THURSTON COUNTY RESOURCE STEWARDSHIP
LAND USE & ENVIRONMENTAL REVIEW SECTION REPORT

HEARING EXAMINER HEARING

February 13, 2012

PROJECT NO:  961372, Taylor Shellfish North Totten Mussel Farm
SEQUENCE NO:  96-961372 XC
APPLICANT:  Taylor Shellfish Company

REQUEST

The applicant requests approval of a Shoreline Substantial Development Permit to construct and operate a mussel farm consisting of 58 rafts anchored off shore along the eastern shoreline of north Totten Inlet. The project is located within a Conservancy shoreline environment as designated by the Shoreline Master Program for the Thurston Region (SMPTR).

GENERAL INFORMATION

A. Applicant:  Taylor Shellfish Company
   SE 130 Lynch Road
   Shelton, WA 98584

B. Location:  Approximately 600 feet waterward of the mean lower, low water mark of the western shoreline of the Steamboat Island peninsula, between approximately 85th Avenue NW and 90th Avenue NW.

C. Legal Description:  A portion of the South Half of Section 5, Township 19 North, Range 2 West, W.M.

D. Area:  An approximately 11.25 acre lease area
PROJECT DESCRIPTION

The Applicant proposes to construct a new mussel farming facility in the northern portion of Totten Inlet (Attachments c through g). The mussel species to be cultivated is *Mytilus edulis galloprovincialis* (Gallo). The mussel farm will consist of 58 separate rafts grouped together in rows and anchored to the sea floor. Each raft will be 30 feet by 34 feet in dimension. Rafts will be attached end to end (with 2 feet in between). It is anticipated that there would be two 8-raft units and six 7-raft units. The longitudinal axis of each raft unit would be parallel to the shore, aligned in a single row of four 2-raft unit groups extending waterward from the shore (Attachment e). There would be approximately 40 feet separating raft units within each group, and 70 feet separating each group. Each raft unit will be secured in-place at both ends with nylon lines and concrete wedge anchors. Construction of the raft components will occur at a 130-acre upland site owned and operated by the Applicant in Mason County, assembled at another location owned by the Applicant, and then towed to the farm site.

The rafts will be constructed of natural, untreated lumber (Douglas fir), welded aluminum cross beams, and 55-gallon recycled food product barrels (for floatation devices). Synthetic “socks” and ropes will be suspended from the raft structure (Attachment g). Each raft will have multiple grow-out lines suspended from it: approximately 720 lines, 16 feet long. The grow-out lines (an inert plastic mesh) will be seeded (by hand) with immature mussels that 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 (Attachment g).

The proposed location of the North Totten Inlet Mussel Farm is on State aquatic lands managed by the Washington State Department of Natural Resources (WDNR). The Applicant proposes to lease an aquatic area of approximately 11.25 acres from WDNR. The 58-raft mussel farm facility will occupy approximately 1.36 acres within that aquatic lands lease area. The lease area will begin about 550 to 600 feet waterward of the Mean Lower Low Water (MLLW) tidal elevation line, and will extend approximately 700 feet further offshore. The length of the lease area will be approximately 700 feet parallel to the shoreline.

Full development of the North Totten Inlet mussel farm will occur over a period of approximately 5 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.

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.

BACKGROUND

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 1 mile southwest of the proposed North Totten site) from 21 rafts to 42 rafts and for development of a new mussel growing site (the North Totten Inlet site) for 108 rafts (Attachments h and i). 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 their proposal. The revised proposal eliminated the proposed expansion at the existing Gallagher Cove farm and reduced the scope of the North Totten mussel farm site. The proposed North Totten farm 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. The revised configuration and location sought to avoid potential impacts to WDNR-managed geoduck beds and reduce the visibility of the proposed mussel farm from homes along the shoreline.

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. The County issued a SEPA Threshold Determination of Significance (DS) and EIS Scoping notice 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
- Impacts to marine navigation: lighting, and vessel navigation around the proposed mussel rafts

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 County Determination of Significance threshold determination and required preparation of an Environmental Impact Statement. The Applicant and the County have spent the intervening years gathering scientific information on the identified environmental issues and preparing an EIS.

The proposed mussel farm is located in the rural portion of Thurston County. Adjacent upland areas of the County are zoned Rural Residential Resource – One Dwelling Unit Per Five Acres (RRR 1/5). The RRR 1/5 zoning designation allows agriculture as a primary permitted use [TCC 20.09A.020(1)]. As defined, agriculture includes shellfish farming [TCC 20.03.040(3)]. Adjacent upland uses consist of single-family residences located on lots of various sizes. Capitol Land Trust has recently (May 23, 2011) purchased a tract of land directly onshore from the location of the proposed mussel farm.

**NOTIFICATION**
Written notice of the public hearing was sent to all property owners within 500 feet of the site and notice was published in The Nisqually Valley News on February 3, 2012 at least ten (10) days prior to the hearing. The site was posted February 3, 2012.

ENVIRONMENTAL EVALUATION

As stated above, Thurston County issued a SEPA Threshold Determination of Significance (DS) and EIS Scoping notice 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
- Impacts to marine navigation: lighting, and vessel navigation around the proposed mussel rafts

The Applicant appealed the DS, but the Hearing Examiner upheld the County’s determination and so required preparation of the EIS.

To assure that the Best Available Science was used in this EIS, Thurston County selected an Independent Technical Review Committee (ITRC) to review and comment on all documents prepared by consultants. This ITRC review included the original scope of work and protocols (methods) for scientific information gathering studies and the findings and conclusions described in the technical reports prepared by the consultants. The ITRC is comprised of a group of distinguished scientists who are recognized experts in their respective fields. The ITR process occurred over a period of 8 years (2001-2008) while the technical studies were being prepared.

Field studies conducted by consultants include several biological and biochemical studies prepared by Dr. Kenneth M. Brooks of Aquatic Environmental Sciences; water circulation studies conducted by Evans Hamilton, Inc. (2006 and 2008); and a comprehensive assessment of potential water column impacts of mussel raft culture in Totten Inlet by NewFields Northwest (2009). Much of this information was generated by examination of conditions at the proposed North Totten Inlet site, and at existing nearby mussel culture operations in Totten Inlet (for example, the Taylor Deepwater Point mussel farm used as a reference site), as well as other areas of Puget Sound.

Once all of the technical studies were complete, including review by the ITRC, a consultant (Vicki Morris Consulting Services and Margenex International) drafted an EIS. The Draft EIS (DEIS) was issued on May 26, 2010. During the comment period for the DEIS, the County held a public meeting (June 22, 2010) to update the public on the process of preparing the DEIS and soliciting public comment on the DEIS. Once the comment period for the DEIS was over, the consultant prepared a Final EIS (FEIS) that addressed comments made on the DEIS. The FEIS was issued on November 7, 2011.
The conclusions of the EIS are that the proposed project will not cause a substantial adverse impact on the elements of the environment reviewed in the document. The EIS lists a number of mitigation measures that will be incorporated into the project (Attachment k).

**DEPARTMENT ANALYSIS**

A. Shoreline Master Program:

The Shoreline Master Program for the Thurston Region (SMPTR) designates the shoreline jurisdiction on the subject property as Conservancy. Shellfish raft projects such as the subject proposal are covered in the “Aquacultural Activities” chapter (Section Three, Chapter II) of the SMPTR and are allowed subject to compliance with policies and standards contained in the specific regulations of the chapter. Listed below are the specific applicable shoreline policies and regulations of the Aquacultural Activities chapter of the SMPTR, along with staff analysis of this project’s compliance.

**SMPTR Section Three, Chapter II, Part B. Policies**

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

The proposed mussel farm is an aquacultural use and is supported by this policy.

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

The proposed mussel farm is an aquacultural use. Totten Inlet is utilized for a variety of aquacultural operations and is known for its aquacultural production.

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

The proposed project does not conflict with this policy.

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

The proposed mussel farm operation will entail almost daily work on the rafts by Taylor Shellfish employees. The employees will access the rafts by way of small boats. All work will be conducted on or in the immediate vicinity of the rafts. There is enough open water around the project site that operation of the rafts will not unduly restrict navigational access of shoreline owners or commercial traffic.

5. *Aquacultural development should consider and minimize the detrimental impact it might have on views from upland property.*
The original application submitted in 1996 for the North Totten site proposed 108 rafts, configured in a more parallel manner relative to the shore, in a location northerly of the current proposed location (Attachments h and i). Based on extensive public comment received on the initial application regarding views of the facility from upland property, the Applicant amended their proposal for the North Totten site. The amended proposal reduced the number of rafts to 58, aligned them perpendicular to the shore, and moved them southwesterly. The reduction in the number of rafts and perpendicular alignment was intended to lessen the extent or width of views of the facility from upland property. Moving the facility southwesterly enabled the facility to avoid geoduck beds near the original proposed site. In addition, the new proposed site is off shore of a lower bank area of the upland property. View impacts of aquaculture facilities are generally less along lower bank shorelines than higher bank shorelines.

The Applicant prepared a visual impact analysis of the revised project (Visual Impact and Ecological Concerns Assessment for the Totten Inlet Mussel Rafts Project, EDAW, Inc., January 1998). This analysis utilizes the assessment methodology listed in the Aquaculture Siting Study (Study), prepared by EDAW, Inc. for the Washington State Department of Ecology in October 1986. Based on consideration of a number of visual elements and criteria listed in the Study, the report concludes that the proposed North Totten mussel farm facility will have a moderate (based on a 4 part scale: extreme, high, moderate, and low) visual impact on the area’s visual resources.

The Aquaculture Siting Study lists potential site selection and site layout and facility design options as potential mitigation measures (Attachment j). The Applicant has incorporated a number of the mitigation measures into their proposal. The proposed location is adjacent to rural onshore development, is not visible from high use transportation routes and public use areas, is not in a particularly small embayment, and is adjacent to a lower bank shoreline within the immediate area. The facility layout and design also complies with several of the mitigation options. The proposed raft facility will have a low profile relative to the water surface, has been reduced in overall size and surface coverage, is to be constructed primarily of untreated Douglas fir lumber and other materials that will weather and not be obtrusive in color relative to the surrounding water, and will be organized in design.

During review of this application, a number of comments have been made regarding storage of certain materials on the existing Taylor Shellfish mussel rafts in Gallagher Cove to the south of the North Totten site. The commenters complain that the materials stored on the rafts make for an eyesore. Storage of any such materials on the new proposed rafts will create a more vertical presence of the rafts and negative impact to views from the uplands and, therefore, is contrary to recommendations of the Aquaculture Siting Study. Therefore, no storage of materials should be allowed on the proposed mussel rafts.

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 Environmental Impact Statement analyzed impacts to navigation. The results of this review did not identify any significant adverse impact. The rafts will be fitted with marine marker lights to make them visible and navigation charts will be revised to note the presence of the rafts. The rafts will cover a relatively small area of Totten Inlet and will not unduly conflict with other 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 proposed use is an aquaculture shellfish farm located within Totten Inlet.

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

The Environmental Impact Statement analyzed impacts to bottom dwelling organisms, impacts to the water column, and impacts to the phytoplankton resource, and effects this would have on aquatic life in Totten Inlet. Potential impacts to endangered species were considered. Based on extensive scientific research and analyses, no significant impacts were identified.

9. Proposed uses located adjacent to existing aquaculture areas which are found to be incompatible should not be allowed.

The proposed mussel rafts would be anchored in a sub-tidal area adjacent to the eastern shoreline of Totten Inlet. The Applicant, Taylor Shellfish Company, owns the adjacent tidelands. These tidelands are used for other types of aquaculture. The proposed mussel rafts are not incompatible with the other adjacent aquacultural operations.

SMPTR Section Three, Chapter II, Part C. General Regulations

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

The proposed mussel rafts would be anchored in a sub-tidal area approximately 600 feet waterward from the eastern shoreline of Totten Inlet. The rafts are not anticipated to cause onshore erosion or accretion.

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 proposed mussel raft farm does not include any such structures or activities.

3. Proposed aquaculture processing plants shall provide adequate buffers to screen operations from adjacent residential uses.
The proposed mussel raft farm does not propose a new processing plant. Mussels from this new farm will be transported to and processed in an existing Taylor Shellfish Company processing plant located in Mason County. No new facilities are proposed at the Mason County site to process the mussels from this farm.

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.

This regulation does not apply to the proposal.

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

This regulation does not apply to the proposal.

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.

This regulation does not apply to the proposal.

7. This regulation pertains to establishing an Aquacultural District.

Such a district is not proposed and so this regulation does not apply.

SMPTR Section Two, Chapter V. REGIONAL CRITERIA

The Shoreline Master Program for the Thurston Region contains regional criteria that apply to the proposal. All development within the jurisdiction of this Master Program shall demonstrate compliance with the following criteria:

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.

This criteria is not pertinent to the subject application.

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 Environmental Impact Statement analyzed impacts to bottom dwelling organisms, impacts to the water column, and impacts to the phytoplankton resource, and effects this would have on aquatic life in Totten Inlet. Potential impacts to endangered species were considered. Based on extensive scientific research and analyses, no significant impacts were identified.

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.

The proposed mussel farm is not an industrial activity, as 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.

This criteria is not pertinent to the subject application.

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

This criteria is not pertinent to the subject application.

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.

This criteria is noted.

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 shoreline adjacent to the proposed facility is scenic and has aesthetic qualities that are highly valued to the residents of the area. However, these qualities do not appear to be necessarily any more notable than many other shoreline areas of the county. There are no public parks, wildlife refuges, or major transportation roadways in the vicinity of the proposed mussel farm. This area of Totten Inlet has other existing aquaculture operations in use.

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.
This application has been reviewed by the Thurston County Public Health and Social Services Department for public health issues. No health issues have been identified and the County Health Department recommends approval (Attachment I).

B. **Review Agency Comments:**

Staff from the Thurston County Public Health and Social Services Department submitted comments on this proposal (Attachment I). They recommend approval of the application.

C. **Public Comments:**

During review of the subject application, a substantial number of comments have been received from the public. These comments were received primarily in the years (1996 – 1998) during initial application review and as part of the Draft Environmental Impact Statement (DEIS) review (2010). The Final Environmental Impact Statement, issued on November 7, 2011, lists all of the comments received during DEIS review and provides a response to each comment.

Issues raised in the comment letters from the early application review time period include ecological concerns related to impacts to marine water quality, marine organisms, and threats of the gallo mussel in the ecosystem. Impacts to public use of the marine waters, including navigation, were raised as were impacts to views from upland properties. One neighborhood group, APHETI, submitted a visual impact analysis concluding that the facility will have a high degree of impact to views.

The ecological issues were thoroughly examined in the EIS. The result of the EIS review is that the proposed mussel farming facility will not cause a substantial adverse impact to marine water quality, bottom dwelling organisms, other marine aquatic life, other aquaculture operations, and from escapement and propagation of the Gallo mussel. The EIS also reviewed impacts to navigation and determined that there would be no significant adverse impacts.

As discussed previously in this staff report, the Applicant has made changes to their proposal to lessen impacts to views from upland properties. The Applicant prepared a visual impact report to study the impacts to upland views. The result of that report is that the project will have a moderate impact on views. Further, the Applicant, as part of its revised proposal, has incorporated a number of mitigation recommendations from a State Department of Ecology aquaculture facility siting guide. The Applicant has taken steps to minimize impacts to views.

**DEPARTMENT RECOMMENDATION**

Based on the above analysis, the Resource Stewardship Department recommends **approval** of the Shoreline Substantial Development Permit subject to the following conditions:
1. Prior to construction and operation of the mussel raft farm, the Applicant shall obtain all necessary local, state and federal permits and/or approvals. This includes, but is not limited to: a Washington State Department of Natural Resources Aquatic Lands Lease; a US Army Corps of Engineers Section 10 Individual Permit; a Federal Endangered Species Act and Magnuson-Stevens Fishery Conservation Management Act compliance letter; and a US Coast Guard Aids to Navigation compliance letter.

2. The mussel raft farm shall be constructed and operated utilizing all of the mitigation measures noted on pages 1-15 through 1-22 of the Final Environmental Impact Statement.

3. All construction and farm operation debris resulting from this project must be disposed of at an approved site. Property owners, developers, and contractors are encouraged to recycle all possible left over construction, demolition, and land clearing (CDL) materials and reduce waste generated at this site. Please visit http://1800recycle.wa.gov to find facilities that recycle construction, demolition, and land clearing materials in your area.

4. 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.

Robert Smith
Senior Planner
LIST OF EXHIBITS

EXHIBIT 1 Resource Stewardship Department, Land Use and Environmental Review Section Report including the following attachments:

Attachment a Notice of Public Hearing
Attachment b Zoning/Site Map
Attachment c JARPA Application, received November 13, 1996
Attachment d General location map, undated
Attachment e Detailed location map, undated
Attachment f Schematic of proposed mussel raft farm, undated
Attachment g Cross Section Appearance of Proposed Mussel rafts, undated
Attachment h Location map showing original proposed North Totten site, undated
Attachment i Original raft configuration diagram, undated
Attachment k Summary Sheets from Final Environmental Impact Statement Listing Potential Impacts and Mitigation Measures, dated November 2011
Attachment l November 22, 1996 Comment Memorandum from Gary Duvall, Jr., Public Health and Social Services Department
NOTICE OF PUBLIC HEARING

For the Thurston County Hearing Examiner

NOTICE IS HEREBY GIVEN that the Thurston County Hearing Examiner will hold a public hearing on **February 13, 2012** beginning at **10:00 a.m.** regarding the following project:

**Project #:** 961372 SSDP  
**Applicant:** Taylor Shellfish Company  
**Requests:** Approval of a Shoreline Substantial Development Permit to construct a mussel farm consisting of 58 rafts anchored off shore along the eastern shoreline of north Totten Inlet. The project is located within a Conservancy shoreline environment as designated by the Shoreline Master Program for the Thurston Region.  
**Location:** Approximately 600 feet waterward of the mean lower, low water mark of the western shoreline of the Steamboat Island peninsula, between approximately 85th Avenue NW and 90th Avenue NW  
**Legal Description:** A portion of the South Half of Section 5, Township 19 North, Range 2 West, W.M.

The meeting place is Room 152 of the Thurston County Courthouse Complex, Building #1 - Administration, 2000 Lakeridge Drive SW, Olympia, Washington.

All interested persons are invited to present testimony relevant to the above-requested action(s). If unable to attend, written statements may be submitted by e-mail at peterscs@co.thurston.wa.us or by mail to the Thurston County Resource Stewardship Department, Building #1, 2000 Lakeridge Drive SW, Olympia, Washington 98502. **Statements must be received by 4:00 p.m. on the business day preceding the hearing. Verbal and written testimony will be accepted at the hearing. Phone calls to staff are not considered part of the hearing record.** Citizens with disabilities requiring special accommodations at the hearing should call (360) 786-5498 and ask for the ADA Coordinator at least three days prior to the hearing. Citizens with hearing impairments may call the County’s TDD line at (360) 754-2933. For other questions regarding the hearing, call the Land Use Clerk at (360) 754-3355 x6348.

Copies of the staff report regarding this project are available one week prior to the hearing. Staff reports can be viewed online at: [http://www.co.thurston.wa.us/permitting/hearing/hearing-home.html](http://www.co.thurston.wa.us/permitting/hearing/hearing-home.html) or can be picked up at the Permit Assistance Center, located on the second floor of Building One of the Thurston County Courthouse Complex between 8 a.m. and 12:30 p.m. Mon-Fri.

DO NOT PUBLISH BELOW THIS LINE

**Publish:** The Nisqually Valley News – February 3, 2012

I, ___Camie Petersen___, certify this notice was sent to the Applicant, Adjacent Property Owners, Griffin Fire District, and the Griffin School District:

Dated this **30** day of **January** 2012.
ZONING/SITE MAP

Case: 96/372 SSDP
Taylor Shellfish

Totten Site

Gallagher Cove

Steam boat

Island

Eld Inlet
**JARPA APPLICATION FORM**

**PLEASE TYPE OR PRINT IN BLUE OR BLACK INK**

Based on the preceding checklist, I am sending copies of this application to the following:  *(check all that apply)*

- [ ] Local Government: for shoreline  
- [X] Substantial Development  
- [X] Conditional Use  
- [ ] Variance  
- [ ] Exemption; or  
- [ ] Floodplain Management  
- [ ] Critical Areas Ordinance  
- [X] Washington Department of Fish and Wildlife for HPA  
- [X] Washington Department of Ecology Approval to Allow Temporary Exceedance of Water Quality Standards  
- [ ] 401 Water Quality Certification Nationwide Permits  
- [X] Corps Engineers for Section 404 or Section 10 permit(s)

**SECTION A - Use for all permits covered by this application. Be sure to also complete Section C (Signature Block) for all permit applications.**

1. **Applicant** Taylor Resources, Inc.  
   Mailing Address SE 130 Lynch Road  
   Shelton, WA 98584  
   Work Phone: (360) 426-6178  
   Home Phone: ( )  
   Fax Number: (360) 427-0327

If an agent is acting for the applicant during the permit process, complete #2 & 3.

2. **Authorized Agent** Diane Cooper  
   Mailing Address Same  
   Work Phone: ( ) Same  
   Home Phone: ( )  
   Fax Number: ( )

3. **Designation of Authorized Agent, if applicable:**

   I hereby designate Diane Cooper to act as my agent in matters related to this application for permit(s). I understand that if a Federal permit is issued, I must sign the permit.

   Signature of Applicant  
   Date: Nov. 8, 1997

4. **Relationship of applicant to property:**  
   [ ] Owner  
   [ ] Purchaser  
   [X] Lessee  
   [ ] Other (____________________)

5. **Name, address, and phone number of property owner(s), if other than applicant:**

   Department of Natural Resources  
   South Puget Sound Region  
   P.O. Box 68  
   Enumclaw, WA 98022
6. Location where proposed activity exists or will occur:

Street Address  N/A

City, County, State, Zip Code

Thurston County
Washington

Waterbody  Totten Inlet
DNR Stream Type (if known)  Type 1

Tributary of  

Legal Description:
Tax Parcel No.:  

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7. Describe the current use of the property, and structures existing on the property.

The North Totten site is in the subtidal zone and is not currently used. The Gallagher Cove site currently has seven 3-unit mussel raft structures. North Totten Inlet has historically been used for aquacultural activities.

Is the property agricultural land?  ☐ Yes ☒ No 
Are you a USDA program participant?  ☐ Yes ☒ No

8. Describe the proposed activity, and the activity’s purpose. Include expected water quality and fish impacts, and proposed actions to reduce the duration and severity of those impacts and provide proper protection for fish life. Complete plans and specifications should be provided for all work waterward of the Ordinary High Water Mark or Line, including types of equipment to be used, and for all work if applying for a shoreline permit. If additional space is needed, please attach a separate sheet.

Taylor Resources proposes to install mussel raft structures at two sites. One site, Gallagher Cove, is currently used for mussel farming. The other site will be a new location for mussel rafts and is located further north.

See Project Overview and maps.

Preparation of drawings: See Appendix A - sample drawings and checklist for completing the drawings. One set of original or good quality reproducible drawings must be attached. NOTE: Applicants are encouraged to submit photographs of the project site, but these do not substitute for drawings. THE CORPS OF ENGINEERS REQUIRES DRAWINGS ON 8-1/2 X 11 INCH SHEETS. Larger drawings may be required by other agencies.
9. Proposed Starting Date: Spring 1997  
Estimated duration of activity: Farming activities will be on-going.

Will the project be constructed in stages?  □ Yes  X No

10. Will any structures be placed:
   a. waterward of the Ordinary High Water Mark or Line for fresh or tidal waters?  X Yes  □ No
   b. waterward of Mean High Water Line in tidal waters?  X Yes  □ No

11. Will fill material (rock, fill, bulkhead, pilings or other material) be placed waterward of Ordinary High Water Mark or Line for fresh or tidal waters?  □ Yes  X No
   a. If “yes,” in fresh water indicate volume in cubic yards:_____________
   b. If “yes,” in tidal waters, indicate volume in cubic yards waterward of the line of mean higher high water:_____________

12. Will material be placed in wetlands?  □ Yes  X No  If yes, impacted area: ____________ (acres)
   If yes:
   a. Has a delineation been completed?  □ Yes  □ No (If yes, please submit with application.)
   b. Type and composition of fill material (e.g., sand, etc.):________________________
   c. Material source:
   d. List all soil series (type of soil) located at the project site, & indicate if they are on the county’s list of hydric soils:
      Soil information can be obtained from the Natural Resources Conservation Service (NRCS), formerly Soil Conservation Service (SCS).

13. Will proposed activity cause flooding or draining of wetlands?  □ Yes  X No  If yes, impacted area: ____________ (acres)

14. Will excavation or dredging be required in water or wetlands?  □ Yes  X No
   If yes, volume: _____ (cubic yards)
   a. Composition of material removed:________________________
   b. Disposal site for excavated material:________________________
   c. Method of dredging:

15. List other applications, approvals, or certifications from other Federal, state or local agencies for any structures, construction, discharges, or other activities described in the application (i.e., preliminary plat approval, health district approval, building permit, SEPA review, FERC license, Forest Practices Application, etc.) Also indicate whether work has been completed and indicate all existing work on drawings.

<table>
<thead>
<tr>
<th>Type of Approval</th>
<th>Issuing Agency</th>
<th>Identification No.</th>
<th>Date of Application</th>
<th>Date Approved</th>
<th>Completed?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shoreline Approval</td>
<td>Thurston County</td>
<td></td>
<td>Applied for</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HPA</td>
<td>DFW</td>
<td></td>
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<tr>
<td>Lease Agreement</td>
<td>DNR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Section 10</td>
<td>Army Corps</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SEPA Lead Agency: Thurston County  
SEPA Decision Date:
16. Has any agency denied approval for the activity described herein or for any activity directly related to the activity described herein?   □ Yes  ☒ No   If yes, explain:

SECTION B - Use for Shoreline & Corps of Engineers permits only:

17. Total cost of Project. This means the fair market value of the project, including materials, labor, machine rentals, etc.

   Approximately $387,000.00

18. Local government w/ jurisdiction:   Thurston County
Shoreline Environment designation:   Conservancy
Zoning designation:   N/A

19. For corps permits, provide names, addresses, and telephone numbers of adjoining property owners, lessees, etc.,

   Sub-tidal ground - State-owned aquatic lands

   Department of Natural Resources

   South Puget Sound Region

   P.O. 68, Enumclaw, Washington 98022

PLEASE NOTE: Shoreline management compliance may require additional notice — consult your local government.

SECTION C - Complete for any permit covered by this application

20. Application is hereby made for a permit or permits to authorize the activities described herein. I certify that I am familiar with the information contained in this application, and that to the best of my knowledge and belief, such information is true, complete, and accurate. I further certify that I possess the authority to undertake the proposed activities. I hereby grant to the agencies to which this application is made, the right to enter the above-described location to inspect the proposed or completed work.

   Signature of Applicant or Authorized Agent (REQUIRED)

   11/7/96
   Date

   Signature of Landowner (REQUIRED if other than applicant)

   Date

This application must be signed by the applicant. If an authorized agent is to be designated, the applicant must also sign at Item #3.

18 U.S.C §1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly falsifies, conceals, or covers up by any trick, scheme, or device a material fact or makes any false, fictitious, or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious, or fraudulent statement or entry, shall be fined not more than $10,000 or imprisoned not more than 5 years or both.
Notes:

Proposed Aquatic Lands Lease Area: 700 ft x 700 ft
Two 8-raft units and six 7-raft units
Raft width 34 feet, length 30 feet
Separation between rafts: 40 feet
Separation between pairs of rafts: 70 feet

Figure 1-4. Principal Features of Proposed North Totten Inlet Mussel Farm (Alternative 1)
Figure 1-5: Cross-Section Appearance of Proposed Mussel Rafts
ALTERNATE SITE SELECTION OPTIONS

1. Identify and select those sites with the capacity to accept human alteration. Avoid sites which have been identified as unique natural environments.

2. Identify and select those sites adjacent to rural or low density development. Avoid sites offshore of existing suburban residential developments.

3. Identify and select sites adjacent to existing commercial/industrial maritime activity, when compatible with the water quality requirements of aquaculture.

4. Identify and select those sites not visible or with limited visibility from adjacent high use transportation routes and public use areas.

5. Identify and select embayments larger than one mile across. Avoid small, enclosed embayments less than one mile across (unless there is limited adjacent residential development, travel routes, or use areas).

6. Identify and select those sites with adjacent low bank shorelines. Avoid sites with adjacent high bank shorelines (must be coordinated with distance offshore).

SITE LAYOUT AND FACILITY DESIGN OPTIONS

1. Locate, when feasible, 1,500 to 2,000 feet offshore. Distance dependent on height above sea level of key observation points.

2. Limit facility shape to horizontal forms. Discourage vertical forms such as worksheds and buildings (unless incorporated as part of dock or marina).

3. Incorporate as part of existing docks or marinas, or design to appear as boat dock, when feasible with use patterns and water quality.

4. Limit overall size and surface coverage of projects. Dependent on the degree of foreshortening created by distance offshore and height of observer position above sea level (see "Visual Impact" section discussion of facility location and design).

5. Select colors which complement or are natural to the dominant blue/green colors of the Puget Sound.

6. Require ordered design with limited variation in materials and colors.
Table 1.6-1. Summary matrix of environmental impacts and mitigation measures associated with the North Totten Inlet Mussel Farm proposal.

<table>
<thead>
<tr>
<th>Potential Impacts</th>
<th>Mitigation Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WATER: Circulation</strong></td>
<td></td>
</tr>
<tr>
<td>There would be little risk of adverse impact to water circulation in Totten Inlet during construction.</td>
<td>Fabrication of mussel raft parts will occur on land at the Taylor Shellfish Lynch Road plant in Mason County, and assembly of the rafts will occur during low tide on the beach at the Taylor Shellfish Totten Inlet Old Plant site.</td>
</tr>
<tr>
<td>Current velocities close to the deployed rafts would be expected to increase above ambient velocities. The turbulent eddy and associated eddy friction would create a down-current eddy that mixes ambient water with raft-influenced water, and would affect about 2.36 acres. The volume of water passing through this portion of Totten Inlet is 0.43% of the total volume of water passing through the cross-sectional transect of North Totten Inlet.</td>
<td>The raft arrays will be arranged parallel to the tidal currents to minimize the distance over which water will be slowed. By design, the downstream areas influenced by the rafts will not include sensitive intertidal or shallow subtidal zones.</td>
</tr>
<tr>
<td>Alternative 2 would have 9.2% more effect on circulation compared to Alternative 1, but would not significantly affect the environment.</td>
<td>Same as above.</td>
</tr>
<tr>
<td><strong>Significant Unavoidable Adverse Impacts:</strong> There would be no significant unavoidable adverse impacts to water circulation as a result of the proposed project with either action alternative.</td>
<td></td>
</tr>
<tr>
<td><strong>WATER: Water Quality – Dissolved Oxygen (DO)</strong></td>
<td></td>
</tr>
<tr>
<td>There would be little risk of adverse impact to dissolved oxygen during construction of the mussel aquaculture facility.</td>
<td>Fabrication of raft parts will occur on land, and assembly of the rafts will occur on the beach at the Old Plant site.</td>
</tr>
<tr>
<td>Alternative 1 would create eight “zones of decreased oxygen” 70 to 200+ m (230 to 656 ft+) in length, which would equate to surface area of approximately 2,906 to 8,288 m² (0.72 to 2.05 acres).</td>
<td>Best Management Practices (BMPs) for mussel raft culture (including siting and raft configuration) will be employed to maintain water quality.</td>
</tr>
<tr>
<td>If 70 m (230 ft) “zones” to DO recovery are assumed for Alternative 1, Alternative 2 would have 91.8% more effect compared to Alternative 1. If 200 m (656 ft) “zones” are assumed for Alternative 1, Alternative 2 would have 15.0% more effect compared to Alternative 1.</td>
<td>Same as above. No additional mitigation for DO concentrations required for Alternative 2, as this alternative would not be likely to have a significant adverse impact on the environment. DO concentrations would generally remain above the biological stress concentration of 5.0 ppm.</td>
</tr>
<tr>
<td><strong>Significant Unavoidable Adverse Impacts:</strong> There would be no significant unavoidable adverse impacts to dissolved oxygen as a result of the proposed project with either action alternative.</td>
<td></td>
</tr>
<tr>
<td><strong>WATER: Water Quality – Nutrients</strong></td>
<td></td>
</tr>
<tr>
<td>There would be little risk of adverse impact to silicate, phosphorus, or dissolved inorganic nitrogen (water column nutrients) during construction.</td>
<td>Fabrication of mussel raft parts will occur on land, and assembly of the rafts will occur on the beach at the Old Plant site.</td>
</tr>
</tbody>
</table>

Statements summarized in the Mitigation Measures column describe elements of the proposal that will avoid, minimize, or compensate for potential adverse effects, as well as offsetting beneficial effects of the proposed mussel farm.
<table>
<thead>
<tr>
<th><strong>Potential Impacts</strong></th>
<th><strong>Mitigation Measures</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Suspended mussel culture can affect nutrients in the water column in several ways, including: removal of organic and inorganic nutrients in the water column through filtration and tissue storage, transformation and regeneration of nutrients through excretion of urea and biodeposits, and settlement and decomposition of biodeposits.</td>
<td>Best Management Practices (BMPs) for mussel raft culture (such as pen set-up and cleaning, harvest timing and techniques) will be employed to maintain water quality during operation of the floating mussel aquaculture facility. The rafts will be constructed of natural, untreated lumber (Douglas fir), welded aluminum cross beams, and 55-gallon recycled food product barrels (for flotation devices), which will have no negative effect on water quality. No additional mitigation is required for potential effects on nutrients in the water column because impacts would not be significant. See the explanations below.</td>
</tr>
<tr>
<td>Mussels may exert a minor influence on local silicate fluxes. Due to high existing concentrations of silicates in Totten Inlet, such that silicate concentrations are not limiting diatom growth, there is no reason to believe that the addition of the proposed North Totten Inlet mussel farm would significantly alter the silicate cycle in Totten Inlet.</td>
<td>No mitigation would be necessary for potential minor effects on silicate concentrations in Totten Inlet.</td>
</tr>
<tr>
<td>Minor changes in phosphorus concentrations were recorded as water passed through the reference site (Deepwater Point) raft array. Changes did not appear to constitute a significant change in phosphorus levels as a result of the mussel raft array. In addition, the effect of increased phosphorus concentrations on phytoplankton populations is expected to be minimal because nitrogen is considered the limiting nutrient during the summer season.</td>
<td>No mitigation would be necessary for potential minor effects on phosphorus concentrations in Totten Inlet.</td>
</tr>
<tr>
<td>Inorganic nitrogen concentrations are expected to increase in the immediate vicinity of the proposed mussel farm during June through September, with ammonium as the principal form present within the mussel raft. Predicted concentrations for the North Totten Inlet mussel farm approach WDOE criteria for high concentrations of ammonium (&gt;5 µM).</td>
<td>An important consideration related to the effects of the proposed mussel farm on Totten Inlet is the removal of nitrogen (N) through mussel assimilation and removal via harvest. This is considered a beneficial remediation effect because South Puget Sound is exhibiting adverse ecological changes associated with over-enrichment by human-derived nitrogen and phosphorus inputs. Nitrogen removal by the Alternative 1 configuration of the North Totten Inlet mussel farm would represent 17 to 40% of the nitrogen introduced to Totten Inlet by human activities.</td>
</tr>
<tr>
<td>The footprint of ammonium effect for Alternative 1 would be approximately 2,906 m² (31,280 sq ft).</td>
<td>Approximately 70 m (230 ft) down-current of the mussel raft array, dissolved inorganic nitrogen (DIN) concentrations appear to return to ambient ammonium conditions. Therefore, no mitigation would be required for the potential minor ammonium effects of Alt 1.</td>
</tr>
<tr>
<td>Assuming the footprint of ammonium effect for Alternative 1 would be approximately 2,906 m² (31,280 sq ft), Alternative 2 could have 46% more effect; however, this would still be minor.</td>
<td>Similar to Alternative 1, no mitigation would be required for the potential minor ammonium effects of Alternative 2.</td>
</tr>
</tbody>
</table>
Table 1.6-1. Summary matrix of environmental impacts and mitigation measures associated with the North Totten Inlet Mussel Farm proposal, continued.

<table>
<thead>
<tr>
<th>Significant Unavoidable Adverse Impacts: There would no significant unavoidable adverse impacts to silicate, phosphorous or dissolved inorganic nitrogen as a result of the proposed project with either action alternative.</th>
<th>Potential Impacts</th>
<th>Mitigation Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MARINE PLANTS: Phytoplankton</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>There would be no impact to phytoplankton during construction and assembly of the mussel aquaculture facility.</td>
<td>No mitigation for phytoplankton would be required during mussel raft fabrication because fabrication of mussel raft parts will occur on land, and assembly of the rafts will occur on the beach at the Old Plant site.</td>
<td></td>
</tr>
<tr>
<td>During the spring/summer period, the North Totten Inlet mussel farm may remove approximately 0.3 to 0.9% of the primary production over 50% of the area of Totten Inlet (representing the Northern Totten Inlet basin); whereas the North Totten Inlet mussel farm would be predicted to remove approximately 1.4 to 4.4% of the seasonal production relative to 10% of Totten Inlet, representing a small portion of North Totten Inlet immediately surrounding the rafts.</td>
<td>Best Management Practices (BMPs) for mussel raft culture (including siting and raft configuration) will be employed to maintain water quality and primary production. The rafts will be constructed of natural, untreated lumber (Douglas fir), welded aluminum cross beams, and 55-gallon recycled food product barrels (for floatation devices), which will have no negative effect on water quality that could negatively affect primary production.</td>
<td></td>
</tr>
<tr>
<td>For the fall/winter period, the North Totten Inlet mussel farm may remove approximately 0.5 to 1.4% of the primary production over 50% of Totten Inlet and the North Totten Inlet mussel farm would be predicted to remove approximately 1.1 to 7.3% of the seasonal production relative to the 10% of Totten Inlet.</td>
<td>Same as above.</td>
<td></td>
</tr>
<tr>
<td>With Alternative 2, the potential effects to phytoplankton would be the same as those described for Alternative 1 because production under either alternative would be similar.</td>
<td>Same as above.</td>
<td></td>
</tr>
</tbody>
</table>

**Significant Unavoidable Adverse Impacts:** There would be no significant unavoidable adverse impacts to phytoplankton as a result of the proposed project with either action alternative.

| **MARINE PLANTS: Macroalgae** | | |
| There would be little risk of adverse impact to macroalgae during construction of the mussel aquaculture facility. | Fabrication of mussel raft parts will occur on land, and assembly of the rafts will occur on the beach at the Old Plant site. | |
| With Alternative 1, there is a potential for shading the sparse coverage of fixed macroalgae under the two shoreward raft units. | In the Alternative 1 raft configuration, the rafts are separated to facilitate access by work boats. This separation will allow light to penetrate between the rafts. In addition, tidal currents will move the raft units such that any one area of the bottom will not be constantly shaded. The raft structure, mooring lines, and the mussels themselves will form hard substrate that typically is colonized by various species of macroalgae. For all of these reasons, it is unlikely that mitigation would be required for macroalgae. | |

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8 Primary production is the total amount of new organic matter produced by photosynthesis in plants; in this case, microscopic plants known as phytoplankton.
Table 1.6-1. Summary matrix of environmental impacts and mitigation measures associated with the North Totten Inlet Mussel Farm proposal, continued.

<table>
<thead>
<tr>
<th>Potential Impacts</th>
<th>Mitigation Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>With Alternative 2, there may be potential for shading the sparse coverage of</td>
<td>See mitigation for Alternative 1 above. In addition, if the Alternative 2 configuration is selected, the raft units would be relocated every 3 years into the adjacent gap between rafts, would allow any build-up beneath the rafts to assimilate at a faster rate. If required, appropriate mitigation would be imposed by regulatory agencies with jurisdiction (such as the U.S. Army Corps of Engineers through compliance required with the conditions of the Biological Evaluation to be prepared for an Individual Permit).</td>
</tr>
<tr>
<td>the 10 five-raft units (the two shallow raft units in the northeast row, and the</td>
<td></td>
</tr>
<tr>
<td>most shallow in the southwest row).</td>
<td></td>
</tr>
</tbody>
</table>

**Significant Unavoidable Adverse Impacts:** There would be no significant unavoidable adverse impacts to macroalgae as a result of the proposed project with either action alternative.

**ANIMALS: Invertebrates – Zooplankton**

There would be little risk of adverse impact to zooplankton during construction of the mussel aquaculture facility.

Impacts to zooplankton attributable to operating either mussel farm action alternative include indirect effects of removal of zooplankton food organisms (phytoplankton), as well as direct effects in the form of removal of some zooplankton by the feeding mussels. The mussel raft array would create small areas of raft-affected water. The proposed mussel farm would be unlikely to create irreversible impacts to the hydrologic or biological health of this subsab in of Puget Sound due to characteristics of the proposed site and regional-specific physical and biological factors described in technical reports prepared for the project.

Fabrication of mussel raft parts will occur on land, and assembly of the rafts will occur on the beach at the Old Plant site.

For every possible adverse effect to zooplankton, there would be mitigating positive effects. The predominant effect would be net removal of nitrogen from the ecosystem when the mussels are harvested. Other positive effects would include providing cover and food organisms for juvenile fish. No mitigation measures are recommended to address the insignificant effects of the proposed mussel farm on zooplankton in North Totten Inlet.

**Significant Unavoidable Adverse Impacts:** There would be no significant unavoidable adverse impacts to zooplankton as a result of the proposed project with either action alternative.

**ANIMALS: Macroinvertebrates – Benthos**

There would be little risk of adverse impact to macroinvertebrates during construction of the mussel aquaculture facility.

A small amount (434 sq ft) of benthic habitat may be displaced by the concrete wedge anchors that secure the rafts in-place.

Studies of the existing Deepwater Point mussel farm showed subtle infaunal community effects extending a distance of 45 m (148 ft) to 75 m (246 ft) down-current. Each row of eight, 34-ft wide raft units in Alternative 1 could be envisioned to result in triangular “zones” of infaunal community effects both up-current and down-current on areas ranging between 0.92 to 1.54 acres. Low sulfide and total volatile solids concentrations observed at Deepwater Point indicate that natural attenuation of substrate chemistry toward baseline conditions occurred very quickly with no evidence of cumulative effects. This suggests there would not be an adverse long-term effect on benthic invertebrates arising from the North Totten Inlet mussel farm.

Fabrication of mussel raft parts will occur on land, and assembly of the rafts will occur on the beach. Assembled rafts will be towed to the site for anchoring.

The anchor ropes will provide more than an equal amount of substrate for other marine organisms to attach.

The rafts will be sited in a well-flushed area and configured to minimize effects on benthic organisms. Technical studies indicate that no additional mitigation for benthic organisms would be required.
Table 1.6-1. Summary matrix of environmental impacts and mitigation measures associated with the North Totten Inlet Mussel Farm proposal, continued.

<table>
<thead>
<tr>
<th>Potential Impacts</th>
<th>Mitigation Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compared to similar calculations for the raft units in Alternative 1, Alternative 2 could temporarily have up to 45 to 48% greater effects on benthic organisms than Alternative 1, ranging from approximately 1.33 to 2.28 acres. If, however, the proposed mitigation actions for Alternative 2 were implemented, this alternative would have less long-term effect on benthos in the vicinity of the North Totten Inlet Mussel Farm compared to Alternative 1.</td>
<td>An off-setting management feature of Alternative 2 to relocate raft units every 2 to 3 years would allow the infaunal community to be restored down-current from the former raft unit locations. This procedure will still result in a similar type of effect. The effect would, however, be temporary and would occur at different locations and at different times. As with Alternative 1, technical studies indicate that no additional mitigation for benthic organisms would be required.</td>
</tr>
</tbody>
</table>

**Significant Unavoidable Adverse Impacts:** There would be no permanent significant unavoidable adverse impacts to macroinvertebrates (benthic organisms) as a result of the proposed project with either action alternative.

### ANIMALS: Native Mussel Species

<table>
<thead>
<tr>
<th>There would be little risk of adverse impact to native mussel species during construction.</th>
<th>Fabrication of mussel raft parts will occur on land, and assembly of the rafts will occur on the beach at the Old Plant site. No native mussels occur on this beach.</th>
</tr>
</thead>
<tbody>
<tr>
<td>The risk of <em>M. e. galloprovincialis</em> to displace or “genetically pollute” <em>M. e. trossulus</em> stocks in Puget Sound is low, and it is unlikely that the proposed project will have a significant adverse effect.</td>
<td>No specific mitigation is proposed for addressing genetic interaction as an impact resulting from the proposed project.</td>
</tr>
</tbody>
</table>

**Significant Unavoidable Adverse Impacts:** There would be no significant unavoidable adverse impacts to the genetic make-up of native mussel populations in North Totten Inlet as a result of the proposed project with either action alternative.

### ANIMALS: Fish

<table>
<thead>
<tr>
<th>There would be no risk of adverse impact to fish during construction.</th>
<th>Fabrication of mussel raft parts will occur on land, and assembly of the rafts will occur on the beach at the Old Plant site. Because only hand tools will be used for assembly, there is no risk of pollutants entering the water that could affect water quality or fish habitat.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effects on fish that would result from the North Totten Inlet mussel farm would be linked to the magnitude of effect on their prey, which in turn would be linked to project effects on production of phytoplankton and zooplankton, and environmental parameters related to primary production and the benthos. Based on the analyses described in Draft EIS Chapter 3, it is unlikely that there would be any significant adverse impact to fish or their prey organisms as a result of the proposed action.</td>
<td>Best Management Practices (BMPs) for mussel raft culture (e.g., siting and raft configuration) that will be employed to maintain water quality will also serve to maintain plankton production and prey species populations. The rafts will be constructed of natural, untreated lumber (Douglas fir), welded aluminum cross beams, and 55-gallon recycled food product barrels (for floatation devices), which will have no adverse effect on water quality or the food chain, and therefore no adverse impact on fish habitat.</td>
</tr>
<tr>
<td>Under Alternative 1, there could be positive effects for fish, because the encrusting organisms that will form on the raft structures and anchor cables will supply food for several species of fish, including surf perches.</td>
<td>The NMFS Biological Opinion on Nationwide Permit 48 for existing mussel farms requires growers to minimize disturbance of inter-tidally spawned forage fish eggs when accessing their culture site. This practice will be employed at the North Totten Inlet site. Because the proposed mussel farm will be located over a subtidal area, the only potential interaction with inter-tidally spawned forage fish is related to access. Taylor’s intertidal shellfish farming operations in the upper intertidal area of the North Totten Inlet site are covered under Nationwide Permit 48 for existing shellfish cultivation activities.</td>
</tr>
</tbody>
</table>
Table 1.6-1. Summary matrix of environmental impacts and mitigation measures associated with the North Totten Inlet Mussel Farm proposal, continued.

<table>
<thead>
<tr>
<th>Potential Impacts</th>
<th>Mitigation Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ANIMALS: Birds</strong></td>
<td></td>
</tr>
<tr>
<td>There would be little risk of adverse impact to birds during construction. Noise from hand tools and disturbance from human activity is expected to be temporary, occasional, and minor. While local bird species may leave the area temporarily, they would be expected to return when the noise-generating activities are completed.</td>
<td>Fabrication of mussel raft parts will occur on land, and assembly of the rafts will occur on the beach at the Old Plant site.</td>
</tr>
<tr>
<td>There would be low risk for the proposed mussel farm to have an adverse impact on birds.</td>
<td>The rafts will be sited and configured to minimize direct effects on birds and indirect effects on prey species. The raft structures will provide perching and resting areas for local birds (especially cormorants and gulls) when not occupied by staff performing mussel culture duties.</td>
</tr>
<tr>
<td>Because the rafts will displace a very small amount of the surface area of Totten Inlet and the activity will not result in noise levels much different from existing conditions, the proposed project is unlikely to have a significant adverse effect on birds.</td>
<td>The U.S. Fish and Wildlife Service (USFWS) Biological Opinion for Nationwide Permit 48 for shellfish aquaculture in Washington (USFWS 2009) confirms no significant anticipated effect on birds. Therefore, no mitigation for birds would be required.</td>
</tr>
</tbody>
</table>

**Significant Unavoidable Adverse Impacts:** There would be no significant unavoidable adverse impacts to fish or fish habitat as a result of the proposed project under either action alternative.

| **ANIMALS: Marine Mammals** |                     |
| There would be little risk of adverse impact to marine mammals during construction. Noise from hand tools and disturbance from human activity is expected to be temporary, occasional, and minor. While local species may leave the area temporarily, they would be expected to return when brief construction activities are completed. | Fabrication of mussel raft parts will occur on land, and assembly of the rafts will occur on the beach at the Old Plant site. |
| Noise generated by marine vessels, hand tools and disturbance associated with human maintenance and harvesting activities is expected to be similar to baseline activities at existing mussel farms in Totten Inlet at Gallagher Cove and Deepwater Point. While some marine mammals may avoid the area temporarily, they would be expected to return when human disturbances cease. | The rafts will be sited and configured to minimize effects on marine mammals. During maintenance and harvest operations, due care will be taken to minimize disturbance of marine mammals, particularly seals and sea lions, in compliance with the Marine Mammal Protection Act. |

**Significant Unavoidable Adverse Impacts:** There would be no significant unavoidable adverse impacts to marine mammals as a result of the proposed project with either action alternative.

| **ANIMALS: Protected, Threatened and Endangered Species** |                     |
| There would be little or no risk of adverse impact to bald eagles, marbled murrelets, bull trout, Puget Sound Chinook salmon, steelhead trout, or Southern Resident killer whales during construction. Noise from hand tools and disturbance from human activity is expected to be temporary, occasional, and minor. | Fabrication of mussel raft parts will occur on land, and assembly of the rafts will occur on the beach at the Old Plant site. |
Table 1.6-1.  Summary matrix of environmental impacts and mitigation measures associated with the North Totten Inlet Mussel Farm proposal, continued.

<table>
<thead>
<tr>
<th>Potential Impacts</th>
<th>Mitigation Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation of the proposed new mussel rafts under either action alternative may affect but would be unlikely to adversely affect bald eagles because the closest known nest tree is more than 1.8 miles from the project area, and disturbance associated with the new mussel farm will not be noticeably different compared to baseline conditions.</td>
<td>No additional mitigation measures are recommended for the proposed North Totten Inlet mussel farm relative to bald eagles.</td>
</tr>
<tr>
<td>Operation of the proposed new mussel farm under either action alternative would be unlikely to adversely affect marbled murrelets because it is considered unlikely that they occur in Totten Inlet.</td>
<td>Best Management Practices (BMPs) for mussel raft culture (including siting and raft configuration) will be employed to maintain water quality. This will result in avoiding potential adverse impacts to protected, threatened, or endangered species or their prey species. The USFWS Biological Opinion for Nationwide Permit 48 for shellfish aquaculture in Washington (USFWS 2009) states that mussel raft culture activities are listed as those with potential effects that are expected to be insignificant (immeasurable) or discountable (extremely unlikely to occur) for marbled murrelets.</td>
</tr>
<tr>
<td>There would be no measurable risk of significant adverse operational impacts to bull trout under either action alternative because this species rarely (if ever) occurs in Totten Inlet.</td>
<td>The measures listed above are also applicable to bull trout.</td>
</tr>
<tr>
<td>There would be no measurable risk of significant adverse operational impacts to Puget Sound Chinook salmon with either action alternative because the potential for this species to be present in Totten Inlet is considered rare.</td>
<td>The NMFS Biological Opinion on Nationwide Permit 48 recommends the following measures for existing mussel culture activities. Taylor proposes to also employ these measures at the North Totten Inlet site: Growers should strictly adhere to their code of practice to ensure minimized effects to listed species. Growers should continue to minimize disturbance of inter-tidally spawned forage fish eggs when accessing their culture sites.</td>
</tr>
<tr>
<td>There would be no risk of significant adverse operational impacts to steelhead trout with either action alternative because their occurrence in Totten Inlet is uncommon.</td>
<td>Same as above.</td>
</tr>
<tr>
<td>There would be no measureable risk of significant adverse operational impacts to Southern Resident killer whales because of their low level of occurrence in Totten Inlet, the fact that whales would move away from any human activity disturbance in the immediate vicinity of the mussel rafts, and because of their ability to echo-locate and avoid underwater objects.</td>
<td>Same as above.</td>
</tr>
</tbody>
</table>

**Significant Unavoidable Adverse Impacts:** There would be no significant unavoidable adverse impacts to bald eagles, marbled murrelets, bull trout, Puget Sound Chinook salmon, steelhead trout, or Southern Resident killer whale as a result of the proposed project with either action alternative.
Table 1.6-1. Summary matrix of environmental impacts and mitigation measures associated with the North Totten Inlet Mussel Farm proposal, continued.

<table>
<thead>
<tr>
<th>Potential Impacts</th>
<th>Mitigation Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NAVIGATION</strong></td>
<td></td>
</tr>
<tr>
<td>There would be no potential impacts to navigation during the fabrication and assembly of rafts to create the North Totten Inlet mussel farm, as these activities would occur on land.</td>
<td>No mitigation required for navigation during mussel raft fabrication and assembly.</td>
</tr>
<tr>
<td>There could be a temporary safety hazard when the rafts are floated into place, before navigation lights or other markers are installed.</td>
<td>Taylor routinely installs two solar-powered navigation lights to identify the width of the raft structure, and as a back-up in case one of the lights burns out. These and/or temporary visual markers would be installed concurrent with floating the first rafts into place within the North Totten Inlet mussel farm, and would be maintained throughout operation of the farm.</td>
</tr>
<tr>
<td>No safety hazards to vessel navigation within Totten Inlet would be anticipated in the developed and operational condition of the North Totten Inlet mussel farm, as the structure would be equipped with all private aids to navigation required by the U.S. Coast Guard (33 CFR, Parts 62 and 66). The Coast Guard has no record of a precedent indication that mussel rafts so-equipped cause a safety hazard to navigation within Totten Inlet.</td>
<td>Marine marker lights on buoys will be required to mark the boundary of the proposed mussel raft, and/or lights on the ends of each raft to identify the obstruction on the water surface. Navigation charts will be revised to apply a symbol to indicate the presence of the mussel raft and any buoys, lights, or “dayshapes” installed to mark the raft location in the waterway.</td>
</tr>
<tr>
<td><strong>Significant Unavoidable Adverse Impacts:</strong> Given that there is no record of conflicts between vessel traffic in Totten Inlet and existing mussel rafts in the Inlet, and given that the new North Totten Inlet mussel raft would be equipped with all Federally-required private aids to navigation, no significant unavoidable adverse impacts to the navigable waterway would be anticipated.</td>
<td>When the rafts are deployed and the private aids to navigation are installed, the U.S. Coast Guard will make a public notice announcement by marine radio broadcast, followed by inclusion of information regarding the new structure their printed weekly public notice.</td>
</tr>
</tbody>
</table>
November 22, 1996

Gayle Zeller
Thurston County Development Services Department
2000 Lakeridge Drive SW
Olympia, WA  98502-6045

Re:  SSDP-96-1372; Totten Inlet Mussel Project
     TP #00000000303

Dear Gayle:

We have reviewed the referenced project with respect to Health Department concerns. As proposed, the project does not appear to pose any adverse impacts to public health. We recommend approval of this project.

If you have any questions, please contact me at your convenience.

Sincerely,

[Signature]

Gary W. Duvall Jr., R.S.
Environmental Health Specialist