regulations

1. Urban, Suburban, Rural, Conservancy and Natural-Aquatic Environments. All types of aquaculture are allowed, provided the operation is consistent with the policies and regulations of this program and chapter.

*As described in this memorandum, the Proposal is a type of aquaculture and is consistent with the policies and regulations of the SMPTR. Therefore, the Proposal is an allowed use in the Conservancy Environment and should be approved pursuant to an SSDP.*
Exhibit D
Washington Shellfish Initiative

The Washington State Shellfish Initiative is a convergence of the National Oceanic and Atmospheric Administration’s (NOAA) National Shellfish Initiative and the State’s interest in promoting a critical clean water industry. While the initiative supports Governor Gregoire’s goal of a “dig-able” Puget Sound by 2020, it also encompasses the extraordinary value of shellfish resources on the coast. As envisioned, the initiative will protect and enhance a resource that is important for jobs, industry, citizens and tribes.

I. Overview
Washington State is taking additional action to protect and enhance shellfish resources. This effort supports the long-term goal of abundant shellfish resources for Washington’s residents and Native American tribes, as well as a thriving and healthy shellfish aquaculture industry. As an outcome of the 2007 treaty rights settlement, many Puget Sound tribes are undertaking shellfish aquaculture as a means of enhancing shellfish resources for cultural and economic gain.

We recognize and respect that shellfish aquaculture and commercial and tribal harvest of wild shellfish resources are water-dependent uses that rely on excellent water quality. Shellfish also can help filter and improve the quality of our marine waters thereby being part of the solution to restore and preserve the health of endangered waters. We can have healthy marine waters and productive shellfish beds for a growing industry, Native American tribes and for all the citizens of Washington.

The Puget Sound Partnership has targeted a net increase from 2007 to 2020 of 10,800 harvestable shellfish acres, which includes 7,000 acres where harvest is currently prohibited in Puget Sound. However, the recent shellfish downgrade in Samish Bay is a reminder of the constant vigilance needed by landowners, businesses and local, state, federal and tribal governments to protect and restore shellfish beds. Such efforts also are required on the coast where there is considerable opportunity to enhance shellfish resources.

To restore and expand shellfish resources, Washington must renew its protection, restoration and enhancement efforts. These efforts will pay off in increased recreation, additional clean water jobs, and a healthier Puget Sound and coastal marine waters.

II. Shellfish: Jobs and Economic Opportunity
Shellfish are critical to the health of Washington’s marine waters and the state’s economy. Washington leads the country in production of farmed clams, oysters and mussels with an annual value of over $107 million. Washington shellfish growers directly and indirectly employ over 3,200 people and provide an estimated total economic contribution of $270 million. Surveys from the early 2000’s indicate shellfish growers are the largest private employer in Pacific County and the second largest in Mason County. In just those two counties, they generate over $27 million annually in payroll. In addition there is ceremonial and subsistence harvest in Puget Sound and Coastal waters that tribes consider invaluable and unquantifiable.

Bivalves coming from Washington’s cool clean waters are prized as some of the best in the world. This reputation has ensured that domestic and international demand for them has long exceeded supply. This strong demand has fostered continued growth of shellfish production and hiring even during the
current economic downturn. Implementation of the NOAA’s National Shellfish Initiative in Washington will enable shellfish aquaculture in the state to expand to meet the demand for quality shellfish providing critical new jobs in rural Western Washington.

Annually, tourists and residents purchase over 300,000 licenses to harvest clams and oysters from Washington waters, providing more than $3.3 million in state revenues. WDFW conservatively estimates that the 125,000 shellfish harvesting trips made each year to Puget Sound beaches provide a net economic value of $5.4 million to the region. On Washington’s coast an average of 244,000 digger trips are made each season to harvest razor clams contributing an estimated $22 million value to the coastal economies.

III. Shellfish Initiative

1) Create a Public/Private Partnership for Shellfish Aquaculture
   a) Federal, State, and Local Model Permitting Program. Provide unified state leadership from state natural resource agencies by identifying a shellfish aquaculture coordinating lead for the State and a lead in each agency. Use the Governor’s Office of Regulatory Assistance (ORA) to facilitate the State Team. Formalize clear and efficient coordination among state and federal agencies, tribes, and local governments for permitting and licensing. Develop and implement a Model Permitting Program that ensures early and continued coordination from all parties, with an Operational Agreement that commits all parties to see each project through from beginning to end. The goal of the Program is to develop a consistent process for improved timeliness of permit decisions while ensuring regulatory compliance. The process will address tribal notification and consultation protocols. The process also will address opportunities for early and ongoing dialogue with permittees and others. The Model Permitting Program will be based on existing, successful programs like the MAP Team (Multi-Agency Permitting) which has a proven record of promoting coordinated decision making. The permitting team has initiated work on a draft Operational Agreement.

   b) Continue vital shellfish aquaculture research. Sustain research on key issues related to aquaculture management and planning. Seek opportunities to partner with NOAA, Washington Sea Grant, USGS, and others to build on existing programs and to build our understanding of shellfish and aquaculture in the Pacific Northwest. Priority should be given to research on geoduck aquaculture, the role of shellfish in nutrient cycling, and other aspects of ecosystem services provided by shellfish. New research projects include:
      i. The Jamestown S’Klallam Tribe recently received their state 401 Water Quality Certification for a new geoduck farm which includes a significant monitoring component for evaluating potential impacts to adjacent eelgrass beds. The data from this monitoring will help improve understanding of the relationship between farms and eelgrass.
      ii. Washington Sea Grant will provide $79,198 over two years to support development of a model that will serve as an innovative tool to assess the risk of toxic blooms in Puget Sound. WSG funded research will study the cyst stage of the toxic algae Alexandrium catenella, responsible for paralytic shellfish poisoning, and evaluate the effectiveness of using cyst mapping as a tool for early warning of bloom events in Puget Sound.
iii. Washington Sea Grant will host a public symposium to share latest scientific research findings on shellfish production effects on the environment. The meeting will explore the scientific basis for management decisions to balance competing land use interests, environmental protection and coastal development needs.

c) Implement Pilots. Implement pilot projects and use the Model Permitting Program to determine permitting efficiency, practicality and regulatory compliance (e.g., habitat protection). Potential pilots include a Washington Department of Natural Resources (DNR) lease site and North Sound restoration projects in bays like Sequim, Similk and Fidalgo.

d) Improve Guidance for Local Shoreline Master Programs. Increase local government and public understanding and application of the new shellfish provisions in State Shoreline Guidelines (Chapter 173-26 WAC). The Department of Ecology (Ecology) will publish an aquaculture Shoreline Master Program Handbook section with special emphasis on geoduck aquaculture and net pen operations, update its aquaculture web resources to make them more comprehensive, and provide direct technical assistance and training to local governments. The guidance will address regulatory and technical assistance to protect against habitat impacts and planning to minimize conflicts with adjoining shoreline owners and other marine water users.

e) Review of Shellfish Ecosystem Services. U.S. Geological Survey will conduct a review of available filter feeding models to quantitatively evaluate the capacity of cultivated shellfish to mitigate nitrogen pollution in Puget Sound. This work will be informed by NOAA research. If appropriate and feasible, Ecology will explore the possibility of implementing a nitrogen credit system using shellfish for pollution reduction. The credit system could stimulate new shellfish culture and jobs as well as identifying the role of shellfish in reducing nitrogen discharges.

2) Promote Native Shellfish Restoration and Recreational Shellfish Harvest

a) Restore Native Shellfish. Native shellfish restoration efforts will focus on two species: native Olympia oysters and pinto abalone.

Olympia oysters:

i. Restore 19 historic, large, Puget Sound natural oyster beds and associated local ecosystems by 2022.

ii. Direct a $200,000 NOAA grant to the Northwest Straits Commission for Olympia oyster restoration in the North Sound.

iii. Revise and update Washington Department of Fish and Wildlife’s (WDFW) 1998 Native Oyster Rebuilding Plan by December 31, 2011. Share the revised plan with NOAA for inclusion in the national Oyster Restoration Plan. WDFW’s standardized metrics will be used to determine success.

iv. NOAA is planning to host a hatchery breeding program for native oysters to increase seed production that meets established genetic conservation guidelines.

v. Increase collaboration with NOAA for assistance in funding and facilitating Olympia oyster research and restoration efforts conducted by WDFW, Puget Sound Restoration Fund (PSRF), tribal co-managers, shellfish growers and other partners.

Pinto abalone:
i. Use a $560,000 federal grant awarded by NOAA to WDFW in September to bolster the number of pinto abalone. The program aims to reestablish a self-sustaining population of pinto abalone without ESA protections. The NOAA-funded research coupled with continued state funding will advance abalone restoration efforts by developing hatchery and nursery programs for captive propagation and rearing. Priority abalone actions will be conducted by WDFW, Puget Sound Restoration Fund, University of Washington and non-profit organizations.

b) Enhance Recreational Shellfish Harvest. Improve and increase public access to shellfish on public tidelands for tribal and recreational harvest through signage, maps, acquisition and other efforts.

c) Create Public Support for Shellfish Initiative. Leverage Washington State Parks to engage the public in the initiative.
   i. Washington Sea Grant will lead the state agencies and partners through a simple planning process to develop shellfish-related messages, publicize events, and otherwise develop materials to make connections between clean water, our region’s shellfish resources, and jobs.
   ii. State Parks will conduct shellfish interpretive programs and events to help forge personal connections between clean, productive Puget Sound waters, the shellfish we eat, and the iconic role shellfish occupy in Washington’s cultural and culinary identity. State Parks will collaborate with other public/tribal/private interests and help promote support of public lands and the Discover Pass program.

3) Ensure Clean Water to Protect and Enhance Shellfish Beds
   a) Direct $4.5 million in Environmental Protection Agency funding to protect and improve water quality to meet state standards in commercial, recreational and Tribal shellfish growing areas. Funds will be used to help reach the Puget Sound Partnership’s shellfish indicator target of upgrading 10,800 acres of harvestable shellfish beds by 2020. The Department of Health (DOH) and the Washington Department of Ecology (Ecology) are managing this new funding, which includes the following:
      i. More than $2 million to help local governments create sustainable pollution identification and correction programs (PIC programs). These programs will be designed to identify and address pathogen and nutrient pollution from a variety of nonpoint sources, including on-site sewage systems, farm animals, pets, sewage from boats, and stormwater runoff. Counties being offered funding pending negotiations are San Juan, Thurston, Pierce, Skagit, Kitsap, as well as the Hood Canal Coordinating Council, the consortium of counties and tribes that encompass the Hood Canal.
      ii. More than $1 million to help Local Health Jurisdictions carry out onsite sewage system management plans that inventory, inspect, and fix failing onsite sewage systems in Marine Recovery Areas and other areas sensitive to pathogen pollution.
      iii. $1.5 million to reduce pathogen and nutrient loading by improving manure management in those areas with PIC programs. The fund will pay for eligible agricultural best management practices including livestock exclusion fencing, off-stream watering, and livestock feeding. Interested land owners must work through a conservation district, local government, tribe, or other governmental entity. Some of this work can be implemented by putting the newly created Sound Corps to work.
iv. Increase local government understanding and application of practices for controlling pathogens, consistent with Chapter 173-201 WAC. Ecology will provide guidance on nonpoint source BMPs consistent with state water quality standards as well as training to local governments to ensure that PIC programs and federal funding implement these standards.

v. Develop economically viable strategies to address impacts from stormwater and wastewater treatment outfalls, which are a significant factor for shellfish bed prohibitions.

b) Improve Shellfish Growing Area Protection and Restoration Efforts. Additional efforts are needed at all levels of government to improve water quality protections for shellfish growing areas. Two immediate steps are to:

i. Form an EPA and state (i.e., Ecology, DOH, Washington State Department of Agriculture) “pollution action team” to respond quickly when water quality problems are identified that threaten to shellfish areas. The team will focus in priority areas and support PIC programs where established. The team will work with technical staff from affected tribes with treaty reserved rights. Services provided by the team include pollution identification, inspections, enforcement, flyovers and technical assistance, consistent with guidance provided for use of federal funds. The team will focus initially in Drayton Harbor and Portage Bay. There has been a long struggle to protect the community shellfish beds in Drayton Harbor, and there are growing concerns over tribal resources in Portage Bay. The Whatcom Conservation District will be a key local partner in working with the state and federal pollution action team.

c) Take Steps to Address Ocean Acidification. Conduct research and develop recommendations to understand, monitor, mitigate and adapt to acidification in Puget Sound and Washington waters.

i. Convene a Blue Ribbon Panel on Ocean Acidification including scientific experts, the relevant agencies and stakeholders to develop clear, actionable recommendations on understanding, monitoring, adapting, and mitigating ocean acidification in Puget Sound and Washington waters.

ii. A new Washington Sea Grant research project will investigate the effects on Pacific oysters of exposure to natural water seawater that contains a high level of carbon dioxide. It will also explore new breeding programs for enhancing the tolerance of farmed Pacific oysters to higher CO₂ seawater. Washington Sea Grant will provide $112,693 over two years (2012-2014) for the project, building on 2010-2013 funding of $478,082 and a total four-year investment of $590,785 to address ocean acidification impacts on shellfish resources.

d) Work with Boaters to Address Potential Pollution Impacts.

i. Strategically Administer the Clean Vessel Program. State Parks and Recreation Commission will target Clean Vessel Act grants towards marinas where significant recreational, commercial, and Tribal shellfish resources exist and are harvested. These grants will fund the construction, renovation, operations, and maintenance of boat pumpout stations and waste reception facilities for recreational boaters. State Parks will partner with the Washington Sea Grant, DNR, and other entities on educational outreach to marinas and boaters that will publicize these pump-out locations and the need for their use.
ii. **Complete No Discharge Zone Assessment.** Ecology will complete an assessment needed to establish a No Discharge Zone, which would ban sewage disposal from commercial and recreational vessels for all or parts of Puget Sound.