

# **Gig Harbor City Council**

**June 11, 2012  
5:30 p.m.**



**AGENDA FOR  
GIG HARBOR CITY COUNCIL MEETING  
Monday, June 11, 2012 – 5:30 p.m.**

**CALL TO ORDER:**

**PLEDGE OF ALLEGIANCE:**

**CONSENT AGENDA:**

1. Approval of City Council Minutes May 29, 2012.
2. Liquor License Action: a) Special Occasion – GH Historic Waterfront Association; b) New Application – State Liquor Store #150; c) Renewals: The Keeping Room, Hunan Garden Restaurant, Kinza Teriyaki, and Spiro's Bella Notte.
3. Agreement Tacoma Pierce County Health Department – 2012 Natural Yard Care Workshops.
4. Sehmel Right-turn Improvements – Consultant Services Contract/Lochner and Associates, Inc.
5. WWTP Landscape Maintenance Contract.
6. Twawelkax Trail Wetland Survey – Consultant Services Contract / Sitts & Hill.
7. Resolution No. 902 Adopting Findings of Fact for Denial of Appeal of Threshold Determination for Shoreline Master Program.
8. Cushman Trail Project – Local Agency Standard Consultant Agreement / H.W. Lochner, Inc.
9. WWTP Buffer Monitoring - Year One / Consultant Services Contract / Grette.
10. Approval of Payment of Bills: Jun 11, 2012: Checks #69805 through #69900 in the amount of \$522,950.92.

**OLD BUSINESS:** None scheduled.

**NEW BUSINESS:**

1. First Reading of Ordinance - Hospital Benefit Zone (HBZ) 30-year Project List.
2. Public Hearing – Shoreline Master Program Update.

**STAFF REPORT:**

**PUBLIC COMMENT:**

**MAYOR'S REPORT / COUNCIL COMMENTS:**

**ANNOUNCEMENT OF OTHER MEETINGS:**

1. Downtown Planning and Vision Committee: Tue. Jun 12th at 4:00 p.m.
2. Finance / Safety Committee: Mon. Jun 18th CANCELLED
3. Operations and Public Projects: Thu. Jun 14th at 3:00 p.m.
4. Boards and Commission Candidate Review: Mon. Jun 25th at 4:30 p.m.
5. Downtown Planning and Vision Open House: Wed. Jun 27th at 4:00 p.m.

**EXECUTIVE SESSION:** For the purpose of discussing potential litigation per RCW 42.30.110(1)(i) and property acquisition per RCW 42.30.110(1)(b).

**ADJOURN:**

## MINUTES OF GIG HARBOR CITY COUNCIL MEETING – May 29, 2012

**PRESENT:** Councilmembers Ekberg, Guernsey, Perrow, Payne, and Kadzik and Mayor Hunter. Councilmember Young joined the meeting after the Consent Agenda action.

**CALL TO ORDER:** 5:30 p.m.

### **PLEDGE OF ALLEGIANCE:**

### **CONSENT AGENDA:**

1. Approval of City Council Minutes May 14, 2012.
2. Receive and File: a) Council Retreat Minutes May 11, 2012;
3. Liquor License Action: a) Assumption: Finholm's Grocery & Deli; b) Added Privilege Red Rooster Café.
4. Appointment to Parks Commission.
5. Correspondence / Proclamation: Pierce Transit Proposed Amendments to Bylaws.
6. Skansie House Electrical Engineering Contract.
7. Skansie House Mechanical Engineering Contract.
8. Wheeler Street End Record of Survey - Consultant Services Contract/David Evans and Associates, Inc.
9. Approval of Supervisors Guild Collective Bargaining Agreement.
10. Pt. Fosdick Square (Safeway) – Termination of Obligations Relating to Outdated Agreements.
11. Eddon Boat Beach – Consultant Services Contract / Grette Associates.
12. Approval of Payment of Bills May 29, 2012: Checks #69715 through #69804 in the amount of \$504,168.25.
13. Approval of Payroll for May: Checks #6491 through #6505 and direct deposit transactions in the total amount of \$324,300.58.

Councilmember Perrow asked that the minutes of the City Council Meeting of May 14, 2012 be amended to show that he abstained from voting on the Consent Agenda.

Mayor Hunter introduced Rhana Lovrovich, new member of the Parks Commission.

**MOTION:** Move to adopt the Consent Agenda with the proposed amendment to the minutes.  
**Ekberg / Payne** – unanimously approved.

### **PRESENTATIONS:**

GHPD Employee of the Year Awards. Chief Davis presented several awards for outstanding service during 2011. He asked each person to come forward as he presented a brief synopsis of why the person was chosen to receive the award. He awarded the following: 2011 Officer of the Year – Fred Douglas; 2011 Top D.U.I. Arrests - Chet Dennis; 2011 Support Staff of the Year – Debra Eason; 2011 C.O.P.S.

Volunteer of the Year - Phil Regnart; 2011 Unit Award - C.O.P.S. Program. Volunteers Dennis Schaumann and Phil Regnart accepted the award; and 2011 Explorer Scout of the Year - Kevin Hayward.

**OLD BUSINESS:** None scheduled.

**NEW BUSINESS:**

1. Open Record Appeal Hearing – Appeal of SEPA Threshold Determination for Shoreline Master Program. Mayor Hunter announced that Attorney Scott Snyder would be acting as the Hearing Officer during these proceedings. He announced a short recess so that Mr. Snyder could be seated.

The meeting resumed at 5:50 p.m. Mr. Snyder introduced himself and explained his role as Hearing Officer to assist the City Council in conducting the open record hearing for the appeal filed by Robert Frisbie; APP-12-0001.

Hearing Officer Snyder asked that in accordance with the Appearance of Fairness Doctrine if any City Councilmembers had participated in any ex parte communication regarding this appeal since it was filed on April 23, 2012. A roll call of the six present Councilmembers disclosed that there had been none. It was also explained that the Mayor was present but does not have a vote, nor will he be participating.

When asked if there were any objections to any one of the Councilmembers participating, Robert Frisbie, Appellant, and City Attorney Angela Belbeck responded that they had no objections. Hearing Officer Snyder gave a brief overview of the order of presentation. Mr. Frisbie, and Senior Planner, Peter Katich were then sworn in. Mr. Katich was asked to begin with his introduction.

Senior Planner Peter Katich explained that he is the Project Manager for the update of the city's Shoreline Master Program and responsible for preparing the SEPA Checklist and associated Supplemental Sheet for Non-project Actions. He presented the background for issuance of the Determination of Non-Significance for the proposed comprehensive amendments to the shoreline master program, which was appealed by Mr. Frisbie on April 25, 2012. When asked, he clarified that the appeal was filed in a timely manner.

Hearing Officer Snyder addressed both the appellant and city attorney to determine if there were any jurisdictional issues with Council hearing the appeal or issues regarding the SEPA process or procedure. Both responded "no." Mr. Frisbie was then asked to proceed with his presentation.

Robert Frisbie said that his sole intent in filing the appeal is to get the City to expand the Checklist to include several items in order to identify alternatives to these items and recommendations for mitigation measures that would ultimately be considered for incorporation into the final shoreline management program. He explained that he believes that the Checklist could be expanded using city staff in one to two weeks. Mr.



Frisbie continued with each item to identify his reasons for concern with the draft SMP, his conclusions, and recommendations for expanding the Checklist to address his concerns. At the conclusion of his presentation, Mr. Frisbie said that addressing these issues through an expanded Checklist could happen quickly, considering the number of time the staff and Planning Commission members have stated that all of the new regulations are supported by White and Technical papers. If answers are not quickly forthcoming, Mr. Frisbie suggested that Council determine whether these papers meet the minimum industry standard or if they are based on someone's "wish list." Mr. Frisbie then said that his letter is stamped with his registered Washington Professional Engineers' Stamp because he feels strongly that he can back up everything he has said. He stressed that not one of the White or Technical papers has any kind of professional stamp because the author doesn't want to be held responsible.

Hearing Officer Snyder asked if there were any objections to entering Mr. Frisbie's submitted exhibits into the record; there were none. Mr. Snyder explained that each Councilmember would have an opportunity to ask questions of Mr. Frisbie. He began with the City Attorney.

Ms. Belbeck addressed a reference made by Mr. Frisbie to RCW 43.21C.030, asking if he understands that this RCW refers to an Environmental Impact Statement and not a threshold determination. Mr. Frisbie responded that yes, he did understand.

Councilmember Kadzik asked Mr. Frisbie to explain why the soft armory failed at the Narrows Park seawall. Mr. Frisbie responded that soft armoring doesn't have the ability to withstand the weather or dissipate the energy of the wave action. When asked if this type of wave action would be a problem in Gig Harbor Bay, Mr. Frisbie referred to the storm of December, 1982 that did so much damage in Puget Sound. He said that this type of storm would pull out soft armoring. He then said that an expanded Checklist could list this type of storm that could occur every 20 years, and talk about the associated cost. He added that beach erosion would be more prevalent in areas such as Henderson Bay where you have wakes.

Councilmember Payne asked Mr. Frisbie if he had a recommendation for a threshold for marina size before they should be required to install a pumpout facility. Mr. Frisbie responded that you would have to run the waste load calculations in the harbor in order to make that determination. He talked about the extension the outfall outside the harbor then said that the biggest load would come from septic systems on the east side of the harbor and the large raccoon and goose population.

Councilmember Guernsey asked if Mr. Frisbie thought the state's checklist is inadequate because it doesn't ask questions in the areas he has identified. Mr. Frisbie responded that you could use this checklist, and just "shuffle the information" into the existing questions and categories. She asked if there is any authority to expand the checklist as he is suggesting. He said no, but there are a number of issues that have been ignored in the checklist so the answers are inadequate. Councilmember Guernsey asked if he is saying the Determination of Nonsignificance by the responsible official is

inadequate. He responded “that is correct.” She continued to ask if he is saying the proposed Shoreline Master Regulations as proposed create a potential, significant, adverse environmental impact. He responded that until you complete the checklist and look at the alternatives you don’t know. Once you finish the SEPA review, he said that you would know the mitigation and how to design of the Shoreline Master Program. He stressed that he does not believe an Environmental Impact Statement should be required.

Councilmember Guernsey then asked for clarification on his reference to commercial fishing moorage and the question of why they are not required to provide pumpout stations and public access. He responded he suspects the commercial fishing boats contribute as much to the waste load in the harbor as his marina. He explained that if you require him to install a pumpout, then you should require it of the commercial fishing industry; if he is required to provide public access, then they should have to provide it as well.

Hearing Officer Snyder asked Mr. Frisbie to clarify whether he agrees that this is not an appeal of the Shoreline Management Plan, that the legislative issues will be addressed at a later date, and what is being discussing is the environmental basis for which the regulations will be reviewed. Mr. Frisbie agreed.

Hearing Officer Snyder continued to say that case law contained in the briefing indicates that economic considerations are not within the zone of interest protected by SEPA and cost benefit analysis is not required under SEPA. He asked Mr. Frisbie if he has anything that would authorize the Council to address the cost benefit issues that he has raised. Mr. Frisbie responded that he did not.

There were no further Council questions and staff was asked to present the city’s information. City Attorney Angela Belbeck introduced Senior Planner Peter Katich and entered the Declaration of Planning Director Tom Dolan into the record.

Hearing Officer Snyder clarified that the Council Packet on the web and given to Council would be considered as Exhibit 1, Mr. Frisbie’s handout would be Exhibit 2, and the Declaration of Tom Dolan would be Exhibit 3. There were no objections to the Exhibits.

Senior Planner Peter Katich began by providing the background of the relationship between the State Shoreline Management Act, Shoreline Master Program Guidelines, and the City’s Shoreline Management Program. He explained that Gig Harbor’s Draft Shoreline Master Program has been developed to comply with the Master Program Guidelines and requirements of the state. Mr. Katich presented several examples of regulatory provisions contained in the city’s master program that are supported by science and designed to support this theme of environmental protection. He noted that no existing, legally established development within the City of Gig Harbor’s jurisdiction would be required to retrofit their property or to comply with these new requirements; they would continue to be a legally, non-conforming development.

Mr. Katich continued to explain that Mr. Frisbie's SEPA appeal outlines his opposition to several of the regulations and protection measures that he previously identified and were addressed during the Planning Commission's public comment period and public hearing on the draft shoreline master program. Several revisions were made to the program based on these comments while no action was taken on other issues.

Mr. Katich pointed out that in this appeal, Mr. Frisbie has not referenced any specific environmental elements that would be adversely impacted by the adoption of the shoreline master program; a requirement for an appeal of a SEPA threshold determination. But instead, he has challenged the city to address the benefits of proposed regulatory approaches by resubmitting issues that are more appropriately addressed during the upcoming public hearing on the Shoreline Master Program.

Mr. Katich stressed that the city and the Responsible Official have thoroughly reviewed the master program and its proposed regulations for potential significant impacts to the sensitive shoreline ecological functions, and has concluded that the adoption of the shoreline master program will not have a probable, significant adverse impact on the environment. Therefore, the City Council should find that the determination of non-significance was issued properly and the appeal should be denied. He added that a proper forum to address any concerns and objections to the draft shoreline master program is at the scheduled public hearing on June 11, 2012 City Council meeting.

Hearing Officer Snyder entered the overheads used during Mr. Katich's presentation as Exhibit 4. He then asked if Mr. Frisbie had any questions for Mr. Katich.

Mr. Frisbie asked Mr. Katich if he had the information on the issues he discussed including the flooding caused by a tsunami, the waste load in the harbor, and erosion at the Narrows Park. He then asked Mr. Katich to clarify whether these are issues that fall under the SEPA Checklist categories. Mr. Katich responded that in the appeal, no specific reference had been made to any elements in the checklist making it difficult to understand the nature of the comments and their consistency with SEPA. Mr. Katich then said that the city does have the information that was submitted during the Planning Commission process, but the Planning Commission elected not to act upon it. He stressed that the burden is on the appellant to show that the adoption of these regulations will have a probably adverse effect on the environment.

Hearing Officer Snyder asked each Councilmember if they had questions.

Councilmember Young asked for clarification on the checklist reference to any natural environmental impacts as it relates to noise. Mr. Katich said that the SEPA standards are inclusive of people, animals, habitat, and structures, and applies to anything in the built and natural environment. Councilmember Young then asked if the SEPA determination is an analysis of the impact of the plan itself, meaning that for flooding or tsunami to qualify, the plan itself would have to increase the frequency and severity of a tsunami. Mr. Katich responded that this is correct.

Councilmember Guernsey asked if Mr. Katich thinks it appropriate to “stuff” these various issues into the city’s responses to the checklist. Mr. Katich responded that he doesn’t think it would be appropriate and it would be inconsistent with law. He said that as he understands it, the appellant’s issues include a request for a cost benefit analysis, an economic impact analysis, an analysis on the effect of individual property rights, and a whole range of concerns for Council to consider, but not in a SEPA context.

Councilmember Kadzik asked if he is correct that Mr. Frisbie’s concerns are best brought to the public hearing forum. Mr. Katich responded that this is correct.

When asked, Ms. Belbeck said that there is no further presentation from the city. Hearing Officer Snyder said Mr. Frisbie has ten minutes for a rebuttal.

Mr. Frisbie summarized by saying that Council has to determine whether the items he listed have been addressed; adding that from his standpoint, they have not. He said that this is a small, close knit community and several people have been here a long time; so you have to ask the question of how long it takes to expand the checklist. He said that it won’t take long and it will provide you with the information to start thinking about how you want the final shoreline master program to look. He said he’d like Council to vote his way.

Hearing Officer Snyder closed the public hearing at 7:35 p.m. and said he would proceed with council deliberation. He noted that anything said by Ms. Belbeck or him is not evidence; he is here to assist; not to vote or to direct.

Councilmember Ekberg said that he listened and read through Mr. Frisbie’s comments; while he brings up important issues, nothing was shown that they significantly and adversely impact the environment, which is the issue in front of Council. He said that economic issues are better addressed at the future public hearing on the shoreline master plan, and that he is convinced that the Responsible Authority ruled correctly.

Councilmember Young concurred, stressing that the State Environmental Protection Act was designed to protect the environment. He said that the proposed shoreline plan is to increase these protections, and the SEPA checklist is designed to look for things that are detrimental to the environment. The appellant appears to be asking to remove current regulations or loosen those being proposed, and although some of these issues are good points, it’s not something that can be done under the SEPA process. He concluded by saying he struggles to find any reason to overturn the SEPA Responsible Official’s determination.

Councilmember Guernsey noted that this is a SEPA Appeal of the DNS by the city’s SEPA Responsible Official, and as she understands the law, the agency has to make a determination of whether the proposed shoreline master plan itself has a probable significant adverse impact on the environment. She explained that the checklist is to help the Responsible Official make a determination, and in her review of the checklist and supplemental information, she found it to be quite extensive. She said that the Responsible Official was correct in determining that the proposed master plan does not have a

significant adverse impact on the environment. She then said that the appellant has the burden of proof as set forth in the Gig Harbor Municipal Code and also the law in many jurisdictions. She explained that the standard of review is clearly erroneous, which is a significant burden to overcome, especially when the Responsible Official's threshold determination must be accorded substantial weight.

Councilmember Guernsey continued to explain that the seven categories raised by the appellant do not relate to the potential or probable significant adverse environmental impacts; they are in essence, his judgment or his opinion based on research he has done as to whether or not the policies should be adopted. This is different than proving that the DNS was inappropriate, she added. If the determination was inappropriate then a Determination of Significance should be issued and an Environmental Impact Statement prepared; but this is clearly not what the appellant thought should occur. As Mr. Katich indicated, economics and a cost benefit analysis are not within the zone of interest protected by SEPA. In conclusion, Councilmember Guernsey said that the Responsible Official's decision was appropriate and should be upheld.

Councilmember Perrow voiced appreciation for raising the issue of equitable application of regulations, saying he looked forward to addressing them at a later time. He said that he thinks the checklist is adequate.

Councilmember Payne said that in review of the elements of the checklist he does not see an issue that has been raised that is within the zone of interest related to SEPA. He added that the issues raised will have an appropriate time to be discussed, but as far as this hearing and the appeal before Council, he sees no probable adverse impact on the environment based upon the decision made by the Responsible Official.

Councilmember Kadzik said he had little to add, but was glad we had the opportunity to be exposed to these issues. He said that he looks forward to the public hearing, but doesn't think that this was the correct forum. He agreed with the other Councilmembers.

**MOTION:** Move to deny the appeal in this matter.  
**Guernsey / Young** – unanimously approved.

Hearing Officer Scott Snyder announced that he would prepare the findings of fact and conclusions for presentation at the next regular council meeting of June 11th.

Mr. Frisbie thanked Council for their time. The Mayor called a brief recess at 7:44 p.m.

The meeting began again at 7:52 p.m.

**STAFF REPORT:**

City Administrator Denny Richards commented how nice it was for the Chief to recognize his staff. He added that the Public Works Crew is doing a fine job of "polishing the town" for

the upcoming weekend events, citing these as good examples of what a great staff the city has employed.

**PUBLIC COMMENT:** None.

**MAYOR’S REPORT / COUNCIL COMMENTS:**

Mayor Hunter reported that we are taking another look at redesigning Lift Station No. 4 to move it further to the north, reduce the scale, and to make it more suitable for the location at Jerisich Park.

Councilmember Young explained that Pierce County Council has formed an advisory board for the Flood Control District and is looking for input on filling the Peninsula seat by June 4th. He asked if any Councilmembers were interested in serving on the board. Councilmember Payne said he would think about it and get back before the fourth. Council agreed to give Mayor Hunter the authority to forward any forthcoming recommendations to the Pierce County Council.

**ANNOUNCEMENT OF OTHER MEETINGS:**

1. Planning/Building Committee: Mon. Jun 4 at 5:15 p.m.
2. Parks Commission: Wed. Jun 6 at 5:30 p.m.
3. Operations Committee: Thu. Jun 14 at 3:00 p.m.

**EXECUTIVE SESSION:** For the purpose of discussing pending litigation per RCW 42.30.110(1)(i). No property acquisition discussion to occur. Mayor Hunter, City Councilmembers, City Administrator Denny Richards, and City Attorney Angela Belbeck were in attendance. It was announced that action may be taken after the session.

**MOTION:** Move to adjourn to Executive Session at 7:58 p.m. for approximately 20 minutes for the purpose of discussing pending litigation per RCW 42.30.110(1)(i).  
**Kadzik / Payne**– unanimously approved.

**MOTION:** Move to return to regular session at 8:15 p.m.  
**Payne / Kadzik** – unanimously approved.

**ADJOURN:**

**MOTION:** Move to adjourn at 8:15 p.m.  
**Payne / Kadzik** – unanimously approved.

CD recorder utilized: Tracks 1002 – 1035

---

Charles L. Hunter, Mayor

---

Molly Towslee, City Clerk

WASHINGTON STATE LIQUOR CONTROL BOARD-License Services  
3000 Pacific Ave SE - P O Box 43075  
Olympia WA 98504-3075

TO: MAYOR OF GIG HARBOR

May 25, 2012

SPECIAL OCCASION # 094717

GIG HARBOR HISTORIC WATERFRONT ASSOCIATION  
3311 HARBORVIEW DR #101  
GIG HARBOR WA 98335

DATE: JULY 14, 2012

TIME: 11:45 AM TO 5:30 PM

PLACE: HARBOR HISTORY MUSEUM (CLASSROOM & OUTSIDE TENT) - 4121 HARBORVIEW  
DRIVE, GIG HARBOR

CONTACT: MARY DESMARAIS 253-514-0071

SPECIAL OCCASION LICENSES

- \*  License to sell beer on a specified date for consumption at specific place.
- \*  License to sell wine on a specific date for consumption at a specific place.
- \*  Beer/Wine in unopened bottle or package in limited quantity for off premises consumption.
- \*  Spirituous liquor by the individual glass for consumption at a specific place.

If return of this notice is not received in this office within 20 days from the above date, we will assume you have no objection to the issuance of the license. If additional time is required please advise.

1. Do you approve of applicant? YES \_\_\_ NO \_\_\_
2. Do you approve of location? YES \_\_\_ NO \_\_\_
3. If you disapprove and the Board contemplates issuing a license, do you want a hearing before final action is taken? YES \_\_\_ NO \_\_\_

<u>OPTIONAL CHECK LIST</u>	<u>EXPLANATION</u>	
LAW ENFORCEMENT	_____	YES ___ NO ___
HEALTH & SANITATION	_____	YES ___ NO ___
FIRE, BUILDING, ZONING	_____	YES ___ NO ___
OTHER:	_____	YES ___ NO ___

If you have indicated disapproval of the applicant, location or both, please submit a statement of all facts upon which such objections are based.

DATE SIGNATURE OF MAYOR, CITY MANAGER, COUNTY COMMISSIONERS OR DESIGNEE



Washington State  
Liquor Control Board

Licensing and Regulation  
PO Box 43098, 3000 Pacific Ave SE  
Olympia WA 98504-3098  
Phone – (360) 664-1600  
Fax – (360) 753-2710

May 23, 2012

MAYOR OF GIG HARBOR

Re: Application for a Spirits Retailer License

Applicant: PREMIUM RETAIL GROUP, LLC  
Principals: MICHAEL CHO, YUOUNG CHOE, CHRISTINE CHOE, C. KWON KAH,  
JASON KIM, HYUN KIM, KYU LEE  
License No: 409664-1U  
Tradename: STATE LIQUOR STORE # 150  
UBI: 603-202-125-001-0003  
Address: 4814 PT FOSDICK DR NW  
GIG HARBOR, WA 98335-1711

Contact Name: MICHAEL CHO

Phone No: (425)353-1400

This letter is to notify you that PREMIUM RETAIL GROUP, LLC, has applied for a liquor license at the above location to sell **spirits** in original containers to:

- Consumers for off-premises consumption
- Permit holders
- Retailers licensed to sell spirits for on-premises consumption; and to
- Export spirits

Per state law adopted under Initiative 1183 (RCW 66.24.620 (1)), if this application is approved, sales cannot begin until **June 1, 2012**.

**The applicant's location is a former WSLCB state liquor store.** In accordance with Initiative 1183 (RCW 66.24.630 (c)), The Board may not deny a Spirits Retailer license to an otherwise qualified holder of a former state liquor store operating rights sold at auction. Therefore, this notice is being provided to you as an informational courtesy only.

Alan E. Rathbun, Director  
Licensing & Regulation



1/13



NOTICE OF LIQUOR LICENSE APPLICATION

RETURN TO: WASHINGTON STATE LIQUOR CONTROL BOARD
License Division - 3000 Pacific, P.O. Box 43075
Olympia, WA 98504-3075
Customer Service: (360) 664-1600
Fax: (360) 753-2710
Website: www.liq.wa.gov

TO: MOLLY TOWSLEE, CITY CLERK
RE: NEW APPLICATION

DATE: 5/23/12

UBI: 603-202-125-001-0003

License: 409664 - 1U County: 27
Tradename: STATE LIQUOR STORE # 150
Loc Addr: 4814 PT FOSDICK DR NW
GIG HARBOR WA 98335-1711

APPLICANTS:
(See Back of Letter)

Mail Addr: PO BOX 918
MUKILTEO WA 98275-0918

Phone No.: 425-353-1400 MICHAEL CHO

Privileges Applied For:
DIRECT SHIPMENT RECEIVER-IN/OUT WA
BEER/WINE SPECIALTY SHOP
SLS SPIRITS RETAILER
KEG SALES

As required by RCW 66.24.010(8), the Liquor Control Board is notifying you that the above has applied for a liquor license. You have 20 days from the date of this notice to give your input on this application. If we do not receive this notice back within 20 days, we will assume you have no objection to the issuance of the license. If you need additional time to respond, you must submit a written request for an extension of up to 20 days, with the reason(s) you need more time. If you need information on SSN, contact our CHRI Desk at (360) 664-1724.

- 1. Do you approve of applicant?
2. Do you approve of location?
3. If you disapprove and the Board contemplates issuing a license, do you wish to request an adjudicative hearing before final action is taken?
4. If you disapprove, per RCW 66.24.010(8) you MUST attach a letter to the Board detailing the reason(s) for the objection and a statement of all facts on which your objection(s) are based.

DATE SIGNATURE OF MAYOR, CITY MANAGER, COUNTY COMMISSIONERS OR DESIGNEE

ADDITIONAL NEW APPLICATION INFORMATION

Applicants:

	PREMIUM RETAIL GROUP, LLC	
	CHO, MICHAEL	1957-08-20
	CHOE, YUOUNG	1964-02-18
	CHOE, CHRISTINE Y	1965-10-07
(Spouse)	KWON, HAK C	1964-01-21
	KIM, JASON	1959-02-18
(Spouse)	KIM, HYUN SOOK	1959-07-19
	LEE, KYU	1967-05-11

LICENSED ESTABLISHMENTS IN INCORPORATED AREAS CITY OF GIG HARBOR  
(BY ZIP CODE) FOR EXPIRATION DATE OF 20120930

LICENSEE	BUSINESS NAME AND ADDRESS	LICENSE NUMBER	PRIVILEGES
1. THE CAPTAIN'S MATE, INC.	THE KEEPING ROOM, CANDLES & WINE 7811 PIONEER WAY GIG HARBOR WA 98335 0000	086515	BEER/WINE SPECIALTY SHOP
2. PANDA INC.	HUNAN GARDEN RESTAURANT 5500 OLYMPIC DR GIG HARBOR WA 98335 0000	076567	SPIRITS/BR/WN REST SERVICE BAR
3. JU, SUN WOO	KINZA TERIYAKI 6820 KIMBALL DR A-1 GIG HARBOR WA 98335 0000	077031	BEER/WINE REST - BEER/WINE
4. SPIRO'S BELLA NOTTE', INC.	SPIRO'S BELLA NOTTE' PIZZA & PASTA 3108 HARBORVIEW DR GIG HARBOR WA 98335 0000	363055	SPIRITS/BR/WN REST LOUNGE + OFF-PREMISES SALE WINE



**Business of the City Council  
City of Gig Harbor, WA**

**Subject:** Agreement Tacoma-Pierce County Health Department – 2012 Natural Yard Care Workshops

**Proposed Council Action:** Authorize the Mayor to execute the Interagency Agreement Tacoma-Pierce County Health Department – 2012 Natural Yard Care for the amount of \$5,000.

**Dept. Origin:** Public Works/Engineering  
**Prepared by:** Wayne Matthews *WMM 6/4/12*  
 Engineering Technician  
**For Agenda of:** June 11, 2012  
**Exhibits:** Tacoma-Pierce County Health Department Interagency Agreement

	Initial & Date
Concurred by Mayor:	<i>CLH 6/6/12</i>
Approved by City Administrator:	<i>R - 6/6/12</i>
Approved as to form by City Atty:	<i>via e-mail 6/4/12</i>
Approved by Finance Director:	<i>CR 6/4/12</i>
Approved by Department Head:	<i>6/4/2012</i>

<b>Expenditure Required</b>	\$5,000 (Grant Funded)	<b>Amount Budgeted</b> <i>\$5,000</i>	<del>See Fiscal Below</del>	<b>Appropriation Required</b>	0
-----------------------------	---------------------------	---------------------------------------	-----------------------------	-------------------------------	---

**INFORMATION/BACKGROUND**

One of the outreach requirements under the City’s current NPDES permit is for the City to provide an active public education and outreach component. The City has offered Natural Yard Care Workshops to the public over the past three years. The workshops have been well attended, reaching up to over 60 at each workshop. The attached Interagency Agreement with Tacoma-Pierce County Health Department (TPCHD) will continue these workshops.

The Gig Harbor workshops promote environmental stewardship and sustainable maintenance practices for yards and landscapes, resulting in minimizing potential impacts upon surface water resources. The workshops promote the five steps to natural yard care directly to Gig Harbor homeowners. The Natural Yard Care Workshops have specialist guest speakers with power point presentations and hands-on activities.

**FISCAL CONSIDERATION**

The Natural Yard Care Workshops project cost of \$5,000 are 100% reimbursable by the Gig Harbor Stormwater Capacity grant from Ecology.

**BOARD OR COMMITTEE RECOMMENDATION**

The Interagency Agreement Tacoma-Pierce County Health Department – Natural Yard Care - 2011 was reviewed at the Operations and Public Projects Committee Meeting in February of last year. Committee members present were supportive of continuing these workshops with the understanding that this expense would be fully reimbursed by the Ecology Stormwater Capacity grant.

**RECOMMENDATION/MOTION**

Move to: Authorize the execution of the Interagency Agreement Tacoma-Pierce County Health Department – 2012 Natural Yard Care for the amount of \$5,000.

## Interagency Agreement Tacoma-Pierce County Health Department - City of Gig Harbor *Natural Yard Care – 2012*

---

The City of Gig Harbor seeks to reduce pollutants in and the impact of stormwater to local surface water bodies through public education as directed by its National Pollution Discharge Elimination System (NPDES) permit. The goal of this project is to increase adoption of natural yard care practices in Gig Harbor through education and outreach efforts in 2012. This approach will complement other existing and planned efforts and will result in the adoption of natural yard care practices by targeted residential. Results will be accessed via a project-end report.

The Tacoma-Pierce County Health Department (Health Department) shares an interest in reducing pollutant discharges to the environment, minimizing potential impacts upon surface water resources, and seeks to safeguard and enhance the health of communities in Pierce County.

The City of Gig Harbor and the Health Department have determined that it is mutually beneficial that the Health Department provide to the City certain services in 2012, as described in this agreement.

The Health Department will partner with the City of Gig Harbor to produce homeowner-targeted workshops promoting environmental stewardship and sustainable maintenance practices for yards and landscapes. The Health Department will promote the “Five Steps to Natural Yard Care” approach: *Build healthy soil, Plant right for your site, Practice smart watering, Think twice before using pesticides, and Practice natural lawn care*, as described below:

- Build healthy soil** - Covers the basic components of soil and benefits of adding organic matter. Talk will include instruction about backyard composting emphasizing troubleshooting and the benefits of recycling nutrients on-site.
- Plant right for your site** - Practical landscape design for matching plants with the proper environmental conditions to encourage healthy plants and reduce reliance on pesticide use.
- Practice smart watering** - Covers water conservation by encouraging irrigation efficiency through a variety of techniques, grouping plants with like water needs together, and encouraging deep, infrequent watering for plant health.
- Think twice before using pesticides** - Emphasizes proper plant placement and plant health as the first step in avoiding pest incidence; cover cultural, mechanical, and biological control techniques before using less-toxic pesticides as a last resort; the importance of and how to read a pesticide label and emphasizing proper usage and disposal of pesticide products.
- Natural lawn care** - Covers differences among grass species common to the area, ‘grass-cycling’ for organic waste diversion and nutrient cycling, proper irrigation and fertilization practices, and emphasizing techniques to reduce weed incidence and pesticide usage.

The workshop program brings these messages directly to City of Gig Harbor homeowners via a series of three lectures and hands-on demonstrations. Follow-up surveys will be conducted to assess changes in participant behaviors and practices occurring as a result of the program.

### GOALS

Increase participants' adoption of natural yard care practices, including:

- reduced inappropriate use of pesticides and fertilizers to reduce potential impacts to surface/storm water
- reduced generation of organic waste/increased backyard composting
- increased use of slow-release fertilizers
- reduced water use

### ACTIVITIES

The Health Department proposes a program of one Natural Yard Care Workshop series to be scheduled in coordination with the City of Gig Harbor and conducted in the fall, 2012, comprised of the following specific elements:

- Three community evening meetings covering the five steps listed above, as well as information pertinent to preserving stormwater and surface water quality in Gig Harbor. Responsible party: **Health Department**
- Advertising via inserts in Gig Harbor utility bills during summer, 2012. Responsible party: **Coordinated by City of Gig Harbor with assistance from Health Department**
- Telephone follow-up to remind pre-registered residents of the upcoming meetings. Responsible party: **Health Department**
- Distribution of printed materials to each attendee covering the topics in the five steps to Natural Yard Care and conduct pre-workshop/baseline yard care practices survey. Responsible party: **Health Department**

### OUTPUTS

- At least 40 Gig Harbor residents are trained in natural yard care practices via the Natural Yard Care workshop series.
- Report summarizing participation, the survey instrument and resulting data, an assessment of changes in behaviors and practices, and conclusions regarding the effectiveness of this approach.

### OUTCOMES

Workshop participants will show increased adoption of natural yard care practices and resulting progress toward the task goals, as listed above. Outcomes will be assessed via a survey of workshop participants approximately 3 months following the workshops, as described above.

### **PROPOSED SCHEDULE AND DELIVERABLES**

- July –August 2012- Workshop advertising including City of Gig Harbor newsletter; direct mail invitations to utility customers; inclusion in City of Gig Harbor website and other city-sponsored advertising means.
- September, 6, 13, and 20, 2012 -- Conduct NYC workshops series at City of Gig Harbor City Civic Center. Conduct post-workshop evaluation survey.
- December 2012- Conduct within 6 to 9 month post-workshop follow-up survey with workshop participants. (Six to nine months will allow participants to utilize knowledge learned over the spring of 2013- survey results will be forwarded to the City of Gig Harbor.)
- December, 2012- Summary report detailing advertising methods, attendance records, topics discussed at workshops, qualitative workshop feedback from attendees, workshop survey analyses. Provide City of Gig Harbor with copies of primary workshop materials and workshop surveys, and associated outreach/education materials.

### **PROJECT COST & BILLING**

In consideration for the services described herein the City of Gig Harbor shall pay the Health Department a total of **\$5,000**. The Health Department shall bill not more frequently than monthly or less frequently than quarterly unless otherwise agreed to by the City and the Health Department. Payment shall be made within 30 days of receipt of an invoice from the Health Department. Invoices from the Health Department shall be accompanied by progress reports describing activities and results for that billing period.



**PROJECT CONTACTS**

City of Gig Harbor  
Wayne Matthews  
3510 Grandview St.  
Gig Harbor, WA 98335  
Phone: 253-853-2646  
Fax: 253-853-7597  
matthewsw@cityofgigharbor.net

Tacoma-Pierce County Health Department  
Geoff Rinehart/John Sherman  
3629 South D St., MS: 1049  
Tacoma, WA 98418  
Phone: 253-798-4587/253-798-6523  
Fax: 253-798-6498  
grinehart@tpchd.org/jsherman@tpchd.org

\_\_\_\_\_  
Date of Signature

\_\_\_\_\_  
Date of Signature

\_\_\_\_\_  
Authorized Signature

\_\_\_\_\_  
Authorized **Department** Signature

\_\_\_\_\_  
**Printed Name**

\_\_\_\_\_  
**Printed Name**

City of Gig Harbor  
3510 Grandview Drive  
Gig Harbor, WA 98335

Tacoma-Pierce County Health  
Department  
3629 South D Street  
Tacoma, WA 98418-6813

\_\_\_\_\_  
**Contractor** Address

\_\_\_\_\_  
**Department** Address

\_\_\_\_\_  
\$5,000

Dollar Amount for this **Agreement**



Business of the City Council  
City of Gig Harbor, WA

**Subject:** Sehmel Drive / Burnham Drive Right Turn Lane Addition Project - Consultant Services Contract / H.W. Lochner, Inc.

**Dept. Origin:** Public Works/Engineering

**Prepared by:** Stephen Misiurak, P.E.  
City Engineer

**Proposed Council Action:** Approve and authorize the Mayor to execute the Consultant Services Contract with H.W. Lochner, Inc. in the not to exceed amount of Fourteen Thousand Eight Hundred Sixty-seven Dollars and Fifty-three Cents (\$14,867.53)

**For Agenda of:** June 11, 2012

**Exhibits:** Pierce County Ordinance, Consultant Services Contract, Scope of Work, Estimated Cost and Fees

Initial & Date

**Concurred by Mayor:**

*CLH 6/6/12*

**Approved by City Administrator:**

*R 6/6/12*

**Approved as to form by City Atty:**

*email 6/4/12*

**Approved by Finance Director:**

*DP 6/5*

**Approved by Department Head:**

*6/5/12*

Expenditure Required	\$14,867.53	Amount Budgeted	\$210,000.00	Appropriation Required	\$ 0
----------------------	-------------	-----------------	--------------	------------------------	------

**INFORMATION / BACKGROUND**

This contract provides for the final revisions to the final bid ready plans and specifications, and minimal construction services for the right-turn improvement project.

**FISCAL CONSIDERATION**

Funding for this project is provided by HBZ Funds, which was recently adopted by Pierce County ordinance.

The following tables show the current available funding sources to fully fund the project and the final engineer's probable cost of construction and other related City incurred costs:

**Project Funding**

Pierce County Ordinance R2012-xx – Exhibit	
HBZ Projects (Sehmel Avenue – Right Turn lane at Burnham / SR 16)	\$210,000.00
<b>Total =</b>	<b>\$210,000.00</b>



**PROPOSED ORDINANCE OR RESOLUTION**  
**DATA SHEET**

**Proposal No.**  
  
To be Inserted by the Clerk of the Council

Pierce County

Direct Questions to the Clerk of the Council at (253) 798-7777.

<p><b>1. Date Prepared:</b> 3/23/12</p>	<p><b>Signature Block</b></p>									
<p><b>2. Date Received by Council Clerk:</b></p>	<p><b>5. County Executive</b></p>	<p><b>8. Prime Sponsor(s)</b></p>								
<p><b>3. Drafted by (Name, Dept., Phone Number)</b> Brian Stacy, x7257</p>	<p><b>6. Department Head</b> <i>[Signature]</i></p>									
<p><b>4. Council Staff Contact (Name and Phone Number):</b></p>	<p><b>7. Budget and Finance</b> (if appropriate - see instructions)</p>	<p><b>9. Risk Management</b> (if appropriate - see instructions)</p>								
<p><b>11.</b> <input checked="" type="checkbox"/> Effective Date Desired: <b>ASAP</b>  <input type="checkbox"/> Final Hearing Date Desired:  <input type="checkbox"/> A Committee Hearing Date is Planned.                  Date:                  Committee Name:                  Explanation:</p>		<p><b>10.</b> Assigned Deputy Prosecuting Attorney (Name and Phone Number)</p> <hr/> <p><b>12.</b> Is This an Official Control? See Instructions.  <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>								
<p><b>13. Complete Title of Ordinance or Resolution:</b>   <b>A Resolution of the Pierce County Council Authorizing the Executive to Execute an Amendment to the Interlocal Agreement with the City of Gig Harbor Regarding the Public Improvements Financed by the Gig Harbor and Pierce County Hospital Benefit Zone.</b></p>										
<p><b>14. List Code Changes Proposed:</b>                  1. New Chapter/Section:                  2. Amends:                  3. Repeals:                  4. None Proposed: <input checked="" type="checkbox"/></p>	<p><b>15. List Special Advertising or Posting Requirements, Include Code Citations:</b>   <b>Post at least 20 days prior to the hearing at each terminus and advertise 2 consecutive weeks in the official newspaper--RCW 36.87.050.</b></p>									
<p><b>16. Summary and Intent of This Legislation:</b>  <b>The purpose is to modify the list and description of the Public Improvements to be financed in whole or in part by hospital benefit zone financing.</b>                   What Prompted This Legislation? <b>A request from the City of Gig Harbor as a result of modifications to their project list.</b></p>										
<p><b>17. Source Documents:</b> List All Materials Included as Part of the Official Record, or as Backup Information. Use Additional Pages, if Necessary.</p> <table border="0"> <tr> <td>1. Ordinance No. 2006-95</td> <td>5.</td> </tr> <tr> <td>2.</td> <td>6.</td> </tr> <tr> <td>3.</td> <td>7.</td> </tr> <tr> <td>4.</td> <td>8.</td> </tr> </table>			1. Ordinance No. 2006-95	5.	2.	6.	3.	7.	4.	8.
1. Ordinance No. 2006-95	5.									
2.	6.									
3.	7.									
4.	8.									

Review of final amendments by Council staff: \_\_\_\_\_ Date: \_\_\_\_\_  
 Clerk sent copy of Data Sheet to:  Executive  Drafter of Proposal

<p><b>18. Electronic Copy of Proposal and Exhibits Attached as:</b> <input type="checkbox"/> Floppy Disk, <input type="checkbox"/> CD, <input checked="" type="checkbox"/> Email to Clerk, <input type="checkbox"/> in Council Directory.</p> <p>Filenames: Ord/Res: Exhibit A: Exhibit B: Exhibit C: More Filenames:</p>	<p><b>19. Electronic Copy of Interested Parties List (IPL) Attached:</b> <input type="checkbox"/> Floppy Disk, <input type="checkbox"/> CD, <input checked="" type="checkbox"/> Email to Clerk, <input type="checkbox"/> In Council Directory. Interested Parties List Filename(s):</p> <p><b>20. Select Subject Area from the Drop-Down Menu Below. Click on the Field to See Entire List. To Choose a Second Subject Area, Use the Second Drop-Down List:</b> - None - - None -</p>
<p><b>21. Distribution List for Sending Final Signed Copy of Proposal:</b> Pat McCarthy, County Executive Pierce County Library Municipal Research and Services Center Law Library State Examiner Susan Long, Code Revisor Linda Medley, Council Legal Clerk (Ordinances amending the Code) Council Record Book <b>Assessor-Treasurer, Seg. Dept.</b> <b>Public Works and Utilities</b> <b>Right-of-Way</b> <b>Environmental Services</b> <b>Transportation Planning and Programming</b> <b>Traffic Division</b> <b>Maintenance Division</b></p>	

Project Expenditures

(\*)Estimated to nearest thousand \$

2012 Project Budget Estimate:	
Design PS&E package (H.W. Lochner Inc.) year 2010	\$12,271.28
Construction Management Services (H.W. Lochner Inc.)	\$14,867.53
Construction	\$155,000.00
Staff Project Support	\$20,000.00
Contingency	\$7,861.19
<b>Total =</b>	<b>\$210,000.00</b>

**BOARD OR COMMITTEE RECOMMENDATION**

This project was discussed at the March 25, 2010 Operations Committee with consensus to move forward on this project.

**RECOMMENDATION / MOTION**

Approve and authorize the Mayor to execute the Consultant Services Contract with H.W. Lochner, Inc. in the not to exceed amount of Fourteen Thousand Eight Hundred Sixty-seven Dollars and Fifty-three Cents (\$14,867.53).

22. Fiscal Note. The "totals" cells in this table are automatically calculated for you. Use whole numbers, no decimals, for dollar amounts. Use the **Comments** sections for any explanations.  
 This Proposal has No or De-minimus Fiscal Impact.

**Comments:**

EXPENDITURES	Current Year	Full Year 1	Full Year 2	Full Years (3-5) Combined	TOTALS
Program 1					
Operating Costs					\$0
Capital Costs					\$0
<b>Total Program 1</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
Number of FTE positions (annual basis)					
Program 2					
Operating Costs					\$0
Capital Costs					\$0
<b>Total Program 2</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
Number of FTE positions (annual basis)					
Program 3					
Operating Costs					\$0
Capital Costs					\$0
<b>Total Program 3</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
Number of FTE positions (annual basis)					
<b>TOTAL EXPENDITURES</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>Comments:</b> Costs: Administrative costs (processing, advertising, posting, field review, public hearings, recording, etc.)					

REVENUE SOURCES	Current Year	Full Year 1	Full Year 2	Full Years (3-5) Combined	TOTALS
1.					\$0
2.					\$0
3.					\$0
4.					\$0
<b>TOTAL REVENUES</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>Comments:</b> Petitioner will pay administrative costs.					

Fiscal Note Prepared by: **Brian Stacy, PW&U** Date Prepared: **3/23/12**

Sponsored by: Councilmember  
Requested by: Pierce County Council

## RESOLUTION NO. R2012-

### **A Resolution of the Pierce County Council Authorizing the Executive to Execute an Amendment to the Interlocal Agreement with the City of Gig Harbor Regarding the Public Improvements Financed by the Gig Harbor and Pierce County Hospital Benefit Zone.**

**Whereas**, the Washington State Legislature in its 2006 Regular Session approved SHB 2670, as Chapter 111, Laws of 2006 ("the Act"), authorizing the formation of hospital benefit zones for the purpose of undertaking public improvements in areas that will benefit from the private development the areas arising as a result of the public improvements; and

**Whereas**, the Franciscan Health System, a Washington nonprofit corporation, received a certificate of need for the construction of a Hospital on June 15, 2006, and did construct St. Anthony's Hospital at 11567 Canterwood Boulevard NW, and Franciscan; and

**Whereas**, a hearing was held by the Gig Harbor City Council on July 24, 2006, after notice as provided by law, and after discussion of the proposed public improvements and the proposed boundaries of the benefit zone and due consideration thereof and of all objections thereto, the Council of the City approved Ordinance No. 1052 establishing the Gig Harbor Benefit Zone; and

**Whereas**, a hearing was held by the Pierce County Council on September 26, 2006, after notice as provided by law, and after discussion of the proposed public improvements and the proposed boundaries of the benefit zone and due consideration thereof and of all objections thereto, the Pierce County Council approved Ordinance No. 2006-95 designating a benefit zone in coordination with the Hospital Benefit Zone formed by the City of Gig Harbor on July 24, 2006; and

**Whereas**, the County's participation in the Gig Harbor Benefit Zone is limited solely to the approval of the re-direction of the State's portion of certain sales and excise taxes authorized under the Act to the Hospital Benefit Zone; and



**Whereas**, the participation of the County as a taxing authority that levies sales and excise taxes under Revised Code of Washington (RCW) Chapter 82.14 is conditioned upon the County's recognition of the benefit of the proposed public improvements and resulting private investment within the Hospital Benefit Zone and upon the County Council's approval of such participation; and

**Whereas**, September 26, 2006, the Council passed Ordinance No. 2006-95 thereby designating a Hospital Benefit Zone in partnership with the City of Gig Harbor for the purpose of financing the public improvements identified in Exhibit A thereto and finding that said public improvements were expected to encourage private development within the Benefit Zone and to support the development of St. Anthony's hospital; and

**Whereas**, Chapter 39.34 RCW authorizes public agencies to enter into agreements for cooperative action; and

**Whereas**, Pierce County and the City of Gig Harbor entered into an Interlocal Agreement dated October 1, 2006, to carry out the purposes of the Hospital Benefit Zone designated by the jurisdictions as authorized by statute; and

**Whereas**, said Interlocal Agreement included an itemized list and description of the public improvements intended to be financed in whole or in part using hospital benefit zone financing; and

**Whereas**, Section 10. of said Interlocal Agreement provides that the Agreement may not be effectively amended, changed, modified or altered, except by an instrument in writing duly executed by the County and the City; and

**Whereas**, Section 1. of said Interlocal Agreement provides that the City shall not amend its Ordinance No. 1052, creating the Hospital Benefit Zone within the jurisdiction of the City of Gig Harbor and identifying the public improvements to be financed thereby, without the prior written consent of the County so long as the Agreement is in effect and the County is performing its obligations thereunder; and

**Whereas**, the City of Gig Harbor desires to modify the list and description of the public improvements which list has been incorporated into both the City's and the County's ordinances creating the Hospital Benefit Zone as well as into the Interlocal Agreement between the two jurisdictions; **Now, Therefore,**

**BE IT RESOLVED by the Council of Pierce County:**





Section 1. The County Executive is hereby authorized to execute an amendment to the Interlocal Agreement between Pierce County and the City of Gig Harbor for the purpose of modifying the list and description of the Public Improvements to be financed in whole or in part by hospital benefit zone financing, said amendment being the same or substantially the same as that shown on Exhibit A, which is attached hereto and incorporated herein by reference.

Section 2. Pierce County hereby acknowledges that the Interlocal Agreement between Pierce County and the City of Gig Harbor regarding the Hospital Benefit Zone is currently in effect and the County is performing its obligations thereunder. The County hereby consents to the amendment of Gig Harbor's Ordinance No. 1052 for the purpose of modifying the list and description of the Public Improvements.

**ADOPTED** this \_\_\_\_\_ day of \_\_\_\_\_, 2012.

ATTEST:

**PIERCE COUNTY COUNCIL**  
Pierce County, Washington

\_\_\_\_\_  
**Denise D. Johnson**  
Clerk of the Council

\_\_\_\_\_  
**Joyce McDonald**  
Council Chair

n:\research\draftprop\sl draft proposals\hbz ila res.doc



Exhibit A to Resolution No. R2012-

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39

**City of Gig Harbor  
Hospital Benefit Zone  
Proposed 30-Year Project List**

**Likely Local Match Projects**

Burnham Interchange Expansion 2—8-2012	\$8,049,000
Vernhardsen Street Upgrades	1,000,000
Cushman Trail Contribution – 96th to Borgen	650,000
Harborview & Stinson Watermains	1,283,000
Well 11 (Skansie)	1,500,000
Well 9 (Gig Harbor North)	4,000,000
Woodworth Watermain	500,000
Lift Station 1	4,000,000
Lift Station 4	3,000,000
Lift Station 12	4,000,000
Lift Station 13	4,000,000
WWTP Outfall	3,000,000
WWTP Expansion I	5,000,000
WWTP Expansion II	3,000,000
Harbor Hill Park Land Acquisition	2,500,000
City Park at Crescent Creek	200,000
Other Public Infrastructure Improvements (Transp., Storm, Sewer, and Water)	
Harbor Hill Multi Family I	2,000,000
Harbor Hill Multi Family II	2,500,000
Harbor Hill Village Center	500,000
Harbor Hill Single Family Residential	3,500,000
Bujacich NW Industrial	2,000,000
Harbor Winds	500,000
Smith Gravel Pit Development	500,000
96th Street Gravel Pit Development	500,000
McCormick Creek	<u>3,000,000</u>
<b>Total</b>	<b>\$60,682,000</b>

**HBZ-Funded Projects**

1		
2		
3	Burnham Interchange Expansion 2020-2030	TBD
4	Harbor Hill Drive Extension	\$15,000,000
5	BB16 Large Roundabout Gap Metering	190,000
6	SR302/Purdy Drive Intersection and Corridor Study	1,000,000
7	Arterial Overlays and Pavement Maintenance within the HBZ	5,000,000
8	Rosedale Sidewalk	450,000
9	Cushman Trail Phase 3 (96th to Borgen)	200,000
10	Cushman Trail Phase 4-a (Borgen to St. Anthony's Hospital)	400,000
11	Cushman Trail Phase 4-b (Borgen to Purdy)	1,000,000 to 2,000,000
12	Sehmel Avenue – Right-Turn Lane at Burnham / SR 16	210,000
13	Burnham Drive Bridge – (SR 16) Reconf to 4-lanes and	
14	Ped Bridge at BB16	18,130,000
15	Burnham Drive Widening	3,500,000
16	Skansie / Rosedale Intersection Improvements (Turn lane)	275,000
17	Vernhardsen St Improvements (storm, roadway, bicycle & peds)	2,650,000
18	Harborview Dr Ped & Pkg Improvements	
19	(Stinson to N. Harborview)	1,500,000
20	Harborview Dr Ped & Pkg Improvements (Rosedale to Stinson)	950,000
21	Stinson / Rosedale Intersection Imp (Turn lanes to WB Rosedale)	280,000
22	Twawelkax Trail Construction & Trailhead	250,000
23	Austin St. & Harborview Drive Intersection Improvements /	
24	Austin Street widening and/or reconstruction /	
25	North Harborview Drive Bridge over Donkey Creek	780,000 to 1,780,000
26	Downtown Parking Lot (no location identified, but within the HBZ)	200,000
27	GH North – 7 Acre Development	1,950,000
28	Wheeler Street – End Pocket Park	80,000
29	Crescent Creek Park and Rohwer Property – Park Development	750,000
30	Masonic Building – Property Acquisition (PROS plan, p.49)	350,000
31	Donkey Creek Corridor Conservation Acquisitions	
32	(PROS plan, pg. 48)	1,500,000
33	Harbor Hill Drive Watermain Extension	950,000
34	Bujacich Lift Station – (17 A) and Force Main	2,150,000
35	PW Shop Facility Bulk Fuel Storage	27,000
36	PW Shop Facility Expansion	400,000
37	<b>Total</b>	<b>\$61,122,000</b>
38		



**PROFESSIONAL SERVICES CONTRACT  
(Architects, Engineers, Land Surveyors, Landscape Architects)  
BETWEEN THE CITY OF GIG HARBOR AND  
H.W. LOCHNER, INC.**

---

THIS AGREEMENT is made by and between the City of Gig Harbor, a Washington municipal corporation (the "City"), and H.W. Lochner, Inc., a corporation organized under the laws of the State of Washington (the "Consultant").

**RECITALS**

WHEREAS, the City is presently engaged in finalizing the Plans, Specifications, and Estimate for bidding the Sehmel Right-turn Lane Project and desires that the Consultant perform services necessary to provide the following consultation services; and

WHEREAS, the Consultant agrees to perform the services more specifically described in the Scope of Work including any addenda thereto as of the effective date of this Agreement, all of which are attached hereto as **Exhibit A – Scope of Work**, and are incorporated by this reference as if fully set forth herein;

NOW, THEREFORE, in consideration of the mutual promises set forth herein, it is agreed by and between the parties as follows:

**TERMS**

**1. Retention of Consultant - Scope of Work.** The City hereby retains the Consultant to provide professional services as defined in this Agreement and as necessary to accomplish the scope of work attached hereto as **Exhibit A** and incorporated herein by this reference as if set forth in full. The Consultant shall furnish all services, labor and related equipment necessary to conduct and complete the work, except as specifically noted otherwise in this Agreement.

**2. Payment.**

A. The City shall pay the Consultant an amount based on time and materials, not to exceed Fourteen Thousand Eight Hundred Sixty-seven Dollars and Fifty-three Cents (14,867.53) for the services described in Section 1 herein. This is the maximum amount to be paid under this Agreement for the work described in **Exhibit A**, and shall not be exceeded without the prior written authorization of the City in the form of a negotiated and executed supplemental agreement. The Consultant's staff and billing rates shall be as described in **Exhibit B – Schedule of Rates and Estimated Hours**. The Consultant shall not bill for Consultant's staff not identified or listed in **Exhibit B** or bill at rates in excess of the hourly rates shown in **Exhibit B**, unless the parties agree to a modification of this Contract, pursuant to Section 17 herein.

B. The Consultant shall submit monthly invoices to the City after such services have been performed, and a final bill upon completion of all the services described in this

Agreement. The City shall pay the full amount of an invoice within forty-five (45) days of receipt. If the City objects to all or any portion of any invoice, it shall so notify the Consultant of the same within fifteen (15) days from the date of receipt and shall pay that portion of the invoice not in dispute, and the parties shall immediately make every effort to settle the disputed portion.

**3. Relationship of Parties.** The parties intend that an independent contractor-client relationship will be created by this Agreement. As the Consultant is customarily engaged in an independently established trade which encompasses the specific service provided to the City hereunder, no agent, employee, representative or subconsultant of the Consultant shall be or shall be deemed to be the employee, agent, representative or subconsultant of the City. In the performance of the work, the Consultant is an independent contractor with the ability to control and direct the performance and details of the work, the City being interested only in the results obtained under this Agreement. None of the benefits provided by the City to its employees, including, but not limited to, compensation, insurance, and unemployment insurance are available from the City to the employees, agents, representatives, or subconsultants of the Consultant. The Consultant will be solely and entirely responsible for its acts and for the acts of its agents, employees, representatives and subconsultants during the performance of this Agreement. The City may, during the term of this Agreement, engage other independent contractors to perform the same or similar work that the Consultant performs hereunder.

**4. Duration of Work.** The City and the Consultant agree that work will begin on the tasks described in **Exhibit A** immediately upon execution of this Agreement. The parties agree that the work described in **Exhibit A** shall be completed by October 31, 2012; provided however, that additional time shall be granted by the City for excusable days or extra work.

**5. Termination.** The City reserves the right to terminate this Agreement at any time upon ten (10) days written notice to the Consultant. Any such notice shall be given to the address specified above. In the event that this Agreement is terminated by the City other than for fault on the part of the Consultant, a final payment shall be made to the Consultant for all services performed. No payment shall be made for any work completed after ten (10) days following receipt by the Consultant of the notice to terminate. In the event that services of the Consultant are terminated by the City for fault on part of the Consultant, the amount to be paid shall be determined by the City with consideration given to the actual cost incurred by the Consultant in performing the work to the date of termination, the amount of work originally required which would satisfactorily complete it to date of termination, whether that work is in a form or type which is usable to the City at the time of termination, the cost of the City of employing another firm to complete the work required, and the time which may be required to do so.

**6. Non-Discrimination.** The Consultant agrees not to discriminate against any customer, employee or applicant for employment, subcontractor, supplier or materialman, because of race, color, creed, religion, national origin, marital status, sex, sexual orientation, age or handicap, except for a bona fide occupational qualification. The Consultant understands that if it violates this provision, this Agreement may be terminated

by the City and that the Consultant may be barred from performing any services for the City now or in the future.

**7. Indemnification.**

A. The Consultant shall defend, indemnify and hold the City, its officers, officials, employees and volunteers harmless from any and all claims, injuries, damages, losses or suits, including attorney's fees, arising out of or resulting from the acts, errors or omissions of the Consultant in performance of this Agreement, except for injuries and damages caused by the sole negligence of the City.

B. Should a court of competent jurisdiction determine that this Agreement is subject to RCW 4.24.115, then in the event of liability for damages arising out of bodily injury to persons or damages to property caused by or resulting from the concurrent negligence of the Consultant and the City, its officers, officials, employees or volunteers, the Consultant's liability hereunder shall be only to the extent of the Consultant's negligence. It is further specifically and expressly understood that the indemnification provided herein constitutes the Consultant's waiver of immunity under Title 51 RCW, solely for the purposes of this indemnification. This waiver has been mutually negotiated by the parties.

C. The provisions of this section shall survive the expiration or termination of this Agreement.

**8. Insurance.**

A. The Consultant shall procure and maintain for the duration of the Agreement, insurance against claims for injuries to persons or damage to property which may arise from or in connection with the Consultant's own work including the work of the Consultant's agents, representatives, employees, subconsultants or subcontractors.

B. Before beginning work on the project described in this Agreement, the Consultant shall provide evidence, in the form of a Certificate of Insurance, of the following insurance coverage and limits (at a minimum):

1. Business auto coverage for any auto no less than a \$1,000,000 each accident limit, and
2. Commercial General Liability insurance no less than \$1,000,000 per occurrence with a \$2,000,000 aggregate. Coverage shall include, but is not limited to, contractual liability, products and completed operations, property damage, and employers liability, and
3. Professional Liability insurance with no less than \$1,000,000 per occurrence. All policies and coverages shall be on an occurrence basis by an 'A' rated company licensed to conduct business in the State of Washington.

C. The Consultant is responsible for the payment of any deductible or self-insured retention that is required by any of the Consultant's insurance. If the City is

required to contribute to the deductible under any of the Consultant's insurance policies, the Contractor shall reimburse the City the full amount of the deductible within 10 working days of the City's deductible payment.

D. The City of Gig Harbor shall be named as an additional insured on the Consultant's commercial general liability policy. This additional insured endorsement shall be included with evidence of insurance in the form of a Certificate of Insurance for coverage necessary in Section B. The City reserves the right to receive a certified and complete copy of all of the Consultant's insurance policies upon request.

E. Under this Agreement, the Consultant's insurance shall be considered primary in the event of a loss, damage or suit. The City's own comprehensive general liability policy will be considered excess coverage with respect to defense and indemnity of the City only and no other party. Additionally, the Consultant's commercial general liability policy must provide cross-liability coverage as could be achieved under a standard ISO separation of insured's clause.

F. The Consultant shall request from his insurer a modification of the ACORD certificate to include language that prior written notification will be given to the City of Gig Harbor at least 30 days in advance of any cancellation, suspension or material change in the Consultant's coverage.

**9. Ownership and Use of Work Product.** Any and all documents, drawings, reports, and other work product produced by the Consultant under this Agreement shall become the property of the City upon payment of the Consultant's fees and charges therefore. The City shall have the complete right to use and re-use such work product in any manner deemed appropriate by the City, provided, that use on any project other than that for which the work product is prepared shall be at the City's risk unless such use is agreed to by the Consultant.

**10. City's Right of Inspection.** Even though the Consultant is an independent contractor with the authority to control and direct the performance and details of the work authorized under this Agreement, the work must meet the approval of the City and shall be subject to the City's general right of inspection to secure the satisfactory completion thereof. The Consultant agrees to comply with all federal, state, and municipal laws, rules, and regulations that are now effective or become applicable within the terms of this Agreement to the Consultant's business, equipment, and personnel engaged in operations covered by this Agreement or accruing out of the performance of such operations.

**11. Records.** The Consultant shall keep all records related to this Agreement for a period of three years following completion of the work for which the Consultant is retained. The Consultant shall permit any authorized representative of the City, and any person authorized by the City for audit purposes, to inspect such records at all reasonable times during regular business hours of the Consultant. Upon request, the Consultant will provide the City with reproducible copies of any such records. The copies will be provided without cost if required to substantiate any billing of the Consultant, but the Consultant may charge the City for copies requested for any other purpose.

**12. Work Performed at the Consultant's Risk.** The Consultant shall take all precautions necessary and shall be responsible for the safety of its employees, agents, and subconsultants in the performance of the work hereunder and shall utilize all protection necessary for that purpose. All work shall be done at the Consultant's own risk, and the Consultant shall be responsible for any loss of or damage to materials, tools, or other articles used or held by the Consultant for use in connection with the work.

**13. Non-Waiver of Breach.** The failure of the City to insist upon strict performance of any of the covenants and agreements contained herein, or to exercise any option herein conferred in one or more instances shall not be construed to be a waiver or relinquishment of said covenants, agreements, or options, and the same shall be and remain in full force and effect.

**14. Resolution of Disputes and Governing Law.**

A. Should any dispute, misunderstanding, or conflict arise as to the terms and conditions contained in this Agreement, the matter shall first be referred to the City Engineer or Director of Operations and the City shall determine the term or provision's true intent or meaning. The City Engineer or Director of Operations shall also decide all questions which may arise between the parties relative to the actual services provided or to the sufficiency of the performance hereunder.

B. If any dispute arises between the City and the Consultant under any of the provisions of this Agreement which cannot be resolved by the City Engineer or Director of Operations determination in a reasonable time, or if the Consultant does not agree with the City's decision on the disputed matter, jurisdiction of any resulting litigation shall be filed in Pierce County Superior Court, Pierce County, Washington. This Agreement shall be governed by and construed in accordance with the laws of the State of Washington. The prevailing party in any such litigation shall be entitled to recover its costs, including reasonable attorney's fees, in addition to any other award.

**15. Written Notice.** All notices required to be given by either party to the other under this Agreement shall be in writing and shall be given in person or by mail to the addresses set forth below. Notice by mail shall be deemed given as of the date the same is deposited in the United States mail, postage prepaid, addressed as provided in this paragraph.

CONSULTANT:  
H.W. Lochner, Inc.  
ATTN: Alan King, P.E.  
400 108<sup>th</sup> Ave NE, Suite 401  
Bellevue, WA 98004

City of Gig Harbor  
ATTN: Stephen Misiurak, P.E.  
3510 Grandview Street  
Gig Harbor, WA 98335  
(253) 851-6170

**16. Subcontracting or Assignment.** The Consultant may not assign or subcontract any portion of the services to be provided under this Agreement without the express written consent of the City. If applicable, any subconsultants approved by the City at the outset of this Agreement are named on **Exhibit C** attached hereto and incorporated herein by this reference as if set forth in full.



**17. Entire Agreement.** This Agreement represents the entire integrated agreement between the City and the Consultant, superseding all prior negotiations, representations or agreements, written or oral. This Agreement may be modified, amended, or added to, only by written instrument properly signed by both parties hereto.

IN WITNESS WHEREOF, the parties have executed this Agreement this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

CONSULTANT

CITY OF GIG HARBOR

By: \_\_\_\_\_  
Its: \_\_\_\_\_

By: \_\_\_\_\_  
Mayor Charles L. Hunter

ATTEST:

\_\_\_\_\_  
City Clerk

APPROVED AS TO FORM:

\_\_\_\_\_  
City Attorney



## Sehmel Drive Turn Lane Construction Assistance

### SCOPE OF SERVICES EXHIBIT A

The City of Gig Harbor is ready to proceed with construction of the previously designed Sehmel Drive Right Turn lane to Borgen Boulevard. Lochner will update the PS&E and provide basic construction assistance supporting City staff.

The work is to be conducted over an approximate six-month period beginning May 1, 2012 and ending October 31, 2012

#### Project Assumptions

1. For the purposes of budgeting, the anticipated length of the project will be approximately six months, three months for design updates and bidding, and three months for construction.
2. City will provide primary construction management for the project.
3. Consultant will respond through the City for bidding questions, assuming three only.
4. Consultant will review shop drawings and submittals, assuming three only.
5. Consultant will support City inspectors with responses to questions, and no field visits are assumed. If field visits are requested by the City, additional cost will be incurred.
6. Consultant will complete as-built plans, assuming only minor changes from design plans.
7. Meetings will occur through telephone conferences.
8. Written responses may be in the form of email and PDF attachments.
9. Mileage reimbursement to Consultant will be limited to that distance between Tacoma and Gig Harbor.

#### TASK 1: Project Management

The Consultant shall be responsible for on-going management of this project in accordance with the provisions of the Agreement. On-going management will include seeing the work completed on time and within the Agreement budget. The Consultant shall:

- Provide a monthly status/progress report with monthly invoices to the City that will describe work performed by the Consultant during the current reporting period.
- Meet via telephone with the City each month during the project to review the overall project status, schedule, budget and outstanding issues. For purposes of estimating time required for this sub element, it is assumed that two meetings will be held during the project and will include preparation time.

Scope of Work

**LOCHNER**



## Sehmel Drive Turn Lane Construction Assistance

- Maintain regular contact with the City Project Manager and maintain regular coordination with City staff for this project in accordance with the provisions of the Agreement.
- Provide Quality Assurance/Quality Control program.

### Deliverables:

- Monthly Status/Progress Reports and Monthly Invoices
- QA/QC documentation will be maintained in the project files.

### TASK 2: Update Project Plans

The Consultant will update the previously approved Plans, Specifications and Estimate in accordance with City direction. The updated documents will be submitted for review by the City, with one set of additional revisions assumed.

### Deliverables:

- One PDF copy of 100% Plans, one Word copy of Specifications & on Excel copy of Estimate.
- One PDF copy of Final PS&E.
- One CD with 100% AutoCAD, complete with plot files, and xrefs.

### TASK 3: Bid and Construction Support

Under this task, the Consultant will provide bidding support and construction support by responding to City questions via email or telephone through the construction period.

Consultant will provide written responses to the City on bidding questions.

Consultant will review shop drawings and provide markups and a written response to the City.

Consultant will assist City field inspectors by providing responses, both verbal and written, to inspectors during the course of construction. Verbal responses will be documented with a written memo.

### Deliverables:

- Bid question responses (assume 3).
- Shop drawing reviews (assume 3).
- Field inspection responses (assume 6).

### TASK 4: Field Observation (Optional)

Under this task, the Consultant will provide field observation on the project. This task will occur only upon formal request of the City, documented through a written letter, delivered in PDF form followed by regular mail. No hours are currently included for this task.

---

Scope of Work

**LOCHNER**



## Sehmel Drive Turn Lane Construction Assistance

---

**Deliverables:**

- Memorandum documenting observations made during field observation (assume 5 pages).

**TASK 5: As-Built Drawings**

Under this task, the Consultant will revise the original design drawings to reflect changes that may occur in the field.

**Deliverables:**

- PDF 11x17 drawings with the revisions noted.
- AutoCAD drawings with revisions, on CD.
- (1) Set, full-size (22x34) Mylar drawings with PE stamp.

**EXHIBIT B  
SUMMARY OF PROJECT COSTS  
H. W. LOCHNER, INC.**

**Sehmel Drive Construction Management Services**

Classification	Direct Labor Cost	Labor Overhead	Fee 30%	Negotiated Rate	Total Hours	Labor Cost	Total Costs
<b>Required CM Services</b>							
Project Manager	\$ 54.68	\$ 90.06	\$ 16.40	\$ 161.15	19.0	\$ 3,061.80	
QC Manager	\$ 66.34	\$ 109.27	\$ 19.90	\$ 195.51	2.5	\$ 488.78	
Project Engineer	\$ 50.30	\$ 82.85	\$ 15.09	\$ 148.24	27.5	\$ 4,076.58	
Transp Engineer	\$ 25.00	\$ 41.18	\$ 7.50	\$ 73.68	0.0	\$ -	
CADD Technican	\$ 30.01	\$ 49.43	\$ 9.00	\$ 88.44	29.0	\$ 2,564.83	
Administration	\$ 31.88	\$ 52.51	\$ 9.56	\$ 93.95	6.0	\$ 563.72	
Firm Total Hours / Salary Costs:					84.0	\$ 10,755.71	
Labor Overhead:	164.71%						
<b>Total Labor Cost CM Services:</b>							\$ 10,755.71
<b>Optional Field Inspection Services</b>							
Project Engineer	\$ 50.30	\$ 82.85	\$ 15.09	\$ 148.24	2.0	\$ 296.48	
Transp Engineer	\$ 25.00	\$ 41.18	\$ 7.50	\$ 73.68	8.0	\$ 589.42	
Field Inspector	\$ 47.38	\$ 78.04	\$ 14.21	\$ 139.63	20.0	\$ 2,792.67	
Firm Total Hours / Salary Costs:					30.0	\$ 3,678.57	
<b>Total Labor Cost Optional Field Inspection:</b>							\$ 3,678.57
							114.0
Direct Reimbursables:							
Travel: Miles	150			\$ 0.555		\$ 83.25	
Reproduction						\$ 250.00	
Miscellaneous						\$ 100.00	
<b>Reimbursables Subtotal:</b>						\$ 433.25	
<b>Total -- HW Lochner, Inc.</b>						\$ 14,867.53	

**City of Gig Harbor  
 Sehmel Drive Construction Management Services  
 LABOR ESTIMATE**

Task	Description	Project Manager	QC Manager	Project Engineer	Transp Engineer	CADD Technician	Field Inspector	Admin. Support	TOTAL HOURS
1a	Monthly Status/Progress Reports/Invoices (1 per Mo)	3.0						3.0	6.0
1b	Project Coordination/Progress Meetings (2 per Mo)	3.0							3.0
1c	Regular Coordination with the City	6.0							6.0
1d	Quality Assurance/Quality Control		2.5						2.5
2	Update PS&E	1.0		8.0		9.0			18.0
3a	Shop Drawing Review and Documentation (3 EA)	1.5		4.5					6.0
3b	Respond to Requests for Information (3 EA)	1.5		3.0				3.0	7.5
4	Construction Observation			2.0	8.0		20.0		30.0
5a	As-builts	2.0		8.0		20.0			30.0
5b	Transfer data	1.0		4.0					5.0
									0.0
	<b>Total Hours</b>	<b>19.0</b>	<b>2.5</b>	<b>29.5</b>	<b>8.0</b>	<b>29.0</b>	<b>20.0</b>	<b>6.0</b>	<b>114.0</b>



**Business of the City Council  
City of Gig Harbor, WA**

**Subject:** WWTP Landscape Maintenance – Contract Award

**Dept. Origin:** WWTP/Public Works

**Proposed Council Action:**

Award and authorize the Mayor to execute a Small Public Works Contract with SS Landscaping Service, Inc. in the amount of \$9,192.12 for Landscape Maintenance Services at the Wastewater Treatment Plant and authorize the Wastewater Treatment Plant Supervisor to approve change orders for Alternates 1 and 2 (Irrigation Repair and Additional Landscape Services) in an amount not to exceed \$2,500.

**Prepared by:** Darrell Winans  
WWTP Supervisor

**For Agenda of:** June 11, 2012

**Exhibits:** Public Works Contract

**Concurred by Mayor:**

**Approved by City Administrator:**

**Approved as to form by City Atty:**

**Approved by Finance Director:**

**Approved by Department Head:**

Initial &  
Date

*cut 6/6/12*  
*R 6/6/12*  
*crd by email*  
*6/6/12*  
*DW*

<b>Expenditure Required</b>	\$9,192.12	<b>Amount Budgeted</b>	\$10,000.00	<b>Appropriation Required</b>	\$0
-----------------------------	------------	------------------------	-------------	-------------------------------	-----

**INFORMATION/BACKGROUND**

The 2012 Wastewater Operating budget provides funds for a one-year landscape maintenance contract to ensure landscape survival.

In accordance with the City's Small Works Roster Process (Resolution No. 884), staff solicited quotes from four Landscape Maintenance Companies and obtained the following bid for this work:

SS Landscaping Services, Inc.	\$9,192.12
-------------------------------	------------

**FISCAL CONSIDERATION**

The 2012 Wastewater Operating budget, objective #17 provides sufficient funds for this work.

Any change orders for Alternates 1 and 2 will be funded out of the Wastewater Treatment Plant Operating Repairs & Maintenance budget.

**BOARD OR COMMITTEE RECOMMENDATION**

N/A

**RECOMMENDATION/MOTION**

Award and authorize the Mayor to execute a Small Public Works Contract with SS Landscaping Service, Inc. in the amount of \$9,192.12 for Landscape Maintenance Services at the Wastewater Treatment Plant and authorize the Wastewater Treatment Plant Supervisor to approve change orders for Alternates 1 and 2 (Irrigation Repair and Additional Landscape Services) in an amount not to exceed \$2,500.



CITY OF GIG HARBOR  
SMALL PUBLIC WORKS CONTRACT

THIS CONTRACT is made and entered into this 11th day of June, 2012, by and between the City of Gig Harbor, Washington (the "City"), and SS Landscaping Service, Inc., a Corporation (the "Contractor").

FOR AND IN CONSIDERATION of the mutual benefits and conditions hereinafter contained, the parties hereto agree as follows:

1. Scope of Work.

The Contractor agrees to furnish all material, labor, tools, equipment, apparatus, etc. necessary to perform and complete in a workmanlike manner the work set forth in the Scope of Work attached hereto as Exhibit A and incorporated herein by reference.

2. Time of Performance and Completion.

The work to be performed under this Contract shall commence as soon as the Contractor has received a Notice to Proceed from the City and in accordance with the schedule set forth in the Scope of Work.

3. Payments.

The Contractor agrees to perform all work called for at the rate reflected on Exhibit A, plus applicable Washington State Sales Tax. Said sum shall constitute full compensation for all labor, materials, tools, appliances, etc. required to perform the required services. The Contractor shall provide an itemized monthly invoice including a summary of monthly maintenance performed and the amount due. The City will pay the invoice for undisputed work performed within 30 days of receipt of the invoice. Total compensation under this Contract shall not exceed \$9,192.12.

4. Retainage. [This section intentionally left blank.]

5. Performance and Payment Bond - 50% Letter. [This section intentionally left blank.]

6. Warranty/Maintenance Bond. [This section intentionally left blank.]





7. Indemnity.

A. The Contractor shall defend, indemnify and hold the City, its officers, officials, employees and volunteers harmless from any and all claims, injuries, damages, losses or suits, including attorney's fees, arising out of or in connection with the performance of this Agreement, except for injuries and damages caused by the sole negligence of the City.

B. Should a court of competent jurisdiction determine that this Agreement is subject to RCW 4.24.115, then in the event of liability for damages arising out of bodily injury to persons or damages to property caused by or resulting from the concurrent negligence of the Contractor and the City, its officers, officials, employees or volunteers, the Contractor's liability hereunder shall be only to the extent of the Contractor's negligence. It is further specifically and expressly understood that the indemnification provided herein constitutes the Contractor's waiver of immunity under Title 51 RCW, solely for the purposes of this indemnification. This waiver has been mutually negotiated by the parties.

C. The provisions of this section shall survive the expiration or termination of this Agreement.

8. Insurance.

A. The Contractor shall secure and maintain in force throughout the duration of this Contract, business auto coverage for any auto no less than a \$1,000,000 each accident limit.

B. The Contractor shall secure and maintain in force throughout the duration of this Contract, comprehensive general liability insurance with a minimum coverage of not less than a limit of \$1,000,000 per occurrence, \$2,000,000 annual aggregate for bodily injury, including death, and property damage. The insurance will be written on an occurrence basis, by an 'A' rated company licensed to conduct business in the State of Washington. The general liability policy shall name the City as an additional insured and shall include a provision prohibiting cancellation, changes and reductions of coverage under said policy except upon thirty (30) days prior written notice to the City. Certificates of coverage as required by this Section shall be delivered to the City with the signed Contract. Under this Agreement, the Contractor's insurance shall be considered primary in the event of a loss, damage or suit. The City's own comprehensive general liability policy will be considered excess coverage with respect to defense and indemnity of the City only and no other party. Additionally, the commercial general liability policy must provide cross-liability coverage as could be achieved under a standard ISO separation of insured's clause.



C. The Contractor shall request from his insurer a modification of the ACORD certificate to include language that prior written notification will be given to the City of Gig Harbor at least 30 days in advance of any cancellation, suspension or material change in the Contractor's coverage.

D. In addition, the Contractor shall secure and maintain workers' compensation insurance pursuant to the laws of the State of Washington.

9. Prevailing Wage.

A. The prevailing rate of wage to be paid to all workmen, laborers, or mechanics employed in the performance of any part of this Contract shall be in accordance with the provisions of Chapter 39.12 RCW, as amended, and the rules and regulations of the Department of Labor and Industries. The rules and regulations of the Department of Labor and Industries and the schedule of prevailing wage rates for the locality or localities where this Contract will be performed as determined by the Industrial Statistician of the Department of Labor and Industries, are attached hereto and by reference made a part of this Contract as though fully set forth herein.

B. On or before the date of commencement of the work, the Contractor shall file a statement under oath with the City and with the Director of Labor and Industries certifying the rate of hourly wage paid and to be paid each classification of laborers, workmen, or mechanics employed upon the work by the Contractor or any Subcontractor, which shall not be less than the prevailing rate of wage. Such statement and any subsequent statement shall be filed in accordance with the practices and procedures required by the Department of Labor and Industries.

10. Termination.

A. Termination for Contractor's Default. If the Contractor refuses or fails to make adequate progress of the work, or to prosecute the work or any separable part thereof with such diligence that will insure its completion within the time specified in this Contract, or defaults under any provision or breaches any provision of this Contract, the City may serve notice upon the Contractor and its surety of the City's intention to terminate by default the right of the Contractor to perform the Contract, and unless within ten (10) days after the serving of such notice, the Contractor shall satisfactorily arrange to cure its failure to perform and notify the City of the corrections to be made, the right of the Contractor to proceed with the work shall terminate. In the event of any such termination, the City shall serve notice thereof upon the Surety and the Contractor, provided, however, that if the Surety does not commence performance thereof within twenty (20) days from the date of the mailing to such Surety of the notice of termination, the City may take over the work and prosecute the same to completion by Contract or otherwise for the account and at the expense of the Contractor. In the case of termination for default, the Contractor shall not be entitled to receive any further payment until the work is finished.

{ASB989600.DOC;1\00008.900000 }

B. Termination by City for Convenience. The performance of work under this Contract may be terminated by the City in accordance with this paragraph in whole or in part, whenever the City shall determine that such termination is in the best interest of the City. Any such termination shall be effected by delivery to the Contractor of a Notice of Termination specifying the extent to which performance or work under the Contract is terminated, and the date upon which such termination becomes effective. The Contractor shall stop work on the project upon the date set forth in the Notice of Termination and shall take such actions as may be necessary, or as the City may direct, for the protection and preservation of the work. After receipt of a Notice of Termination, the Contractor shall submit to the City its termination claim, in the form and with the certification prescribed by the City. Such claim shall be submitted promptly but in no event later than 3 months from the effective date of the termination. Upon approval by the City, the termination claim shall be paid.

C. Termination by Contractor. If the work should be stopped under an order of any court, or other public authority, for a period of thirty (30) days, through no act or fault of the Contractor or of anyone employed by him, then the Contractor may, upon seven (7) days written notice to the City, terminate this Contract and recover from the City payment for all work executed and any proven loss sustained. Should the City fail to pay to the Contractor, within the payment period provided for in this Contract, any sum due and owing, then the Contractor may, upon seven (7) days written notice to the City, stop the work or terminate this Contract.

11. Compliance with Laws. The Contractor shall at all times comply with all applicable state and local laws, rules, ordinances and regulations.

12. Nondiscrimination. Except to the extent permitted by a bona fide occupational qualification, the Contractor agrees that the Contractor will not discriminate against any employee or applicant for employment because of race, creed, color, national origin, sex, honorably discharged veteran or military status, sexual orientation, or the presence of any sensory, mental, or physical disability or the use of a trained dog guide or service animal by a person with a disability.

13. Independent Contractor. No agent, employee or representative of the Contractor shall be deemed to be an agent, employee or representative of the City for any purpose. Contractor shall be solely responsible for all acts of its agents, employees, representatives and subcontractors during the performance of this contract.

14. Relationship of Parties. The parties intend that an independent contractor-client relationship will be created by this Agreement. As the Contractor is customarily engaged in an independently established trade which encompasses the specific service provided to the City hereunder, no agent, employee, representative or subcontractor of the Contractor shall be or shall be deemed to be the employee, agent, representative or

{ASB989600.DOC;1\00008.900000\ }



subcontractor of the City. In the performance of the work, the Contractor is an independent contractor with the ability to control and direct the performance and details of the work, the City being interested only in the results obtained under this Agreement. None of the benefits provided by the City to its employees, including, but not limited to, compensation, insurance, and unemployment insurance are available from the City to the employees, agents, representatives, or subcontractors of the Contractor. The Contractor will be solely and entirely responsible for its acts and for the acts of its agents, employees, representatives and subcontractors during the performance of this Agreement. The City may, during the term of this Agreement, engage other independent contractors to perform the same or similar work that the Contractor performs

15. Legal Action. In the event that either party shall bring suit to enforce any provision of this Contract or to seek redress for any breach, the prevailing party in such suit shall be entitled to recover its costs, including reasonable attorneys' fees.

16. Entire Agreement. This Contract, together with all attachments, represents the entire and integrated agreement between the parties hereto and supersedes all prior negotiations, representations and agreements, whether written or oral. This Contract may be amended only by written change order, properly signed by both parties.

IN WITNESS WHEREOF, the parties have executed this Contract as of the day and year first written above.

CITY OF GIG HARBOR

CONTRACTOR

\_\_\_\_\_  
MAYOR CHARLES L. HUNTER  
Date: \_\_\_\_\_

SS LANDSCAPING SERVICES INC  
By: Josh Cantrell  
Title: MAINTENANCE MANAGER  
Date: 6-5-12

ATTEST/AUTHENTICATED:

\_\_\_\_\_  
MOLLY TOWSLEE, CITY CLERK

APPROVED AS TO FORM:  
Office of the City Attorney



Business of the City Council  
City of Gig Harbor, WA

**Subject:** Twawelkax Trail Wetland Survey—  
Consultant Services Contract with Sitts & Hill  
Engineers, Inc.

**Proposed Council Action:** Authorize the  
Mayor to execute a Consultant Services  
Contract with Sitts & Hill Engineers, Inc. for an  
amount not to exceed \$ 8,078.

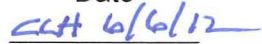
**Dept. Origin:** Public Works/Engineering

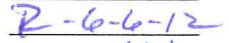
**Prepared by:** Jeff Langhelm 

**For Agenda of:** June 11, 2012

**Exhibits:** Consultant Services Contract  
with Scope and Fee

Initial &  
Date

**Concurred by Mayor:**  6/6/12

**Approved by City Administrator:**  6-6-12

**Approved as to form by City Atty:**  VIA EMAIL 6/5/12

**Approved by Finance Director:**  6/6/12

**Approved by Department Head:**  6/6/12

<b>Expenditure Required</b>	\$ 8,078	<b>Amount Budgeted</b>	\$ 10,000	<b>Appropriation Required</b>	\$0
---------------------------------	----------	----------------------------	-----------	-----------------------------------	-----

**INFORMATION/BACKGROUND**

The City has proposed a trail to connect the Cushman Trail to the Harborview Drive corridor. This proposed trail connection has been developed through the Parks Commission with funding for necessary environmental and permitting work identified in the City's 2012 Budget Park Development Fund.

Throughout this process the City has been working with the owners of Haven of Rest and the Rotary Club of Gig Harbor to determine the location and scope of the Trail. Part of this work has included creation of an easement granted by Haven of Rest to the City for placement of the Trail. In order to minimize potential conflicts with future development on the property, Haven of Rest has requested the trail be located adjacent to a wetland buffer identified a November 2011 Wetland Analysis performed by Grette Associates.

The City has tentatively agreed to this proposed location. However, the wetland has not been surveyed and therefore the location of the buffer cannot be established.

The proposed Consultant Services Contract with Sitts & Hill will survey the wetland and establish the location of the wetland buffer. This wetland buffer location will then be used to assist in the generation of the easement for the Trail between Haven of Rest and the City.

This survey work was initially anticipated in 2013 to assist with the design of the Trail but not anticipated in 2012 to assist in establishing the easement for the Trail.

**FISCAL CONSIDERATION**

The 2012 City Budget's Park Development Fund (109) has allocated the following for this project:

2012 Budget for Park Development Fund for Twawelkax Trail (Objective No. 15)	\$ 10,000
<b>Anticipated 2012 Expenses</b>	
Sitts & Hill Consultant Services Contract for Wetland Survey	(\$ 8,078)
Remaining 2012 Budget =	\$ 1,922

**BOARD OR COMMITTEE RECOMMENDATION**

N/A.

**RECOMMENDATION/MOTION**

**Move to:** Authorize the Mayor to execute a Consultant Services Contract with Sitts & Hill Engineers, Inc. for an amount not to exceed \$ 8,078.

**CONSULTANT SERVICES CONTRACT  
BETWEEN THE CITY OF GIG HARBOR AND  
SITTS & HILL ENGINEERS, INC.**

---

THIS AGREEMENT is made by and between the City of Gig Harbor, a Washington municipal corporation (the "City"), and Sitts & Hill Engineers, Inc., a corporation organized under the laws of the State of Washington (the "Consultant").

**RECITALS**

WHEREAS, the City is presently engaged in Surveying Services for the Twawelkax Trail Connection and desires that the Consultant perform services necessary to provide the following consultation services; and

WHEREAS, the Consultant agrees to perform the services more specifically described in the Scope of Work including any addenda thereto as of the effective date of this Agreement, all of which are attached hereto as **Exhibit A – Scope of Work**, and are incorporated by this reference as if fully set forth herein;

NOW, THEREFORE, in consideration of the mutual promises set forth herein, it is agreed by and between the parties as follows:

**TERMS**

**1. Retention of Consultant - Scope of Work.** The City hereby retains the Consultant to provide professional services as defined in this Agreement and as necessary to accomplish the scope of work attached hereto as **Exhibit A** and incorporated herein by this reference as if set forth in full. The Consultant shall furnish all services, labor and related equipment necessary to conduct and complete the work, except as specifically noted otherwise in this Agreement.

**2. Payment.**

A. The City shall pay the Consultant an amount based on time and materials, not to exceed Eight Thousand Seventy-Eight Dollars and Zero Cents (\$8,078.00) for the services described in Section 1 herein. This is the maximum amount to be paid under this Agreement for the work described in **Exhibit A**, and shall not be exceeded without the prior written authorization of the City in the form of a negotiated and executed supplemental agreement. The Consultant's staff and billing rates shall be as described in **Exhibit B – Schedule of Rates and Estimated Hours**. The Consultant shall not bill for Consultant's staff not identified or listed in **Exhibit B** or bill at rates in excess of the hourly rates shown in **Exhibit B**, unless the parties agree to a modification of this Contract, pursuant to Section 17 herein.

B. The Consultant shall submit monthly invoices to the City after such services have been performed, and a final bill upon completion of all the services described in this Agreement. The City shall pay the full amount of an invoice within forty-five (45) days of receipt. If the City objects to all or any portion of any invoice, it shall so notify the Consultant of the same within

fifteen (15) days from the date of receipt and shall pay that portion of the invoice not in dispute, and the parties shall immediately make every effort to settle the disputed portion.

**3. Relationship of Parties.** The parties intend that an independent contractor-client relationship will be created by this Agreement. As the Consultant is customarily engaged in an independently established trade which encompasses the specific service provided to the City hereunder, no agent, employee, representative or subconsultant of the Consultant shall be or shall be deemed to be the employee, agent, representative or subconsultant of the City. In the performance of the work, the Consultant is an independent contractor with the ability to control and direct the performance and details of the work, the City being interested only in the results obtained under this Agreement. None of the benefits provided by the City to its employees, including, but not limited to, compensation, insurance, and unemployment insurance are available from the City to the employees, agents, representatives, or subconsultants of the Consultant. The Consultant will be solely and entirely responsible for its acts and for the acts of its agents, employees, representatives and subconsultants during the performance of this Agreement. The City may, during the term of this Agreement, engage other independent contractors to perform the same or similar work that the Consultant performs hereunder.

**4. Duration of Work.** The City and the Consultant agree that work will begin on the tasks described in **Exhibit A** immediately upon execution of this Agreement. The parties agree that the work described in **Exhibit A** shall be completed by August 31, 2012; provided however, that additional time shall be granted by the City for excusable days or extra work.

**5. Termination.** The City reserves the right to terminate this Agreement at any time upon ten (10) days written notice to the Consultant. Any such notice shall be given to the address specified above. In the event that this Agreement is terminated by the City other than for fault on the part of the Consultant, a final payment shall be made to the Consultant for all services performed. No payment shall be made for any work completed after ten (10) days following receipt by the Consultant of the notice to terminate. In the event that services of the Consultant are terminated by the City for fault on part of the Consultant, the amount to be paid shall be determined by the City with consideration given to the actual cost incurred by the Consultant in performing the work to the date of termination, the amount of work originally required which would satisfactorily complete it to date of termination, whether that work is in a form or type which is usable to the City at the time of termination, the cost of the City of employing another firm to complete the work required, and the time which may be required to do so.

**6. Non-Discrimination.** The Consultant agrees not to discriminate against any customer, employee or applicant for employment, subcontractor, supplier or materialman, because of race, color, creed, religion, national origin, marital status, sex, sexual orientation, age or handicap, except for a bona fide occupational qualification. The Consultant understands that if it violates this provision, this Agreement may be terminated by the City and that the Consultant may be barred from performing any services for the City now or in the future.

**7. Indemnification.**



A. The Consultant agrees to hold harmless, indemnify and defend the City, its officers, agents, and employees, from and against any and all claims, losses, or liability, for injuries, sickness or death of persons, including employees of the Consultant, or damage to property, arising out of any willful misconduct or negligent act, error, or omission of the Consultant, its officers, agents, subconsultants or employees, in connection with the services required by this Agreement; provided, however, that:

1. The Consultant's obligations to indemnify, defend and hold harmless shall not extend to injuries, sickness, death or damage caused by or resulting from the sole willful misconduct or sole negligence of the City, its officers, agents or employees; and

2. The Consultant's obligations to indemnify, defend and hold harmless for injuries, sickness, death or damage caused by or resulting from the concurrent negligence or willful misconduct of the Consultant and the City, or of the Consultant and a third party other than an officer, agent, subconsultant or employee of the Consultant, shall apply only to the extent of the negligence or willful misconduct of the Consultant.

B. It is further specifically and expressly understood that the indemnification provided herein constitutes the consultant's waiver of immunity under industrial insurance, title 51 RCW, solely for the purposes of this indemnification. The parties further acknowledge that they have mutually negotiated this waiver. The consultant's waiver of immunity under the provisions of this section does not include, or extend to, any claims by the consultant's employees directly against the consultant.

C. The provisions of this section shall survive the expiration or termination of this Agreement.

**8. Insurance.**

A. The Consultant shall procure and maintain for the duration of the Agreement, insurance against claims for injuries to persons or damage to property which may arise from or in connection with the Consultant's own work including the work of the Consultant's agents, representatives, employees, subconsultants or subcontractors.

B. Before beginning work on the project described in this Agreement, the Consultant shall provide evidence, in the form of a Certificate of Insurance, of the following insurance coverage and limits (at a minimum):

1. Business auto coverage for any auto no less than a \$1,000,000 each accident limit, and
2. Commercial General Liability insurance no less than \$1,000,000 per occurrence with a \$2,000,000 aggregate. Coverage shall include, but is not limited to, contractual liability, products and completed operations, property damage, and employers liability, and
3. Professional Liability insurance with no less than \$1,000,000 per occurrence. All policies and coverages shall be on an occurrence basis by an 'A' rated company licensed to conduct business in the State of Washington.

C. The Consultant is responsible for the payment of any deductible or self-insured retention that is required by any of the Consultant's insurance. If the City is required to contribute to the deductible under any of the Consultant's insurance policies, the Contractor shall reimburse the City the full amount of the deductible within 10 working days of the City's deductible payment.

D. The City of Gig Harbor shall be named as an additional insured on the Consultant's commercial general liability policy. This additional insured endorsement shall be included with evidence of insurance in the form of a Certificate of Insurance for coverage necessary in Section B. The City reserves the right to receive a certified and complete copy of all of the Consultant's insurance policies upon request.

E. Under this Agreement, the Consultant's insurance shall be considered primary in the event of a loss, damage or suit. The City's own comprehensive general liability policy will be considered excess coverage with respect to defense and indemnity of the City only and no other party. Additionally, the Consultant's commercial general liability policy must provide cross-liability coverage as could be achieved under a standard ISO separation of insured's clause.

F. The Consultant shall request from his insurer a modification of the ACORD certificate to include language that prior written notification will be given to the City of Gig Harbor at least 30 days in advance of any cancellation, suspension or material change in the Consultant's coverage.

**9. Ownership and Use of Work Product.** Any and all documents, drawings, reports, and other work product produced by the Consultant under this Agreement shall become the property of the City upon payment of the Consultant's fees and charges therefore. The City shall have the complete right to use and re-use such work product in any manner deemed appropriate by the City, provided, that use on any project other than that for which the work product is prepared shall be at the City's risk unless such use is agreed to by the Consultant.

**10. City's Right of Inspection.** Even though the Consultant is an independent contractor with the authority to control and direct the performance and details of the work authorized under this Agreement, the work must meet the approval of the City and shall be subject to the City's general right of inspection to secure the satisfactory completion thereof. The Consultant agrees to comply with all federal, state, and municipal laws, rules, and regulations that are now effective or become applicable within the terms of this Agreement to the Consultant's business, equipment, and personnel engaged in operations covered by this Agreement or accruing out of the performance of such operations.

**11. Records.** The Consultant shall keep all records related to this Agreement for a period of three years following completion of the work for which the Consultant is retained. The Consultant shall permit any authorized representative of the City, and any person authorized by the City for audit purposes, to inspect such records at all reasonable times during regular business hours of the Consultant. Upon request, the Consultant will provide the City with

reproducible copies of any such records. The copies will be provided without cost if required to substantiate any billing of the Consultant, but the Consultant may charge the City for copies requested for any other purpose.

**12. Work Performed at the Consultant's Risk.** The Consultant shall take all precautions necessary and shall be responsible for the safety of its employees, agents, and subconsultants in the performance of the work hereunder and shall utilize all protection necessary for that purpose. All work shall be done at the Consultant's own risk, and the Consultant shall be responsible for any loss of or damage to materials, tools, or other articles used or held by the Consultant for use in connection with the work.

**13. Non-Waiver of Breach.** The failure of the City to insist upon strict performance of any of the covenants and agreements contained herein, or to exercise any option herein conferred in one or more instances shall not be construed to be a waiver or relinquishment of said covenants, agreements, or options, and the same shall be and remain in full force and effect.

**14. Resolution of Disputes and Governing Law.**

A. Should any dispute, misunderstanding, or conflict arise as to the terms and conditions contained in this Agreement, the matter shall first be referred to the City Engineer or Director of Operations and the City shall determine the term or provision's true intent or meaning. The City Engineer or Director of Operations shall also decide all questions which may arise between the parties relative to the actual services provided or to the sufficiency of the performance hereunder.

B. If any dispute arises between the City and the Consultant under any of the provisions of this Agreement which cannot be resolved by the City Engineer or Director of Operations determination in a reasonable time, or if the Consultant does not agree with the City's decision on the disputed matter, jurisdiction of any resulting litigation shall be filed in Pierce County Superior Court, Pierce County, Washington. This Agreement shall be governed by and construed in accordance with the laws of the State of Washington. The prevailing party in any such litigation shall be entitled to recover its costs, including reasonable attorney's fees, in addition to any other award.

**15. Written Notice.** All notices required to be given by either party to the other under this Agreement shall be in writing and shall be given in person or by mail to the addresses set forth below. Notice by mail shall be deemed given as of the date the same is deposited in the United States mail, postage prepaid, addressed as provided in this paragraph.

CONSULTANT:  
SITTS & HILL ENGINEERS, INC.  
ATTN: Robert Erb, P.L.S.  
Principal, Director of Surveying  
4815 Center Street  
Tacoma, WA 98409  
(253) 474-9449

City of Gig Harbor  
ATTN: Stephen Misiurak, P.E.  
City Engineer  
3510 Grandview Street  
Gig Harbor, WA 98335  
(253) 851-6170

16. **Subcontracting or Assignment.** The Consultant may not assign or subcontract any portion of the services to be provided under this Agreement without the express written consent of the City. If applicable, any subconsultants approved by the City at the outset of this Agreement are named on **Exhibit C** attached hereto and incorporated herein by this reference as if set forth in full.

17. **Entire Agreement.** This Agreement represents the entire integrated agreement between the City and the Consultant, superseding all prior negotiations, representations or agreements, written or oral. This Agreement may be modified, amended, or added to, only by written instrument properly signed by both parties hereto.

IN WITNESS WHEREOF, the parties have executed this Agreement this \_\_\_\_\_  
day of \_\_\_\_\_, 20\_\_\_\_.

CONSULTANT

CITY OF GIG HARBOR

By: Robert N. Gib  
Its: PRINCIPAL

By: \_\_\_\_\_  
Mayor Charles L. Hunter

ATTEST:

\_\_\_\_\_  
City Clerk

APPROVED AS TO FORM:

\_\_\_\_\_  
City Attorney

Exhibit A

## **SITTS & HILL ENGINEERS, INC.**

---

Professional Engineers and Planners  
4815 Center Street, Tacoma, WA 98409  
Telephone (253) 474-9449  
Fax (253) 474-0153

ROBERT J. DAHMEN, P.E.  
BRENT K. LESLIE, P.E.  
ROBERT N. ERB, P.L.S.  
KATHY A. HARGRAVE, P.E.  
LARRY G. LINDELL, P.E.

June 4, 2012

CITY OF GIG HARBOR  
3510 Grandview Street  
Gig Harbor, Washington 98335

TO: Mr. Steve Misiurak, P.E.

SUBJECT: ***PROPOSAL FOR SURVEYING SERVICES FOR TWAWELKAX TRAIL WETLANDS IN GIG HARBOR, WA.***

Dear Mr. Misiurak:

Sitts & Hill Engineers is pleased to present this proposal for surveying services for the Twawelkax Trail wetlands in Gig Harbor, Washington. Sitts & Hill Engineers is committed to providing the Project Team with the high level of responsiveness and service necessary to make this a cost effective and successful project.

This proposal includes our Project Description, Scope of Surveying Services, Exclusions and a summary of estimated Professional Services Fees.

### **PROJECT DESCRIPTION**

Sitts & Hill Engineers proposes to provide wetland location surveying services on the above referenced project.

### **ASSUMPTIONS**

We have made the following assumptions in the calculation of estimated surveying services fees:

1. Notice will be provided to property owners, as necessary, by the City.
2. The Horizontal Datum for all work will be ground coordinates based on NAD 83/91 Washington State Plane Grid Coordinate System, South Zone (4602) based on established control from previous Twawelkax mapping.
3. The Vertical Datum for all work will be NGVD 29 based on established control from previous Twawelkax mapping.

Exhibit A

June 4, 2012  
Page 2 of 2

**BASIC SCOPE OF SURVEYING SERVICES**

Sitts & Hill Engineers understands the Scope of surveying services to be defined as follows. If additional items are required or excluded, please contact our office so that adjustments can be made to the proposed fees.

1. Wetland Location surveying performed by field crews
2. Wetland Location mapping performed in our office and incorporated into previously provided Twawelkax base mapping.
3. Signed and sealed hard copies of Wetland Exhibit Maps

**EXCLUSIONS - BASIC SCOPE OF SURVEYING SERVICES**

The following are a list of Additional Services that may be performed under a separate contract if necessary.

1. Boundary or RW determination

**SURVEYING FEES**

Basic surveying services are Time and Materials based on the attached Rate Sheet, and will be billed monthly. We suggest a budget of \$8,000 be established to cover the scope of services outlined above.

We are prepared to begin work upon receipt of Authorization to Proceed. This proposal is valid for a period of 120 days.

We appreciate this opportunity to submit this proposal. If you have any questions, please don't hesitate to contact our office.

Sincerely,

SITTS & HILL ENGINEERS, INC.



Mike McEvelly, P.L.S.  
Survey Project Manager

---

Authorization Signature

---

Date

**Exhibit B - Schedule of Rates and Estimated Hours**

**SITTS & HILL ENGINEERS, INC.**  
**4815 Center Street**  
**Tacoma, Washington 98409**

*The following are representative charges:*

**CIVIL AND STRUCTURAL ENGINEERING DESIGN**

Principal	\$ 135 - 139/Hour
Senior Project Manager	\$ 110 - 124/Hour
Project Manager	\$ 98 - 116/Hour
Engineer	\$ 62 - 119/Hour
Landscape Architect	\$ 113/Hour
Inspectors & Technicians	\$ 62 - 95/Hour

**SURVEYING**

Principal Land Surveyor	\$ 139/Hour
Senior Project Surveyor	\$ 110 - 115/Hour
Project Surveyor	\$ 80 - 105/Hour
Survey Technician	\$ 60 - 95/Hour
Field Crew Chief	\$ 62 - 95/Hour
Field Crew Member	\$ 60 - 70/Hour
One Man Field Crew	\$ 105/Hour

**SUPPORT PERSONNEL**

CAD Technician	\$ 66 - 95/Hour
Administration	\$ 61 - 74/Hour

**MISCELLANEOUS**

Mileage	\$ 0.55 per mile
Regular Materials (Stakes)	\$ 0.50 per unit
Special Materials	Cost Plus 15%
Subconsultants	Cost Plus 15%

**CONSULTING ENGINEER AND COURT CASES**

Principal	\$ 275/Hour
Engineer	\$ 225/Hour
Land Surveyor	\$ 225/Hour

*Effective September 1<sup>st</sup>, 2011*

**Exhibit B - Schedule of Rates and Estimated Hours**

**ENGINEERING SERVICES ESTIMATE**

**PREPARED FOR:**

FILE: 2012-06-04\_Wetland Survey Estimate.xls  
 DATE: June 4, 2012  
 ESTIMATE BY Mike McEvilly

City of Gig Harbor  
 3510 Grandview Street  
 Gig Harbor, WA 98335

**SITTS & HILL ENGINEERS, INC.**  
 CIVIL ■ STRUCTURAL ■ SURVEYING  
 4815 CENTER STREET | TACOMA, WA 98409  
 PHONE: 253-474-9449 | FAX: 253-474-0153

**PROJECT: Twawelkax Trail Wetland Location**

DESCRIPTION	PRINCIPAL SURVEYOR \$139	PROJECT SURVEYOR \$105	ONE MAN CREW \$105	TWO MAN CREW \$150	SURVEY TECH. \$78	MILEAGE \$0.550	MATERIAL (PER UNIT) \$0.50	TOTAL COSTS
<b>TOPOGRAPHIC SURVEY</b>								
1. Recover and Establish Survey Control				4				\$600
2. Wetland Flag Location				44		80		\$6,644
3. Wetland Mapping		1			8			\$729
4. Finalize and Deliver		1						\$105
5.								\$0
NOTES:	0 \$0	2 \$210	0 \$0	48 \$7,200	8 \$624	80 \$44.00	0 \$0.00	\$8,078
	TOTAL MAN HOURS:			58				
<b>SUB-TOTAL COSTS:</b>								<b>\$8,078</b>

Note - Chargeout rates current 9/1/2011. Rates shown are typical and may vary between individuals.



**Subject:** A resolution of the City Council Regarding a decision in the appeal of Robert G. Frisbie.

**Proposed Council Action:** Approve Resolution No. 902 Adopting Findings of Fact and Conclusions of Law Supporting the City Council's Denial of the Robert Frisbie SEPA Appeal.

**Dept. Origin:** Planning

**Prepared by:** Tom Dolan   
Planning Director

**For Agenda of:** June 11, 2012

**Exhibits:** Resolution No. 902

Initial & Date

**Concurred by Mayor:**

LCR 6/7/12

**Approved by City Administrator:**

R 6/7/12

**Approved as to form by City Atty:**

by email

**Approved by Finance Director:**

\_\_\_\_\_

**Approved by Department Head:**

TD 6/7/12

Expenditure Required	0	Amount Budgeted	0	Appropriation Required	0
----------------------	---	-----------------	---	------------------------	---

**INFORMATION / BACKGROUND**

On May 29, 2012 the Gig Harbor City Council conducted a public hearing to consider the appeal of Robert G. Frisbie of the issuance of a SEPA Determination of Nonsignificance for the City's 2012 draft Shoreline Master Program. At the conclusion of the public hearing the City Council determined that the appellant failed to sustain the required burden of proof and denied the appeal.

**FISCAL CONSIDERATION**

None

**BOARD OR COMMITTEE RECOMMENDATION**

N/A

**RECOMMENDATION / MOTION**

**Move to:** Adopt Resolution 902.

**RESOLUTION NO. 902**

**A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF GIG HARBOR REGARDING A DECISION IN THE APPEAL OF ROBERT G. FRISBIE, APPEAL NUMBER 12-0001.**

---

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF GIG HARBOR, WASHINGTON, HEREBY RESOLVES AS FOLLOWS:

**Section 1.** For its decision the City Council adopts the following:

**PROCEDURAL HISTORY**

An appeal was filed in this matter on April 23, 2012 by Robert G. Frisbie. The Gig Harbor City Council appointed W. Scott Snyder as its hearing officer. The hearing officer held a pre-hearing conference with the appellant, City Attorney and staff member Peter Katich on May 24, 2012. This matter came on for hearing before the Gig Harbor City Council on Tuesday, May 29, 2012. The hearing officer chaired the hearing, but did not participate in deliberation or the decision. Councilmembers Ekberg, Guernsey, Kadzik, Payne, Perrow and Young were present. Council member Malich was absent. Mayor Charles Hunter was present but did not participate in the hearing.

At the hearing the parties stipulated that there were no procedural issues. The City stipulated that the appeal was filed on time and the appellant stipulated that his appeal raises no issue regarding notice, publication, timing or other procedural issues relating to the issuance of the determination of non-significance (hereinafter "DNS") for the City's 2012 draft Shoreline Master Program ("SMP draft").

The decision is based upon the record of the proceeding. The record consists of the transcript of the proceeding and the exhibits listed in Section 2 below.

**POSITION OF PARTIES**

Appellant

The appellant's appeal dated April 23, 2012 lists seven appeal grounds. The grounds are summarized as follows:

1. The shift in emphasis within the SMP draft from hard armoring to soft armoring is not adequately addressed by the checklist.
2. The SMP draft proposes "additional uses for overwater net shed" whose environmental impact is not adequately assessed by the checklist.

3. The SMP draft provides for enhancement of public access and the impact of enhanced access is not adequately assessed by the checklist.
4. The SMP draft establishes new minimum setbacks from the ordinary high water mark (OHWM) and the impact of this change is not adequately assessed by the checklist.
5. Limits on maximum impervious surface in the SMP draft are not adequately assessed by the checklist.
6. SMP draft provisions for “pump-out, holding and/or waste treatment facilities” are not adequately assessed by the checklist.
7. The regulation of commercial fishing moorage does not appear to include requirements for pump-out stations or public access. The appellant asserts that the checklist fails to “identify the benefit for this exemption.”

Appellant’s appeal and his hearing statement received by the City Council on May 29, see Exhibit 2, provides significant additional detail on the basis for his appeal. At hearing, appellant states that his sole request for relief was an expansion of the checklist to include the additional material which is referenced in his presentations.

#### City’s Position

The City emphasizes that the determination of the responsible official is required to be given substantial weight under City ordinance and state law. The City asserts that the appellant’s contentions are policy matters best addressed through the legislative process preceding adoption of Shoreline Master Program amendments, if any. The City asserts that issues related to economics associated with implementing regulations contained in the Shoreline Master Program are “not within the zone of interest protected by SEPA” citing *Alliance v. Snohomish County*, 76 Wash. App. 44, 52, 882, P.2d 807 (1994), review denied 125 Wn.2d 1025 (1995) and that a request for a cost benefit analysis is beyond the scope of SEPA review. The City asserts that the appellant has failed to sustain his burden of proof which it asserts to be a “clearly erroneous” standard.

#### **FINDINGS OF FACT**

1. The appeal of Robert Frisbie was timely filed in accordance with City ordinance and state law.
2. The State Environmental Policy Act review process was conducted by the City in accordance with City ordinance and state law.
3. The City’s environmental checklist is used to review the “proposed activities, alternatives, and impacts... in accordance with SEPA’s goals and policies” in

connection with the adoption of the Shoreline Master program amendments. WAC 197-11-060.

4. The checklist is a standard form designed to illicit sufficient information about the proposal and its environmental impacts in order that an intelligent threshold determination can be made.

5. Assessment of the potential impacts of a proposal on elements of the environment are determined on accord with categories established by the Washington Administrative Code. WAC 197-11-315; WAC 197-11-960.

6. The issues raised by appellant's appeal are by and large policy issues best addressed in the continuing legislative process attending adoption of Shoreline Master Program amendments. Expanding the checklist to perform cost benefit analysis, evaluate economic impacts, are specifically prohibited by case law and State regulation. *Alliance v. Snohomish County, ibid*; WAC 197-11-450.

7. The relief sought by the appellant, expansion of the checklist to evaluate the individual provisions of the draft SMP, misstates the purpose of the checklist. The checklist's primary purpose is to enable an intelligent threshold determination regarding the proposal and its environmental impacts, not assess policy considerations, such as public benefits and individual costs.

8. Appellant has failed to identify any potential significant adverse environmental impact associated with the SMP draft. Those environmental impacts which he has identified, such as the impact of a tsunami, are unrelated to the adoption of the SMP draft and concern either, as in the case of the tsunami, the impacts of a natural disaster or differences in degree in alleged benefits to be derived from certain regulatory measures.

### **CONCLUSIONS OF LAW**

The appellant has failed to sustain his burden of proof. Having given the determination of the SEPA official "substantial weight," the City Council is not left with the definite and firm conviction that a mistake has been committed.

### **DECISION**

The appeal is denied. The appellant's position is included in the legislative record created before the City's Planning Commission. The appellant will have a chance to make his policy arguments in the more appropriate legislative context during public hearings regarding the Shoreline Master Program. The SEPA process is designed to assess the potential "probable significant adverse environmental impacts" of a proposal or a project, not to weigh policy considerations such as the cost benefit of regulatory actions versus their economic consequences. State and federal constitutions, state law and City ordinance provide adequate protections to prevent unconstitutional takings or to allow the

appellant to challenge any assessment which he believes to be in violation of his constitutional rights.

**Section 2:** The exhibits entered into the record of this proceeding are:

Exhibit 1 Agenda Council Packet and Attachments:

- A. SEPA checklist dated February 1, 2012
- B. SEPA checklist Supplemental Sheet for non-project actions dated February 29, 2012
- C. Determination of non-significance
- D. Appeal letter from Robert Frisbie dated April 23, 2012
- E. Appellant Frisbie comments and exhibits to Planning Commission
- F. City Memorandum in Support of Denial of Appeal

Exhibit 2 Appeal Presentation of Robert Frisbie May 29 with attachments:

- A. Drawing
- B. RCW 43.21C.030
- C. Email chain regarding soft-armoring dated May 7, 2010 and salmon run chart
- D. Frisbie comments to Planning Commission dated March 31, 2011
- E. RCW 43.21C.010 and 43.21C.020
- F. WAC 173-27-040
- G. Gig Harbor Shoreline Inventory - title page and page 30
- H. Wikipedia article 5th Amendment to the United States Constitution
- I. Photographs (9) of hard-armoring
- J. Internet article regarding Wildlife Water Pollution.
- K. Washington State Recreation and Conservation office- grant information

Exhibit 3 Declaration of Tom Dolan

Exhibit 4 Overhead exhibits - staff presentation

RESOLVED this 11th day of June, 2012.

APPROVED:

---

MAYOR CHARLES L. HUNTER

ATTEST/AUTHENTICATED:

---

MOLLY TOWSLEE, CITY CLERK

FILED WITH THE CITY CLERK: 06/04/12  
PASSED BY THE CITY COUNCIL: 06/11/12  
RESOLUTION NO. 902



**Business of the City Council  
City of Gig Harbor, WA**

**Subject:** Cushman Trail Project  
- WSDOT Local Agency Standard  
Consultant Agreement for design for  
H.W. Lochner, Inc.

**Proposed Council Action:** Approve and authorize the Mayor to execute the Local Agency Standard Consultant Agreement with H.W. Lochner, Inc. for Phase 1 design services for the Cushman Trail Project in the not to exceed amount of Thirty Thousand, Five Hundred dollars and no cents, \$30,500.00.

**Dept. Origin:** Public Works/Engineering

**Prepared by:** Stephen Misiurak, P.E.  
City Engineer

**For Agenda of:** June 11, 2012

**Exhibits:** WSDOT Local Agency Standard  
Consultant Agreement with  
attachments.

Initial & Date

**Concurred by Mayor:**

*CLH 6/7/12*

**Approved by City Administrator:**

*2-6/7/12*

**Approved as to form by City Atty:**

*appro via email 6/7/12*

**Approved by Finance Director:**

*[Signature] 6/7/12*

**Approved by Department Head:**

*[Signature] 6/7/12*

Expenditure Required	\$30,500.00	Amount Budgeted	\$1,200,000.00	Appropriation Required	\$0
----------------------	-------------	-----------------	----------------	------------------------	-----

**INFORMATION / BACKGROUND**

The original construction plans and specifications for this project were completed under Pierce County oversight several years ago and due to funding constraints the remaining portion of trail went unconstructed.

This contract provides for the review of previously completed work and a determination of the most cost effective and expeditious path forward the City should take pertaining to the final design modifications that are necessary to the current plans along with the permitting path forward. Phase 2 work to be authorized at a later date will complete the federal environmental permitting process along with completion of a final bid ready specification and bid package for this project.

**FISCAL CONSIDERATION**

Sufficient monies exist within the Park Development Fund to fund this expenditure.

**BOARD OR COMMITTEE RECOMMENDATION**

N/A

**RECOMMENDATION / MOTION**

Approve and authorize the Mayor to execute a WSDOT Local Agency Standard Consultant Agreement with H.W. Lochner, Inc. for Phase 1 Engineering in the not to exceed amount of Thirty Thousand, Five Hundred dollars and no cents, (\$30,500.00).

<b>Local Agency Standard Consultant Agreement</b>	Consultant/Address/Telephone <b>H. W. Lochner, Inc. 400 108th Ave NE Suite 401 Bellevue, WA 98004</b>	
<input checked="" type="checkbox"/> Architectural/Engineering Agreement <input type="checkbox"/> Personal Services Agreement Agreement Number		
<b>CPP-1126</b>	Project Title And Work Description <b>Cushman Trail Phase III and IV: Complete the final design plans and documents, procure required environmental permits.</b>	
Federal Aid Number <b>TCSP-11WA (26)</b>		
Agreement Type (Choose one) <input type="checkbox"/> <b>Lump Sum</b> Lump Sum Amount \$ _____	DBE Participation <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No _____ %	
<input checked="" type="checkbox"/> <b>Cost Plus Fixed Fee</b> Overhead Progress Payment Rate <b>178.41</b> % Overhead Cost Method <input checked="" type="checkbox"/> Actual Cost	Federal ID Number or Social Security Number <b>36-2338811</b>	
<input type="checkbox"/> Actual Cost Not To Exceed _____ % <input type="checkbox"/> Fixed Rate _____ % Fixed Fee \$ _____ <b>485.00</b>	Do you require a 1099 for IRS? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Completion Date 6/18/2013
<input type="checkbox"/> <b>Specific Rates Of Pay</b> <input type="checkbox"/> Negotiated Hourly Rate <input type="checkbox"/> Provisional Hourly Rate <input type="checkbox"/> <b>Cost Per Unit of Work</b>	Total Amount Authorized \$ <b>30,500.00</b> Management Reserve Fund \$ _____ Maximum Amount Payable \$ <b>30,500.00</b>	

**Index of Exhibits (Check all that apply):**

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> Exhibit A-1 – Scope of Work             | <input type="checkbox"/> Exhibit G-2 – Fee-Sub Specific Rates                              |
| <input type="checkbox"/> Exhibit A-2 – Task Order Agreement                 | <input checked="" type="checkbox"/> Exhibit G-3 – Sub Overhead Cost                        |
| <input type="checkbox"/> Exhibit B-1 – DBE Utilization Certification        | <input checked="" type="checkbox"/> Exhibit H – Title VI Assurances                        |
| <input checked="" type="checkbox"/> Exhibit C – Electronic Exchange of Data | <input checked="" type="checkbox"/> Exhibit I – Payment Upon Termination of Agreement      |
| <input type="checkbox"/> Exhibit D-1 – Payment - Lump Sum                   | <input checked="" type="checkbox"/> Exhibit J – Alleged Consultant Design Error Procedures |
| <input checked="" type="checkbox"/> Exhibit D-2 – Payment - Cost Plus       | <input checked="" type="checkbox"/> Exhibit K – Consultant Claim Procedures                |
| <input type="checkbox"/> Exhibit D-3 – Payment - Hourly Rate                | <input type="checkbox"/> Exhibit L – Liability Insurance Increase                          |
| <input type="checkbox"/> Exhibit D-4 – Payment - Provisional                | <input checked="" type="checkbox"/> Exhibit M-1a – Consultant Certification                |
| <input checked="" type="checkbox"/> Exhibit E-1 – Fee - Lump/Fixed/Unit     | <input checked="" type="checkbox"/> Exhibit M-1b – Agency Official Certification           |
| <input type="checkbox"/> Exhibit E 2 – Fee - Specific Rates                 | <input checked="" type="checkbox"/> Exhibit M-2 – Certification Primary                    |
| <input checked="" type="checkbox"/> Exhibit F – Overhead Cost               | <input checked="" type="checkbox"/> Exhibit M-3 – Lobbying Certification                   |
| <input checked="" type="checkbox"/> Exhibit G – Subcontract Work            | <input checked="" type="checkbox"/> Exhibit M-4 – Pricing Data Certification               |
| <input checked="" type="checkbox"/> Exhibit G-1 – Subconsultant Fee         | <input type="checkbox"/> App. 31.910 Supplemental Signature Page                           |

THIS AGREEMENT, made and entered into this **11th** day of **June, 2012**,  
between the Local Agency of **City of Gig Harbor**, Washington, hereinafter called the “AGENCY”,  
and the above organization hereinafter called the “CONSULTANT”.



**WITNESSETH THAT:**

WHEREAS, the AGENCY desires to accomplish the above referenced project, and

WHEREAS, the AGENCY does not have sufficient staff to meet the required commitment and therefore deems it advisable and desirable to engage the assistance of a CONSULTANT to provide the necessary services for the PROJECT; and

WHEREAS, the CONSULTANT represents that he/she is in compliance with the Washington State Statutes relating to professional registration, if applicable, and has signified a willingness to furnish Consulting services to the AGENCY,

NOW THEREFORE, in consideration of the terms, conditions, covenants and performance contained herein, or attached and incorporated and made a part hereof, the parties hereto agree as follows:

**I General Description of Work**

The work under this AGREEMENT shall consist of the above described work and services as herein defined and necessary to accomplish the completed work for this PROJECT. The CONSULTANT shall furnish all services, labor, and related equipment necessary to conduct and complete the work as designated elsewhere in this AGREEMENT.

**II Scope of Work**

The Scope of Work and projected level of effort required for this PROJECT is detailed in Exhibit "A" attached hereto and by this reference made a part of this AGREEMENT.

**III General Requirements**

All aspects of coordination of the work of this AGREEMENT with outside agencies, groups, or individuals shall receive advance approval by the AGENCY. Necessary contacts and meetings with agencies, groups, and/or individuals shall be coordinated through the AGENCY. The CONSULTANT shall attend coordination, progress and presentation meetings with the AGENCY and/or such Federal, State, Community, City or County officials, groups or individuals as may be requested by the AGENCY. The AGENCY will provide the CONSULTANT sufficient notice prior to meetings requiring CONSULTANT participation. The minimum required hours or days notice shall be agreed to between the AGENCY and the CONSULTANT and shown in Exhibit "A."

The CONSULTANT shall prepare a monthly progress report, in a form approved by the AGENCY, which will outline in written and graphical form the various phases and the order of performance of the work in sufficient detail so that the progress of the work can easily be evaluated.

The CONSULTANT, and each SUBCONSULTANT, shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The CONSULTANT, and each SUBCONSULTANT, shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of USDOT-assisted contracts. Failure by the CONSULTANT to carry out these requirements is a material breach of this AGREEMENT that may result in the termination of this AGREEMENT.

Participation for Disadvantaged Business Enterprises (DBE), if required, per 49 CFR Part 26, or participation of Minority Business Enterprises (MBE), and Women Business Enterprises (WBE), shall be shown on the heading of this AGREEMENT. If D/M/WBE firms are utilized, the amounts authorized to each firm and their certification number will be shown on Exhibit "B" attached hereto and by this reference made a part of this AGREEMENT. If the Prime CONSULTANT is a DBE firm they must comply with the Commercial Useful Function (CUF) regulation outlined in the AGENCY'S "DBE Program Participation Plan". The mandatory DBE participation goals of the AGREEMENT are those established by the WSDOT'S Highway and Local Programs Project Development Engineer in consultation with the AGENCY.

All Reports, PS&E materials, and other data furnished to the CONSULTANT by the AGENCY shall be returned. All electronic files, prepared by the CONSULTANT, must meet the requirements as outlined in Exhibit "C."

All designs, drawings, specifications, documents, and other work products, including all electronic files, prepared by the CONSULTANT prior to completion or termination of this AGREEMENT are instruments of service for this PROJECT, and are the property of the AGENCY. Reuse by the AGENCY or by others, acting through or on behalf of the AGENCY of any such instruments of service, not occurring as a part of this PROJECT, shall be without liability or legal exposure to the CONSULTANT.

#### **IV Time for Beginning and Completion**

The CONSULTANT shall not begin any work under the terms of this AGREEMENT until authorized in writing by the AGENCY.

All work under this AGREEMENT shall be completed by the date shown in the heading of this AGREEMENT under completion date.

The established completion time shall not be extended because of any delays attributable to the CONSULTANT, but may be extended by the AGENCY in the event of a delay attributable to the AGENCY, or because of unavoidable delays caused by an act of GOD or governmental actions or other conditions beyond the control of the CONSULTANT. A prior supplemental agreement issued by the AGENCY is required to extend the established completion time.

#### **V Payment Provisions**

The CONSULTANT shall be paid by the AGENCY for completed work and services rendered under this AGREEMENT as provided in Exhibit "D" attached hereto, and by reference made part of this AGREEMENT. Such payment shall be full compensation for work performed or services rendered and for all labor, materials, supplies, equipment, and incidentals necessary to complete the work. The CONSULTANT shall conform to all applicable portions of 48 CFR Part 31.

A post audit may be performed on this AGREEMENT. The need for a post audit will be determined by the State Auditor, WSDOT External Audit Office and/or at the request of the AGENCY'S PROJECT Manager.

#### **VI Sub-Contracting**

The AGENCY permits sub-contracts for those items of work as shown in Exhibit "G" attached hereto and by this reference made part of this AGREEMENT.

Compensation for this sub-consultant work shall be based on the cost factors shown on Exhibit "G."

The work of the sub-consultant shall not exceed its maximum amount payable unless a prior written approval has been issued by the AGENCY.

All reimbursable direct labor, overhead, direct non-salary costs and fixed fee costs for the sub-consultant shall be substantiated in the same manner as outlined in Section V. All sub-contracts shall contain all applicable provisions of this AGREEMENT.

With respect to sub-consultant payment, the CONSULTANT shall comply with all applicable sections of the Prompt Payment laws as set forth in RCW 39.04.250 and RCW 39.76.011.

The CONSULTANT shall not sub-contract for the performance of any work under this AGREEMENT without prior written permission of the AGENCY. No permission for sub-contracting shall create, between the AGENCY and sub-contractor, any contract or any other relationship. A DBE certified sub-consultant is required to perform a minimum amount of their sub-contracted agreement that is established by the WSDOT Highways and Local Programs Project Development Engineer in consultation with the AGENCY.

#### **VII Employment**

The CONSULTANT warrants that they have not employed or retained any company or person, other than a bona fide employee working solely for the CONSULTANT, to solicit or secure this contract, and that it has not paid or agreed to pay any company or person, other than a bona fide employee working solely for the CONSULTANT, any fee, commission, percentage, brokerage fee, gift, or any other consideration, contingent upon or resulting from the award or making of this contract. For breach or violation of this warrant, the AGENCY shall have the right to annul this AGREEMENT without liability or, in its discretion, to deduct from the AGREEMENT price or consideration or otherwise recover the full amount of such fee, commission, percentage, brokerage fee, gift, or contingent fee.

Any and all employees of the CONSULTANT or other persons while engaged in the performance of any work or services required of the CONSULTANT under this AGREEMENT, shall be considered employees of the CONSULTANT only and not of the AGENCY, and any and all claims that may arise under any Workmen's Compensation Act on behalf of said employees or other persons while so engaged, and any and all claims made by a

third party as a consequence of any act or omission on the part of the CONSULTANT'S employees or other persons while so engaged on any of the work or services provided to be rendered herein, shall be the sole obligation and responsibility of the CONSULTANT.

The CONSULTANT shall not engage, on a full- or part-time basis, or other basis, during the period of the contract, any professional or technical personnel who are, or have been, at any time during the period of the contract, in the employ of the United States Department of Transportation, or the STATE, or the AGENCY, except regularly retired employees, without written consent of the public employer of such person.

### **VIII Nondiscrimination**

During the performance of this contract, the CONSULTANT, for itself, its assignees, and successors in interest agrees to comply with the following laws and regulations:

Title VI of the Civil Rights Act of 1964  
(42 USC Chapter 21 Subchapter V Section 2000d through 2000d-4a)

Federal-aid Highway Act of 1973  
(23 USC Chapter 3 Section 324)

Rehabilitation Act of 1973  
(29 USC Chapter 16 Subchapter V Section 794)

Age Discrimination Act of 1975  
(42 USC Chapter 76 Section 6101 et seq.)

Civil Rights Restoration Act of 1987  
(Public Law 100-259)

American with Disabilities Act of 1990  
(42 USC Chapter 126 Section 12101 et. seq.)

49 CFR Part 21

23 CFR Part 200

RCW 49.60.180

In relation to Title VI of the Civil Rights Act of 1964, the CONSULTANT is bound by the provisions of Exhibit "H" attached hereto and by this reference made part of this AGREEMENT, and shall include the attached Exhibit "H" in every sub-contract, including procurement of materials and leases of equipment, unless exempt by the Regulations or directives issued pursuant thereto.

### **IX Termination of Agreement**

The right is reserved by the AGENCY to terminate this AGREEMENT at any time upon ten (10) days written notice to the CONSULTANT.

In the event this AGREEMENT is terminated by the AGENCY other than for default on the part of the CONSULTANT, a final payment shall be made to the CONSULTANT as shown in Exhibit "I" for the type of AGREEMENT used.

No payment shall be made for any work completed after ten (10) days following receipt by the CONSULTANT of the Notice to Terminate. If the accumulated payment made to the CONSULTANT prior to Notice of Termination exceeds the total amount that would be due when computed as set forth herein above, then no final payment shall be due and the CONSULTANT shall immediately reimburse the AGENCY for any excess paid.

If the services of the CONSULTANT are terminated by the AGENCY for default on the part of the CONSULTANT, the above formula for payment shall not apply.

In such an event, the amount to be paid shall be determined by the AGENCY with consideration given to the actual costs incurred by the CONSULTANT in performing the work to the date of termination, the amount of work originally required which was satisfactorily completed to date of termination, whether that work is in a form or a type which is usable to the AGENCY at the time of termination, the cost to the AGENCY of employing another firm to complete the work required and the time which may be required to do so, and other factors which affect the value to the AGENCY of the work performed at the time of termination.

Under no circumstances shall payment made under this subsection exceed the amount, which would have been made using the formula set forth above.

If it is determined for any reason that the CONSULTANT was not in default or that the CONSULTANT'S failure to perform is without the CONSULTANT'S or it's employee's default or negligence, the termination shall be deemed to be a termination for the convenience of the AGENCY. In such an event, the CONSULTANT would be reimbursed for actual costs in accordance with the termination for other than default clauses listed previously.

In the event of the death of any member, partner or officer of the CONSULTANT or any of its supervisory personnel assigned to the PROJECT, or dissolution of the partnership, termination of the corporation, or disaffiliation of the principally involved employee, the surviving members of the CONSULTANT hereby agree to complete the work under the terms of this AGREEMENT, if requested to do so by the AGENCY. This subsection shall not be a bar to renegotiation of the AGREEMENT between the surviving members of the CONSULTANT and the AGENCY, if the AGENCY so chooses.

In the event of the death of any of the parties listed in the previous paragraph, should the surviving members of the CONSULTANT, with the AGENCY'S concurrence, desire to terminate this AGREEMENT, payment shall be made as set forth in the second paragraph of this section.

Payment for any part of the work by the AGENCY shall not constitute a waiver by the AGENCY of any remedies of any type it may have against the CONSULTANT for any breach of this AGREEMENT by the CONSULTANT, or for failure of the CONSULTANT to perform work required of it by the AGENCY. Forbearance of any rights under the AGREEMENT will not constitute waiver of entitlement to exercise those rights with respect to any future act or omission by the CONSULTANT.

#### **X Changes of Work**

The CONSULTANT shall make such changes and revisions in the complete work of this AGREEMENT as necessary to correct errors appearing therein, when required to do so by the AGENCY, without additional compensation thereof. Should the AGENCY find it desirable for its own purposes to have previously satisfactorily completed work or parts thereof changed or revised, the CONSULTANT shall make such revisions as directed by the AGENCY. This work shall be considered as Extra Work and will be paid for as herein provided under Section XIV.

#### **XI Disputes**

Any dispute concerning questions of fact in connection with the work not disposed of by AGREEMENT between the CONSULTANT and the AGENCY shall be referred for determination to the Director of Public Works or AGENCY Engineer, whose decision in the matter shall be final and binding on the parties of this AGREEMENT; provided, however, that if an action is brought challenging the Director of Public Works or AGENCY Engineer's decision, that decision shall be subject to de novo judicial review. If the parties to this AGREEMENT mutually agree, disputes concerning alleged design errors will be conducted under the procedures found in Exhibit "J", and disputes concerning claims will be conducted under the procedures found in Exhibit "K".

#### **XII Venue, Applicable Law, and Personal Jurisdiction**

In the event that either party deems it necessary to institute legal action or proceedings to enforce any right or obligation under this AGREEMENT, the parties hereto agree that any such action shall be initiated in the Superior court of the State of Washington, situated in the county in which the AGENCY is located. The parties hereto agree that all questions shall be resolved by application of Washington law and that the parties to such action shall have the right of appeal from such decisions of the Superior court in accordance with the laws of the State of Washington. The CONSULTANT hereby consents to the personal jurisdiction of the Superior court of the State of Washington, situated in the county in which the AGENCY is located.

### XIII Legal Relations

The CONSULTANT shall comply with all Federal, State, and local laws and ordinances applicable to the work to be done under this AGREEMENT. This contract shall be interpreted and construed in accordance with the laws of the State of Washington.

The CONSULTANT shall indemnify and hold the AGENCY and the STATE and its officers and employees harmless from and shall process and defend at its own expense all claims, demands, or suits at law or equity arising in whole or in part from the CONSULTANT'S negligence or breach of any of its obligations under this AGREEMENT; provided that nothing herein shall require a CONSULTANT to indemnify the AGENCY or the STATE against and hold harmless the AGENCY or the STATE from claims, demands or suits based solely upon the conduct of the AGENCY or the STATE, their agents, officers and employees; and provided further that if the claims or suits are caused by or result from the concurrent negligence of (a) the CONSULTANT'S agents or employees, and (b) the AGENCY or the STATE, their agents, officers and employees, this indemnity provision with respect to (1) claims or suits based upon such negligence (2) the costs to the AGENCY or the STATE of defending such claims and suits shall be valid and enforceable only to the extent of the CONSULTANT'S negligence or the negligence of the CONSULTANT'S agents or employees.

The CONSULTANT'S relation to the AGENCY shall be at all times as an independent contractor.

The CONSULTANT shall comply with all applicable sections of the applicable Ethics laws, including RCW 42.23, which is the Code of Ethics for regulating contract interest by municipal officers. The CONSULTANT specifically assumes potential liability for actions brought by the CONSULTANT'S own employees against the AGENCY and, solely for the purpose of this indemnification and defense, the CONSULTANT specifically waives any immunity under the state industrial insurance law, Title 51 RCW.

Unless otherwise specified in the AGREEMENT, the AGENCY shall be responsible for administration of construction contracts, if any, on the PROJECT. Subject to the processing of a new sole source, or an acceptable supplemental agreement, the CONSULTANT shall provide On-Call assistance to the AGENCY during contract administration. By providing such assistance, the CONSULTANT shall assume no responsibility for: proper construction techniques, job site safety, or any construction contractor's failure to perform its work in accordance with the contract documents.

The CONSULTANT shall obtain and keep in force during the terms of the AGREEMENT, or as otherwise required, the following insurance with companies or through sources approved by the State Insurance Commissioner pursuant to Title 48 RCW.

#### Insurance Coverage

- A. Worker's compensation and employer's liability insurance as required by the STATE.
- B. Commercial general liability and property damage insurance in an aggregate amount not less than two million dollars (\$2,000,000) for bodily injury, including death and property damage. The per occurrence amount shall not exceed one million dollars (\$1,000,000).
- C. Vehicle liability insurance for any automobile used in an amount not less than a one million dollar (\$1,000,000) combined single limit.

Excepting the Worker's Compensation Insurance and any Professional Liability Insurance secured by the CONSULTANT, the AGENCY will be named on all policies as an additional insured. The CONSULTANT shall furnish the AGENCY with verification of insurance and endorsements required by the AGREEMENT. The AGENCY reserves the right to require complete, certified copies of all required insurance policies at any time.

All insurance shall be obtained from an insurance company authorized to do business in the State of Washington. The CONSULTANT shall submit a verification of insurance as outlined above within fourteen (14) days of the execution of this AGREEMENT to the AGENCY.

No cancellation of the foregoing policies shall be effective without thirty (30) days prior notice to the AGENCY.

The CONSULTANT'S professional liability to the AGENCY shall be limited to the amount payable under this AGREEMENT or one million (\$1,000,000) dollars, whichever is the greater, unless modified by Exhibit "L". In no case shall the CONSULTANT'S professional liability to third parties be limited in any way.

The AGENCY will pay no progress payments under Section V until the CONSULTANT has fully complied with this section. This remedy is not exclusive; and the AGENCY and the STATE may take such other action as is available to it under other provisions of this AGREEMENT, or otherwise in law.

#### **XIV Extra Work**

- A. The AGENCY may at any time, by written order, make changes within the general scope of the AGREEMENT in the services to be performed.
- B. If any such change causes an increase or decrease in the estimated cost of, or the time required for, performance of any part of the work under this AGREEMENT, whether or not changed by the order, or otherwise affects any other terms and conditions of the AGREEMENT, the AGENCY shall make an equitable adjustment in the (1) maximum amount payable; (2) delivery or completion schedule, or both; and (3) other affected terms and shall modify the AGREEMENT accordingly.
- C. The CONSULTANT must submit any "request for equitable adjustment", hereafter referred to as "CLAIM", under this clause within thirty (30) days from the date of receipt of the written order. However, if the AGENCY decides that the facts justify it, the AGENCY may receive and act upon a CLAIM submitted before final payment of the AGREEMENT.
- D. Failure to agree to any adjustment shall be a dispute under the Disputes clause. However, nothing in this clause shall excuse the CONSULTANT from proceeding with the AGREEMENT as changed.
- E. Notwithstanding the terms and conditions of paragraphs (A) and (B) above, the maximum amount payable for this AGREEMENT, shall not be increased or considered to be increased except by specific written supplement to this AGREEMENT.

#### **XV Endorsement of Plans**

If applicable, the CONSULTANT shall place their endorsement on all plans, estimates, or any other engineering data furnished by them.

#### **XVI Federal and State Review**

The Federal Highway Administration and the Washington State Department of Transportation shall have the right to participate in the review or examination of the work in progress.

#### **XVII Certification of the Consultant and the Agency**

Attached hereto as Exhibit "M-1(a and b)" are the Certifications of the CONSULTANT and the AGENCY, Exhibit "M-2" Certification Regarding Debarment, Suspension and Other Responsibility Matters - Primary Covered Transactions, Exhibit "M-3" Certification Regarding the Restrictions of the Use of Federal Funds for Lobbying and Exhibit "M-4" Certificate of Current Cost or Pricing Data. Exhibit "M-3" is required only in AGREEMENTS over \$100,000 and Exhibit "M-4" is required only in AGREEMENTS over \$500,000.

#### **XVIII Complete Agreement**

This document and referenced attachments contain all covenants, stipulations, and provisions agreed upon by the parties. No agent, or representative of either party has authority to make, and the parties shall not be bound by or be liable for, any statement, representation, promise or agreement not set forth herein. No changes, amendments, or modifications of the terms hereof shall be valid unless reduced to writing and signed by the parties as an amendment to this AGREEMENT.

#### **XIX Execution and Acceptance**

This AGREEMENT may be simultaneously executed in several counterparts, each of which shall be deemed to be an original having identical legal effect. The CONSULTANT does hereby ratify and adopt all statements, representations, warranties, covenants, and agreements contained in the proposal, and the supporting material submitted by the CONSULTANT, and does hereby accept the AGREEMENT and agrees to all of the terms and conditions thereof.

In witness whereof, the parties hereto have executed this AGREEMENT as of the day and year shown in the "Execution Date" box on page one (1) of this AGREEMENT.

By \_\_\_\_\_ By \_\_\_\_\_  
Consultant **Jorge Garcia, III, Vice President** Agency **Charles L. Hunter, Mayor**

**Exhibit A-1**  
**Scope of Work**

Project No: 11WA(026)

See attached Exhibit A

**Documents To Be Furnished By The Consultant**

See Attached Exhibit A





Cushman Trail Project Phase III & IV  
96<sup>th</sup> St. to Borgen Blvd.

---

**EXHIBIT A**  
**SCOPE OF SERVICES**

The Cushman Trail Project Phase III and IV, between 96th St. to Borgen Blvd. (approximately 1 mile in length), is a non-motorized multi-use trail adjacent to Burnham Drive starting at the current north trail end at 96<sup>th</sup> Street and continuing north along the Tacoma Public Utilities (TPU) right of way to Borgen Blvd.

The purpose of this scope of work is to:

- Work with the City to complete the design and support the City in analyzing and documenting the environmental impacts associated with the proposed improvements.
- Complete the final design plans and documents to construct the project.
- Procure all the required environmental permits.

The project will be split into two phases to refine the scope for the final environmental and design work. The work is assumed to occur over an approximate 12-month period beginning June 18, 2012 and being completed by June 18, 2013.

The following is a summary of the approach for the scope for this project.

**Project Assumptions**

- For the purposes of budgeting, the anticipated length of the project will be approximately 12-months.
- Phase I will include a new delineation of wetlands, followed by a field review of geotechnical needs and design needs, both structural and general civil. The scope will then be reviewed and updated to refine the final environmental and design requirements.
- Phase II will include the NEPA documents and design documents.
- The City will conduct one public meeting, as part of a council meeting or workshop.
  - The City will provide the logistical support to reserve all meeting locations.
  - The City will prepare a summary of the meeting and public comments.
- No traffic analysis will be conducted as part of the work scope.
- Minor Right-of-way certification assistance is assumed as part of this project. Neither right-of-way appraisals nor acquisitions are included at this time in Phase 2 of this scope.
- If retaining walls are required, a MSE gravity wall design will be used.
- Minor geotechnical analysis and/or review of previous work will be needed.
- Illumination design review will be needed for the Cushman Trail.
- Pedestrian crossing improvements will be needed at Burnham Drive and Borgen Blvd.
- The City will coordinate all electrical connections.
- The City will provide permitting with support from Lochner, the City will pay permitting fees directly.



Cushman Trail Project Phase III & IV  
96<sup>th</sup> St. to Borgen Blvd.

---

- No irrigation will be incorporated into the project. Landscaping will be limited to parking areas. Landscaping material lists and installation details will be provided by the City to the Consultant for incorporation into the contract documents.
- Utility work will involve review of existing plans for possible conflicts in Phase I, and potential minor revisions as the trail design is updated in Phase II.
- Traffic control plans at intersections with streets will be included.
- City and State standards. Consultant will review the current design for ADA compliance and coordinate with stakeholders on the bridge structural and pathway vehicle/access requirements. Final design will conform to the stakeholder requirements. Alignment will conform to TPU easement requirements.
- Contract specifications will conform to the 2012 WSDOT Specifications and City of Gig Harbor Public Works Standards.
- 70% submittal will have no more than two review opportunities by the City. 100% submittal will have no more than one review opportunity by the City. Additional reviews will be subject to additional fees.
- Travel time reimbursement to Consultant will be limited to that travel time between Tacoma and Gig Harbor. Mileage costs will be reimbursed for the distance traveled.

**TASK 1: Project Administration (Phase I and Phase II)**

The Consultant shall be responsible for on-going management of the consultant team for this project in accordance with the provisions of the Agreement. On-going management will include seeing the work completed on time and within the Agreement budget. The Consultant shall:

- Provide a monthly status/progress report with monthly invoices to the City that will describe work performed by the Consultant Team members during the current reporting period. Monthly invoices will be submitted in a format acceptable to the City.
- Provide an overview design schedule for the anticipated Tasks Phase 1 and Phase 2.
- Meet with the City each month during the project to review the overall project status, schedule, budget and outstanding issues. These meetings may be in the City's offices, the Consultant office or through telephone conference calls. For purposes of estimating time required for this sub element, it is assumed that six (6) meetings will be held during the project and will include preparation time. It is also assumed that three (3) of these meeting will be held at the City's Office and the other two meetings will be conducted via telephone conference calls, and one stakeholder meeting at a stakeholder office location to be determined.
- Meet with other Stakeholders to identify direction for key design/permitting issues. Telephone conference call meetings may include one or more stakeholders for their input/interface as required.
- Maintain regular contact with the City Project Manager and maintain regular coordination with City staff for this project in accordance with the provisions of the Agreement. Regular coordination with the City will include involving the City staff in all



**Cushman Trail Project Phase III & IV**  
**96<sup>th</sup> St. to Borgen Blvd.**

---

aspects of the project. One meeting will be held at the City's offices to review work and the other communication will be conducted through e-mails and telephone calls.

- Support and assist City in providing supporting documentation for funding agency reporting and demonstration of compliance with WSDOT LAG manual guidelines as may be required.

**Deliverables:**

- Project Schedule (Excel format)
- Monthly Status/Progress Reports and Monthly Invoices.



Cushman Trail Project Phase III & IV  
96<sup>th</sup> St. to Borgen Blvd.

---

**PHASE I**

**TASK 2: Phase I Preliminary Project Studies**

The Consultant will perform a new wetland and stream delineation and preliminary project studies to refine the environmental and design scope to be used in Phase II.

**Task 2.1: Wetland and Stream Delineation Report**

A wetland and stream delineation was completed for the project site in January 2007, according to the Wetland Analysis Report for the Cushman Trail, Phase II project, completed by W&H Pacific, revised on November 9, 2007. As wetland delineations are only considered acceptable for five years by local, state, and federal agencies, the Phases 3 and 4 alignment will need to be delineated again. The Consultant, through its Sub Consultant, will provide wetland and stream delineation consisting of the following tasks:

- Meet with the City and project team to discuss alignment considerations prior to performing the wetland and stream delineation field work.
- Conduct a background review of information relating to the site. This will include a review of previous wetland and stream delineations completed for the project, the Pierce County Soil Survey, U.S. Fish and Wildlife National Wetlands Inventory maps, Washington State Department of Fish and Wildlife SalmonScape mapping system, and other relevant background information. Complete a wetland delineation of the site using the methodology outlined in U.S. Army Corps of Engineers (the Corps) 1987 Wetland Delineation Manual, and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (May 2010). It is assumed that property access will be obtained on our behalf. In addition, it is assumed that property boundaries will be marked in the field or that someone can be available to show our field biologists these locations. Wetland and stream delineation flagging will be surveyed in the field using a Trimble® GeoExplorer® 2008 series GeoXM handheld global positioning system (GPS) receiver with ESRI ArcPad® 7.1.0 software with a reliable accuracy to within 1 to 3 meters. GPS data will be post-processed with differential correction using Trimble GPScorrect extension. We assume that a base map will be provided to us from the City that can be used to develop a map of the wetland boundaries.
- Approximate wetland boundaries located within 300 feet of the alignment to determine the extent of off-site wetlands and buffers that may impact development on site, in accordance with the City's requirements.
- Rate wetlands identified on site and within 300 feet of the site using Ecology's Washington State Wetland Rating System for Western Washington, in accordance with the City's requirements, to determine the standard buffer widths as defined within the Gig Harbor Municipal Code (GHMC).
- Delineate the ordinary high water mark of streams and other potential drainages located on the site following the guidance within Ecology's technical report, Determining the



Cushman Trail Project Phase III & IV  
96<sup>th</sup> St. to Borgen Blvd.

---

Ordinary High Water Mark on Streams in Washington State. All streams identified and delineated will be classified using the water typing system defined within GHMC.

- Complete a wetland and stream delineation report describing our findings for your use and files.
- The Report will conform with the City's environmental wetlands requirements under CoGH Municipal Code Chapter 18.

One electronic copy of the draft report will be submitted for review by the Consultant and the City.

**Task 2.2: Summary Preliminary Geotechnical and Design Report**

Following the completion of the wetlands review, the Consultant will provide a field review of potential design and alignment changes, and potential geotechnical issues that may require further study. A brief summary letter with recommendations for geotechnical design will be submitted.

The services performed under this task will include:

- Literature Review. The Consultant, through its Sub Consultant, will review readily available geotechnical reports of the project area, geological reports, and geologic maps, including:
  - Landau March 18, 2008, Geotechnical Report.
  - Landau October 27, 2007, Landslide and Erosion Report.
  - Kleinfelder April 24, 2007, Limited Phase II Environmental Site Assessment.
  - WSDOT reports.
  - U.S. Geologic Survey (USGS) topographic maps.
  - USGS geologic maps and reports.
  - USGS seismologic studies.
  - Aerial photographs (available from University of Washington).
  - U.S. Department of Agriculture soil maps.
  - Washington State Department of Ecology (Ecology) on-line well log data base.
  - Washington State Department of Natural Resources Division of Geology and Earth Resources maps and reports.
- Geotechnical Reconnaissance. The Consultant, through its Sub Consultant, will perform a field reconnaissance to observe the site and soil exposed at the surface.
- Meet with the City and project team to discuss alignment.
- Prepare a brief summary report with recommendations for environmental and design will be submitted.

The Consultant will also submit any proposed revisions to the Scope of Work for Phase II.



Cushman Trail Project Phase III & IV  
96<sup>th</sup> St. to Borgen Blvd.

---

**Deliverables:**

- Preliminary Draft Wetland and Stream Delineation Report (one Word copy.) Consultant will incorporate all City comments including City's Planning Department comments.
- Summary report of the environmental, design, and geotechnical issues for consideration in the Phase II scope refinement (one PDF copy.)

**Task 2.3: Preliminary Structural Review**

Following the completion of the wetlands review, the Consultant will provide a structural review of potential design and alignment changes, review of updated topographical and base mapping, and will review ADA compliance issues that affect structural design. A brief summary memorandum listing structural issues and giving recommendations for structural design will be submitted.

The services performed under this task will include:

- Review potential alignment changes and evaluate effects on structural design.
- Review ADA compliance issues that affect structural design.

**Deliverables:**

- Preliminary Structural Issues Memorandum incorporating City review comments.
- One complete cohesive report summarizing all the above project aspects with recommendation on project path forward with milestone schedule for completion. Consultant will forward a draft for City review. Final report will incorporate City review comments.



Cushman Trail Project Phase III & IV  
96<sup>th</sup> St. to Borgen Blvd.

---

**Phase II – OPTIONAL**

Tasks 3 through 10 are optional work and may be authorized by the City at a future date.

**TASK 3: Public Involvement**

The Consultant will prepare graphics of design drawings for up to three (3) council or public meetings and present the findings and design of the improvements.

**Deliverables:**

- Graphics for community/council meeting.

**TASK 4: Topographical Survey and Base Mapping (Prizm Surveying)**

The Consultant, through its Sub Consultant, will provide survey updates to verify field locations and boundaries, and provide needed topographic data for potential redesign areas. This work will occur in Phase II and will include:

- Coordinate with the client on the proposed location of the project and plan an initial walk through to identify possible issues and site constraints.
- Perform office research of the City of Gig Harbor's, Pierce County's and the Department of Natural Resources Records for relevant monumentation, Right of way and Control surveys in the vicinity of the subject area.
- Perform a random field traverse or GPS survey locating relevant (visible) survey monumentation and vertical control as recoverable through a diligent search, necessary for the determination of Rights of Way and the Topographic Survey. Horizontal datum will be Washington State Plane Coordinate System, South Zone. Vertical datum will be per Pierce County, NGVD 1929.
- Perform a Topographic survey of approximately 1,000' of planned trail corridor with an approximate width of 50 feet. We will be locating existing features deemed necessary for the future design of the site. Within said limits, which will include, but not limited to visible: trails, pavement edging, sidewalks, ramps, utility poles, hydrants, valves, manholes, storm drains, storm ditches, culverts, mailboxes, signs, fences, significant landscaping outline, driveways or other access ways, and significant trees 12''+, and canalization. All of which will be utilized to determine existing natural and man altered elevations. Accessible utility structures will be measured for depth, pipe sizes, direction, etc.
- Visible evidence of underground of utilities (Water, Gas, Power, Communication) will be located as noted above, but any underground locations of conductible utilities not visible cannot be shown without the benefit of a underground utility locate service.  
The Consultant will contact local utility providers requesting as-built information in the vicinity of the project area. The as-built information will be transferred to the final map.
- A temporary benchmark and control points will be set at convenient locations for future reference.
- Perform mathematical computations, analyze and resolve the limits of the Right of Way, and the approximate location intersecting property lines.



Cushman Trail Project Phase III & IV  
96<sup>th</sup> St. to Borgen Blvd.

- Reduce field notes, plot data obtained from the fieldwork, and prepare an AutoCAD drawing of the above for design use at a convenient scale showing the data collected along with 2-foot interval contours and spot elevations where needed for clarity. The final Map will be reviewed, field checked and certified by a Professional Land Surveyor, and provided in electronic format and paper copies. Surface DTM in 3D lines will be provided for design purposes.

The Consultant will conduct a field walk through to verify the base mapping.

**Deliverables:**

- Copies of the locate as-built documents provided by the utilities.
- AutoCAD Base Map drawing files suitable for the preparation of plans, and other deliverables.
- Survey Notes.
- DTM with two-foot contours.

**TASK 5: Preliminary Design (30% Design)**

Under this task, the Consultant will prepare the preliminary (30%) trail plans. It is envisioned that a community meeting will be held to review these plans to receive public comments prior to finalizing the design.

**Task 5.1. Preliminary Conceptual Trail Plans**

The Consultant will prepare preliminary trail, parking lot, wall location and drainage plans for the project using the base map and DTM developed in Task 4. This work will include development of typical sections, 1" = 100' plans, driveway adjustments, utility impacts, and retaining wall locations, where needed

**Task 5.2. Preliminary Bridge Plan and Profile**

The Consultant will prepare preliminary bridge plan and profile based on revised alignments and meeting ADA criteria. Plans will be developed at 1" = 20' scale.

**Task 5.3. Conceptual Drainage Plans**

The Consultant will prepare a limited technical memorandum discussing the preferred stormwater management BMP. It is assumed that infiltration of stormwater through porous asphalt or infiltration trenches is acceptable to meet water quality and flow control requirements. Stormwater runoff modeling for flow control, water quality or infiltration testing is not included. It is assumed that the previously submitted drainage report for this project is acceptable with a letter supplement if the trail is realigned

**Task 5.4. Conceptual Cost Estimate**

The Consultant will prepare a conceptual level cost estimate using the plans developed above and WSDOT standard bid items.





Cushman Trail Project Phase III & IV  
96<sup>th</sup> St. to Borgen Blvd.

---

**Deliverables:**

- One PDF copy of the conceptual alignment and profile plans, typical sections, and channelization plans.
- One PDF copy of the Technical Memorandum discussing the drainage options and showing the layout of the proposed system for water quality and quantity for the City and two copies for the Consultant team.
- One PDF copy of the conceptual cost estimate for preliminary design.

**TASK 6: Geotechnical Studies (Shannon & Wilson)**

This task focuses on using the previous geotechnical studies. The Consultant, through its Sub Consultant will provide specific geotechnical design recommendations addressing changes in the proposed trail alignment and design.

Portions of the proposed trail may be constructed over wetlands and deep, loose soil. The geotechnical explorations performed to date are near the 96th Street NW and Borgen Boulevard street crossings. The Consultant, through its Sub Consultant, will perform additional subsurface explorations to characterize the depth of soft and loose soil once wetland and alignment studies have been completed.

The services performed under this task will include:

**Task 6.1. Site Reconnaissance**

The Consultant, through its Sub Consultant, will perform a site reconnaissance to select hand boring exploration locations.

**Task 6.2. Subsurface Explorations and Laboratory Testing**

The Consultant, through its Sub Consultant will explore the site with hand borings. The hand borings are intended to provide subsurface information for designing pin pile or other foundations for bridge and wall sections of the proposed trail.

Eight (8) hand borings will be drilled to depths of 15 feet or until practical refusal of the equipment, whichever is shallower. The hand boring subsurface explorations will require two 12-hour days including travel and equipment mobilization. If very soft or very loose soil is present to depths greater than 15 feet, we will notify you if we believe the hand boring should be drilled deeper than 15 feet. In the hand borings, we will sample and conduct penetration tests using modified Porter sampling equipment. This equipment uses a 40-pound weight falling 18 inches to drive a 1.4-inch-diameter split-spoon sampler. The penetration resistance correlates approximately to the Standard Penetration Resistance in blows per foot.

Permits are not normally required for drilling hand borings in wetland areas, provided access to the area is by foot, and that filling and substantial ground disturbance do not occur. Hand auger cuttings will be used to backfill the holes, so little material will be left on the surface. If the work is done while the site is dry, a two-person crew would not cause substantial disturbance on the surface.



Cushman Trail Project Phase III & IV  
96<sup>th</sup> St. to Borgen Blvd.

---

The Consultant, through its Sub Consultant will drill the borings and test pit excavations and develop logs of the subsurface conditions encountered. Soil encountered in the subsurface explorations will be classified in accordance with ASTM International (ASTM) Designation: D 2488, Standard Recommended Practice for Description of Soils (Visual-Manual Procedure), and the geologic unit of each soil sample will be interpreted.

The Consultant, through its Sub Consultant will screen soil samples recovered from the borings and test pits for evidence of contamination, including visual and olfactory evidence, and with a photoionization detector.

The Consultant, through its Sub Consultant will perform geotechnical laboratory testing in general accordance with appropriate ASTM or WSDOT standards. Laboratory testing will include moisture content, grain size analyses, Atterberg Limits, organic content, and compaction tests on selected samples.

**Task 6.3. Geotechnical Analyses**

Using the data from the previous studies and the proposed reconnaissance and limited subsurface explorations, geotechnical studies will be performed to provide design and construction recommendations for the proposed new trail, which will include:

- Description of the subsurface conditions.
- Stability of permanent slopes and temporary excavation slopes.
- Drainage recommendations.
- Retaining wall recommendations.
- Bridge foundation recommendations, including pin piles, helical anchors, timber piles, and small-diameter drilled piers.
- Earthwork, including stripping depths, reuse of onsite soil, and subgrade preparation for foundations and structural fills.
- Backfill and compaction recommendations.

**Task 6.4. Geotechnical Report**

The Consultant, through its Sub Consultant will present the geotechnical conclusions and recommendations in a letter report. The letter report will not repeat the data, conclusions, and recommendations presented in the Landau reports, but will present new data and provide recommendations that differ based on site-specific data for the Phases 3 and 4 portions of the proposed trail.

The Sub Consultant will provide a draft copy for review by the Consultant and the City. The Consultant will incorporate comments for the final report.

**Deliverables**

- Draft Geotechnical Report (one Word copy.)
- Final Geotechnical Report (one PDF copy and three hard copies.)



Cushman Trail Project Phase III & IV  
96<sup>th</sup> St. to Borgen Blvd.

**TASK 7: Environmental Analysis and Documentation (Shannon & Wilson)**

**Task 7.1. Final Wetland and Stream Delineation Report**

On completion of Task 4 the comments from the Preliminary Report submitted in Task 3 will be consolidated into a final wetland and stream delineation report.

**Deliverables**

- Final Wetland and Stream Analysis Report (one PDF copy and three hard copies)

**Task 7.2. Conceptual Mitigation Plan**

The Consultant, through its Sub Consultant will coordinate with the design team to determine the amount of wetland, stream, and buffer impacts associated with the project. It is assumed that a mitigation area, necessary to mitigate for the impacts, is available on site and will primarily consist of restoration of the disturbed wetland, stream, and buffer areas. The conceptual mitigation plan will include a wetland functions evaluation, identify mitigation areas on site, and develop a conceptual planting plan.

A detailed wetland hydrology evaluation is not included in this scope of services. An amended scope and cost estimate will be required if a hydrologic evaluation is required or if additional mitigation is necessary beyond the subject property. This task does not include a detailed planting plan.

The Sub Consultant will submit one electronic copy of the draft conceptual mitigation plan for review by the Consultant and the City. The Consultant will provide the Sub Consultant with one set of consolidated comments, if any, to address. The Sub Consultant will make the appropriate edits and changes and resubmit the final conceptual mitigation plan. This plan is required for the permit applications to the Corps, Ecology, and, potentially, the City.

**Deliverables**

- Draft Conceptual Mitigation Plan (one Word copy.)
- Conceptual Mitigation Plan (one PDF copy and three hard copies.)

**Task 7.3. Final Mitigation Plan**

Typically, during the permitting process, regulatory agencies request some modification of the mitigation plans. The final mitigation plan will be developed based on comments received from the regulatory agencies. The Consultant, through its Sub Consultant will coordinate with the design team to refine the amount of wetland, stream, and buffer impacts associated with the project, and revise the plan based on agency comments. As the project alignment and impacts are not well known, it is assumed that the approved mitigation plan and strategy within the conceptual mitigation plan (Task 7.2, above) includes on-site and in-kind mitigation through removal of fill and revegetation at one location. A detailed planting plan is required by the City as part of the final mitigation plan.

It is assumed that no hydrologic evaluation will be necessary and mitigation will not occur at multiple sites. A scope and cost estimate will be required if a hydrologic evaluation is required or if additional mitigation is necessary beyond the subject property.



Cushman Trail Project Phase III & IV  
96<sup>th</sup> St. to Borgen Blvd.

One electronic copy of the draft final mitigation plan will be submitted for review by the Consultant and the City. The Consultant will consolidate comments, if any, to address. The Sub Consultant will make appropriate edits and changes and submit the final mitigation plan.

**Deliverables**

- Draft Final Mitigation Plan (one Word copy.)
- Final Mitigation Plan (one PDF copy and three hard copies.)

**Task 7.4. Environmental Classification Summary (ECS)**

As a requirement of the project's federal funding, an ECS will be required to comply with the National Environmental Policy Act.

Given the project's federal funding from FHWA, we believe that meeting with key personnel from WSDOT Highways and Local Programs and the City will be important to identify the required discipline documents necessary to support the Project's ECS. The intent of this meeting is to review the site with those who will be reviewing the project design to determine whether analysis such as a noise study or cultural resource survey will be required.

Following this onsite meeting, The Consultant, through its Sub Consultant will complete the ECS checklist for the project. Either the Consultant or other Sub Consultants will provide the design and technical analysis and discipline reports necessary to complete those sections of the ECS that FHWA/WSDOT requires as part of the application. Those sections that could be required by FHWA/WSDOT include air quality, aquifer recharge area and wellhead protection areas, floodplains and floodways, hazardous and problem waste, noise, Sections 4(f) and 6(f), resource lands, tribal lands, visual quality, stormwater, communications, and social effects and environmental justice sections.

If, in meeting with FHWA/WSDOT, they determine an in-depth review is necessary in other disciplines, a modification of this scope will be required.

One electronic copy of the draft ECS will be submitted for review by the Consultant and the City. The Consultant will provide one set of consolidated comments, if any, to address. The Sub Consultant will make the appropriate revisions and submit the final ECS so it can be provided to WSDOT.

**Deliverables**

- Draft ECS (one Word copy.)
- Final ECS (one PDF copy and three hard copies.)

**Task 7.5. Biological Evaluation (BE) – Alternative**

As a requirement of the project's federal funding, compliance with the Endangered Species Act (ESA) and Magnuson-Stevens Act will be required.

Based on our current understanding of the project and the known resources and designated critical habitat located in the project area, we believe the project may be able to be constructed so that it justifies a "No Effect" determination to listed species and essential fish habitat (EFH). Should a "No Effect" determination be warranted, the BE can be completed within Part V of the



Cushman Trail Project Phase III & IV  
96<sup>th</sup> St. to Borgen Blvd.

---

ECS checklist. However, should the project result in a “May Affect, Not Likely to Adversely Affect” effects determination, a formal BE will be necessary for informal consultation between WSDOT and the Services (e.g., the U.S. Fish and Wildlife Service and National Oceanic and Atmospheric Administration’s National Marine Fisheries Service).

If needed, The Consultant, through its Sub Consultant will prepare a formal BE for the project, which summarizes potential impacts to waters of the United States (e.g., jurisdictional wetlands and streams), listed species under the federal ESA, and EFH protected under the Magnuson-Stevens Act. It is assumed that the Consultant and the project team will be able to provide the reports and designs necessary for us to adequately assess all of the project’s impacts. This includes, but is not limited to, a set of design drawings (30 percent completion minimal), location of staging areas, temporary erosion and sediment control and grading plan, and construction timeline.

One electronic copy of the preliminary BE will be submitted for the Consultant’s review. The Consultant consolidated comment, if any, to address. The Sub Consultant will complete those appropriate edits and finalize the BE for WSDOT to review and submit to the Services.

**Deliverables:**

- Preliminary Biological Evaluation (one Word copy.)
- Final Biological Evaluation (one PDF copy and three hard copies.)

**Task 7.6. Joint Aquatic Permit Application (JARPA)**

Projects that require work above or below the ordinary high water mark of a Water of the State, require an Hydraulic Project Approval (HPA) from the Washington State Department of Fish and Wildlife (WDFW). Additionally, any project which proposes the placement of fill within waters of the United States requires a permit under Sections 404 and 401 of the federal Clean Water Act from the Corps and Ecology, respectively. This includes the placement of a trail and boardwalk in or over jurisdictional wetlands and streams.

The Consultant, through its Sub Consultant will complete a JARPA for submission to WDFW, the Corps, and Ecology as the Project’s application for an HPA, Section 404 permit, and Section 401 water quality certification. It is assumed that the Consultant and the project team will be able to provide the reports and designs necessary to complete the JARPA. This includes, but is not limited to, a set of design drawings (30 percent completion minimal), location of staging areas, temporary erosion and sediment control and grading plan, and construction timeline.

The Corps’ definition of “fill” does not include the placement of wood within jurisdictional aquatic areas (not including Section 10 traditionally navigable waters). Therefore, if the project design ultimately proposes the installation of freestanding timber piles within jurisdictional waters for the boardwalk foundations and there are no other wetland and stream impacts, then permitting from the Corps may not be necessary.

**Task 7.7. Permit Coordination and Meetings**

It is anticipated that as permitting for the project is underway, project meetings between the design team and City staff will be required periodically. This includes the Consultant, through its Sub Consultant, providing technical assistance and coordination to the City to complete the State



Cushman Trail Project Phase III & IV  
96<sup>th</sup> St. to Borgen Blvd.

---

Environmental Policy Act review as necessary and to ensure consistency between the local permitting process and state and federal permit efforts.

**TASK 8: Cultural Resources (Cultural Resource Consultants)**

The project is subject to the National Historic Preservation Act, which requires consideration of adverse effects to historic properties resulting from federally funded or permitted undertakings. Relevant Washington state laws that may apply include the Archaeological Sites and Resources Act (RCW 27.53) and the Indian Graves and Records Act (RCW 27.44). This scope is based on the following assumptions:

- This is based upon information provided on 31 May 2012. Any changes may require a change in budget to accommodate updating project information not received prior to the start of this project.
- No more than one unrecorded archaeological site or one unrecorded historic site will be identified within the project area. It would be necessary to adjust the budget if additional sites are found. This budget was prepared with the assumption that no more than ten (10) shovel test probes would be excavated. If extensive archaeological deposits are encountered or if additional shovel test probes are warranted within the project area it may be necessary to modify this agreement to accommodate additional investigations for purposes of site identification.
- No meetings with clients and/or stakeholders will be required.
- Project proponents can provide immediate Right of Entry to CRC so the project may be completed within the stated project schedule.
- If human remains are found within the project area, all CRC field investigations will cease immediately, proper authorities will be notified and CRC will not resume field investigations until applicable state laws are addressed.
- The report will be submitted to DAHP (cover page provided; however, the client should include their own cover letter requesting review) within 15 days of receipt of said report for review. CRC cannot be held liable for reports prepared but not submitted to DAHP in a timely manner. Additional fees may apply for additional services required as part of DAHP's review process for reports submitted after 15 days of receipt.
- No cultural resources study can wholly eliminate uncertainty regarding the potential for prehistoric sites, historic properties or traditional cultural properties to be associated with a project. The information CRC will present within the reports is based on years of experience and professional opinions derived from the analysis and interpretation of the documents, records, literature, and information CRC is able to identify and use within the report, and during field investigation and observations to be conducted in the process of preparing the technical report. The conclusions and recommendations CRC presents will apply to the project conditions existing at the time of study and those reasonably foreseeable.



Cushman Trail Project Phase III & IV  
96<sup>th</sup> St. to Borgen Blvd.

---

**Task 8.1. Background Research**

CRC will conduct a search of site files recorded at Washington Department of Archaeology and Historic Preservation (DAHP); review of relevant correspondence between the project proponent, stakeholders and DAHP; and, review of pertinent environmental, archaeological, ethnographic and historical information appropriate to the project area.

**Task 8.2. Tribal Contact**

CRC will contact the cultural resources staff of tribes that may have an interest in the project area.

**Task 8.3. Field Identification**

CRC will provide a field investigation of the project location for identification of archaeological and historical resources and, if necessary, excavation of shovel test probes or other exploratory excavations in environments that might contain buried archaeological deposits. Field methods will be consistent with DAHP guidelines.

**Task 8.4. Documentation of Findings**

CRC will document and record historic properties within the project area, including preparation of Washington State archaeological and/or historic site(s) forms. Documentation will be consistent with DAHP standards.

**Task 8.5. Cultural Resources Assessment Report**

CRC will prepare a technical memo describing background research, field methods, results of investigations, and management recommendations. The report will provide supporting documentation of findings, including maps and photographs, and will conform to DAHP reporting standards.

**Deliverables:**

- Draft Cultural Resource Report (one Word copy.)
- Final Cultural Resource Report (one PDF copy, 1 electronic version on CD for DAHP, hard copies on request.)

**TASK 9: Final Design**

This task will include the development of the interim (70%) plans, and final (100%) PS&E plans for the trail improvements.

**Task 9.1. Interim 70 % Project Design**

The Consultant will prepare the interim project plans for the Cushman trail, including traffic calming channelization, illumination, signing, driveways, drainage and erosion control, and landscaping plans. The Consultant will also develop special provisions and an Estimate of Probable Cost.



Cushman Trail Project Phase III & IV  
96<sup>th</sup> St. to Borgen Blvd.

---

**Task 9.1.1. Trail Plans and Typical Sections**

The Consultant will prepare a preliminary trail plan and sections showing trail alignment revisions.

**Task 9.1.2. Parking Lot and Detail Sections**

The Consultant will develop the parking lots plans and details.

**Task 9.1.3. Drainage Plans**

The Consultant will prepare drainage plans. The drainage analysis will match proposed improvements to existing pipes, ditches and discharge points. The Consultant will also prepare erosion control plans for the project.

**Task 9.1.4. Channelization and Signage Plans**

The Consultant will prepare channelization and signage plans, including pavement markings, permanent signing and miscellaneous details.

**Task 9.1.5. Wall Plans**

The Consultant will prepare plans for retaining walls, showing location, size and details. Wall profiles are not anticipated.

**Task 9.1.6. Bridge Plans**

The Consultant will develop designs and prepare plans, elevations and details for the Cushman Trail Pedestrian Bridge.

**Task 9.1.7. Illumination Plans**

The Consultant will prepare an illumination plan for the crossing of Burnham Drive and the two trail parking lots.

**Task 9.1.8. Landscaping**

The Consultant will prepare landscaping plans in accordance with City requirements providing for the plantings. This contract will include hydro-seeding and landscaping of the distributed areas.

**Task 9.1.9. Traffic Control Plan**

The Consultant will prepare a basic Traffic Control Plan.

**Task 9.1.10. Cost Estimate**

The Consultant will calculate quantities and prepare an Estimate of Probable Construction Cost using bid items.





## Cushman Trail Project Phase III & IV 96<sup>th</sup> St. to Borgen Blvd.

---

### **Task 9.1.11. Specifications**

The Consultant will review the WSDOT/APWA/City's Standard Construction Specifications and prepare special provisions for these items not included or are changed from the standard specifications. The Consultant will prepare the complete specification package for the project.

#### **Deliverables:**

- One PDF set of Interim 70% Project Plans, Specifications and Construction Estimate for the City.

### **Task 9.2. Final 100% PS&E Design**

Based on City's comments from their review of the interim plans and specifications, the Consultant will prepare the final project design plans including trail, gravity walls, channelization, illumination, signing, driveways, drainage and erosion control, and landscaping. The Consultant will also develop special provisions and cost estimate. It is assumed that there are no major changes from the preliminary design submittal.

#### **Deliverables:**

- Camera-ready Final Project Plans, Specifications and Construction Estimate with Engineer's stamp.
- Electronic copy of all drawings (AutoCAD and PDF format), specifications (Word and PDF format) and cost estimate (Excel and PDF format) versions as determined by the City.
- Two sets (one set 11" x 17" paper and one set 22" x 34" mylar) of Final Project Plans, Specifications and Construction Estimate with Engineer's stamp for the City and two sets for the consultant team.

### **Task 10: Bid Assistance**

The Consultant will provide assistance during the bidding process for this project. This work will include the preparation of responses to bidder's questions and preparing addenda as required. For budgeting purposes, up to 2 addenda will be assumed.

The City will prepare a summary of the bids (bid tabulation).

#### **Deliverables:**

- Written responses to bidder's questions.
- Up to 2 addenda packages.

**Exhibit C**  
**Electronic Exchange of Engineering and Other Data**

In this Exhibit the agency, as applicable, is to provide a description of the format and standards the consultant is to use in preparing electronic files for transmission to the agency. The format and standards to be provided may include, but are not limited to, the following:

I. Surveying, Roadway Design & Plans Preparation Section

A. Survey Data

**PDF and/or Excel 2010, Word 2010**

B. Roadway Design Files

**AutoCAD 2010 with Supporting COGO Project Civil Files**

C. Computer Aided Drafting Files

**AutoCAD 2010 with Supporting COGO Project Civil Files**

D. Specify the Agency's Right to Review Product with the Consultant

**City will be authorized to review all products at stages noted in Scope**

E. Specify the Electronic Deliverables to Be Provided to the Agency

**Design & Environmental Reports**

F. Specify What Agency Furnished Services and Information Is to Be Provided

**As noted in Scope**

II. Any Other Electronic Files to Be Provided

**Various Reports in PDF and/or Word 2010**

III. Methods to Electronically Exchange Data

A. Agency Software Suite

**Office 2010**

B. Electronic Messaging System

**Outlook 2010**

C. File Transfers Format

**FTP & YouSendIt**

## Exhibit D-2 Payment (Cost Plus a Fixed Fee)

The CONSULTANT shall be paid by the AGENCY for completed work and services rendered under this AGREEMENT as provided hereinafter. Such payment shall be full compensation for work performed or services rendered and for all labor, materials, supplies, equipment, and incidentals necessary to complete the work specified in Section II, "Scope of Work." The CONSULTANT shall conform to all applicable portions of 48 CFR Part 31.

A. Actual Costs: Payment for all consulting services for this PROJECT shall be on the basis of the CONSULTANT'S actual cost plus a fixed fee. The actual cost shall include direct salary cost, overhead, direct non-salary costs, and fixed fee.

1. Direct Salary Costs: The Direct Salary Cost is the direct salary paid to principals, professional, technical, and clerical personnel for the time they are productively engaged in work necessary to fulfill the terms of this AGREEMENT. The CONSULTANT shall maintain support data to verify the direct salary costs billed to the AGENCY.

2. Overhead Costs: Overhead Costs are those costs other than direct costs, which are included as such on the books of the CONSULTANT in the normal everyday keeping of its books. Progress payments shall be made at the rate shown in the heading of this AGREEMENT under "Overhead Progress Payment Rate." Total overhead payments shall be based on the method shown in the heading of the AGREEMENT. The two options are explained as follows:

- a. Fixed Rate: If this method is indicated in the heading of the AGREEMENT the AGENCY agrees to reimburse the CONSULTANT for overhead at the percentage rate shown. This rate shall not change during the life of the AGREEMENT.
- b. Actual Cost: If this method is indicated in the heading of the AGREEMENT the AGENCY agrees to reimburse the CONSULTANT the actual overhead costs verified by audit, up to the Maximum Total Amount Payable, authorized under this AGREEMENT, when accumulated with all other Actual Costs.

A summary of the CONSULTANTS cost estimate and the overhead computation is shown in Exhibit "E" attached hereto and by this reference made part of this AGREEMENT. When an Actual Cost method is used, the CONSULTANT (prime and all sub-consultants) will submit to the AGENCY within six (6) months after the end of each firm's fiscal year, an overhead schedule in the format required by the AGENCY (cost category, dollar expenditures, etc.) for the purpose of adjusting the overhead rate for billing purposes. It shall be used for the computation of progress payments during the following year and for retroactively adjusting the previous year's overhead cost to reflect the actual rate.

Failure to supply this information by either the prime CONSULTANT or any of their sub-consultants shall cause the AGENCY to withhold payment of the billed overhead costs until such time as the required information is received and an overhead rate for billing purposes is approved.

The AGENCY, STATE and/or the Federal Government may perform an audit of the CONSULTANT'S books and records at any time during regular business hours to determine the actual overhead rate, if they so desire.

3. Direct Non-Salary Costs: Direct Non-Salary Costs will be reimbursed at the Actual Cost to the CONSULTANT. These charges may include, but are not limited to, the following items: travel, printing, long distance telephone, supplies, computer charges and fees of sub-consultants.
  - a. Air or train travel will be reimbursed only to economy class levels unless otherwise approved by the AGENCY. The CONSULTANT shall comply with the rules and regulations regarding travel costs (excluding air, train, and rental car costs) in accordance with the AGENCY'S Travel Rules and Procedures. However, air, train, and rental car costs shall be reimbursed in accordance with 48 Code of Federal Regulations (CFR) Part 31.205-46 "Travel Costs."
  - b. The billing for Direct Non-Salary Costs shall include an itemized listing of the charges directly identifiable with the PROJECT.
  - c. The CONSULTANT shall maintain the original supporting documents in their office. Copies of the original supporting documents shall be supplied to the AGENCY upon request.
  - d. All above charges must be necessary for the services provided under this AGREEMENT.
4. Fixed Fee: The Fixed Fee, which represents the CONSULTANT'S profit, is shown in the heading of this AGREEMENT under Fixed Fee. This amount does not include any additional Fixed Fee, which could be authorized from the Management Reserve Fund. This fee is based on the Scope of Work defined in this AGREEMENT and the estimated person-hours required to perform the stated Scope of Work. In the event the CONSULTANT enters into a supplemental AGREEMENT for additional work, the supplemental AGREEMENT may include provisions for the added costs and an appropriate additional fee. The Fixed Fee will be prorated and paid monthly in proportion to the percentage of work completed by the CONSULTANT and reported in the Monthly Progress Reports accompanying the billings. Any portion of the Fixed Fee earned but not previously paid in the progress payments will be covered in the final payment, subject to the provisions of Section IX entitled "Termination of Agreement."
5. Management Reserve Fund: The AGENCY may desire to establish a Management Reserve Fund to provide the Agreement Administrator with the flexibility to authorize additional funds to the AGREEMENT for allowable unforeseen costs, or reimbursing the CONSULTANT for additional work beyond that already defined in this AGREEMENT. Such authorization(s) shall be in writing and shall not exceed

the lesser of \$100,000 or 10% of the Total Amount Authorized as shown in the heading of this AGREEMENT. The amount included for the Management Reserve Fund is shown in the heading of this AGREEMENT. This fund may not be replenished. Any changes requiring additional costs in excess of the Management Reserve Fund shall be made in accordance with Section XIV, "Extra Work." 6. Maximum Total Amount Payable: The Maximum Total Amount Payable by the AGENCY to the CONSULTANT under this AGREEMENT shall not exceed the amount shown in the heading of this AGREEMENT. The Maximum Total Amount Payable is comprised of the Total Amount Authorized, and the Management Reserve Fund. The Maximum Total Amount Payable does not include payment for Extra Work as stipulated in Section XIV, "Extra Work." No minimum amount payable is guaranteed under this AGREEMENT.

- B. Monthly Progress Payments: The CONSULTANT may submit billings to the AGENCY for reimbursement of Actual Costs plus the calculated overhead and fee on a monthly basis during the progress of the work. Such billings shall be in a format approved by the AGENCY and accompanied by the monthly progress reports required under Section III, "General Requirements" of this AGREEMENT. The billings will be supported by an itemized listing for each item including Direct Salary, Direct Non-Salary, and allowable Overhead Costs to which will be added the prorated Fixed Fee. To provide a means of verifying the billed salary costs for CONSULTANT employees, the AGENCY may conduct employee interviews. These interviews may consist of recording the names, titles, salary rates, and present duties of those employees performing work on the PROJECT at the time of the interview.
- C. Final Payment: Final Payment of any balance due the CONSULTANT of the gross amount earned will be made promptly upon its verification by the AGENCY after the completion of the work under this AGREEMENT, contingent upon receipt of all PS&E, plans, maps, notes, reports, electronic data and other related documents which are required to be furnished under this AGREEMENT. Acceptance of such Final Payment by the CONSULTANT shall constitute a release of all claims for payment, which the CONSULTANT may have against the AGENCY unless such claims are specifically reserved in writing and transmitted to the AGENCY by the CONSULTANT prior to its acceptance. Said Final Payment shall not, however, be a bar to any claims that the AGENCY may have against the CONSULTANT or to any remedies the AGENCY may pursue with respect to such claims.

The payment of any billing will not constitute agreement as to the appropriateness of any item and at the time of final audit, all required adjustments will be made and reflected in a final payment. In the event that such final audit reveals an overpayment to the CONSULTANT, the CONSULTANT will refund such overpayment to the AGENCY within thirty (30) days of notice of the overpayment. Such refund shall not constitute a waiver by the CONSULTANT for any claims relating to the validity of a finding by the AGENCY of overpayment. The CONSULTANT has twenty (20) days after receipt of the final POST AUDIT to begin the appeal process to the AGENCY for audit findings.

- D. Inspection of Cost Records: The CONSULTANT and their sub-consultants shall keep available for inspection by representatives of the AGENCY, STATE and the United States, for a period of three (3) years after receipt of final payment, the cost records and accounts pertaining to this AGREEMENT and all items related to or bearing upon these records with the following exception: if any litigation, claim or audit arising out of, in connection with, or related to this contract is initiated before the expiration of the three (3) year period, the cost records and accounts shall be retained until such litigation, claim, or audit involving the records is completed.

**Exhibit E-1  
Consultant Fee Determination - Summary Sheet  
(Lump Sum, Cost Plus Fixed Fee, Cost Per Unit of Work)**

**Project:** Cushman Trail Project Phase III & IV 96th St. to Borgen Blvd.

**Direct Salary Cost (DSC):**

<u>Classification</u>	<u>Man Hours</u>	<u>Rate</u>	<u>Cost</u>
Project Principal	6 x	66.34 = \$	398.04
Project Manager	12 x	54.68 = \$	656.16
Sr Transp Engineer / Planner	5 x	47.38 = \$	236.90
Design Engineer / Planner	0 x	25.00 = \$	
Sr Hydraulics Engineer	0 x	66.34 = \$	
Structural Engineer	8 x	51.25 = \$	410.00
CADD Technician	0 x	29.98 = \$	
Adminstrative	1 x	31.25 = \$	31.25
	x	= \$	
	x	= \$	
	x	= \$	
	x	= \$	
<b>Total DSC</b>			<b>1,732</b>

**Overhead (OH Cost – Including Salary Additives):**

OH Rate x DSC of 178.41% x \$ 1,732 = 3,090

**Fixed Fee (FF):**

FF Rate x DSC of 28.00% x \$ 1,732 = 485

**Reimbursables:**

Itemized: Travel	<u>56</u>	
Graphics/Misc	<u>500</u>	
Prizm Surveying	<u>4,153</u>	
<b>Total Reimbursables</b>		<b><u>4,709</u></b>

**Subconsultant Costs (See Exhibit G):** *(+1.8% Markup)* 20,484

**Grand Total** 30,500

Prepared By: Al King

Date: June 6, 2012

**Exhibit F**  
**Breakdown of Overhead Cost**

Account Title	\$ Beginning Total	% of Direct Labor
Direct Labor      See attached audit document.		
Overhead Expenses:		
FICA		
Unemployment		
Health/Accident Insurance		
Medical Aid & Industrial Insurance		
Holiday/Vacation/Sick Leave		
Commission/Bonus/Pension		
<b>Total Fringe Benefits</b>		
General Overhead:		
State B&O Taxes		
Insurance		
Administration & Time Not Assignable		
Printing, Stationery & Supplies		
Professional Services		
Travel Not Assignable		
Telephone & Telegraph Not Assignable		
Fees, Dues & Professional Meetings		
Utilities & Maintenance		
Professional Development		
Rent		
Equipment Support		
Office, Miscellaneous & Postage		
<b>Total General Overhead</b>		
<b>Total Overhead (General + Fringe)</b>		
<b>Overhead Rate (Total Overhead / Direct Labor)</b>		



**Washington State  
Department of Transportation**  
**Paula J. Hammond, P.E.**  
Secretary of Transportation

**Transportation Building**  
310 Maple Park Avenue S.E.  
P.O. Box 47300  
Olympia, WA 98504-7300

360-705-7000  
TTY: 1-800-833-6388  
[www.wsdot.wa.gov](http://www.wsdot.wa.gov)

December 15, 2011

Paul Blachowicz, Director of Finance  
H.W. Lochner, Inc.  
20 N. Wacker Drive, Suite 1200  
Chicago, IL 60606-2901

Re: H.W. Lochner, Inc. Overhead Schedule  
Fiscal Year End April 30, 2011

Dear Mr. Blachowicz:

We have completed a desk review of your overhead schedule for the above referenced fiscal year. Our review included the documentation provided by H.W. Lochner, Inc.

The reviewed data included, but was not limited to; the schedule of the indirect cost rate, a description of the company, basis of accounting and description of H.W. Lochner, Inc.'s accounting system and the basis of indirect costs.

Based on our work, we are issuing this letter of review establishing H.W. Lochner, Inc.'s overhead rate for the fiscal year ending April 30, 2011. The Company Wide Rate (Composite Rate) is 169.73 % of direct labor. Included within this rate are the Home Rate of 178.41 % of direct labor, and the Field Rate of 141.52 % of direct labor. Rates include Facilities Cost of Capital of 0.22%. Costs billed to actual agreements will still be subject to audit of actual costs.

Please check with the WSDOT Consultant Services Office (HQ) and/or the WSDOT Area Consultant Liaison to determine when this reviewed rate will be applicable to your WSDOT agreement(s).

Also, remember that when you provide next year's overhead schedule to our office, you will also need to submit your *Compensation Analysis* for review. This analysis must be in compliance with the steps listed in the AASHTO Audit Guide, Chapter 7. We will need your *Compensation Analysis* in order to complete our review of your overhead schedule.



Mr. Blachowicz  
December 15, 2011  
Page 2

If you, or any representatives of H.W. Lochner, Inc., have any questions, please contact Martha Roach, Jeri Sivertson, or Steve McKerney at (360) 705-7003.

Sincerely,



Martha S. Roach  
Agreement Compliance Audit Manager

MR:ds  
Enclosures

cc: Steve McKerney, Director of Internal Audit  
Jeri Sivertson, Assistant Director of Internal Audit  
Larry Schofield, MS 47323  
File

**H.W. Lochner, Inc**  
**Overhead Schedule**  
**For the Year Ended April 30, 2011**

Field Rate Allocation

Description	Financial Statement Amount	Lochner Adjustments	WSDOT Adj.	Ref.	Accepted			
					Amount	%	HOME FIELD	
<b>Direct Labor</b>	<u>\$21,909,311</u>				<u>\$21,909,311</u>	100.00%	\$17,275,427	\$4,468,404
<b>Fringe Benefits:</b>								
Vacation, Sick	\$2,733,599			A	\$2,733,599	12.48%	\$2,176,081	\$557,518
Holiday	528,520			A	528,520	2.41%	378,818	\$107,792
Payroll Taxes	2,953,968			A	2,953,968	13.48%	2,351,506	\$602,462
Health Insurance	3,941,745			A	3,941,745	17.99%	3,137,826	\$803,919
Workers' Comp. Insurance	135,878			A	135,878	0.62%	108,166	\$27,712
Premium Overtime	14,911			A	14,911	0.07%	11,870	\$3,041
Profit Sharing (401-k)	589,495			A	589,495	2.69%	469,267	\$120,228
<b>Total Fringe Benefits</b>	<u>\$10,898,116</u>	<u>\$0</u>	<u>\$0</u>		<u>\$10,898,116</u>	<u>49.74%</u>	<u>\$8,633,535</u>	<u>\$2,222,671</u>
<b>General Overhead:</b>								
Indirect Labor	\$11,899,881	(\$179,526)	(\$1,225,330)	A,H,O	\$10,495,025	47.90%	\$8,354,564	\$2,140,460
Bid and Proposal Labor			1,225,330	A,O	1,225,330	5.59%	975,424	\$249,906
Incentive Bonus	1,458,789			A	1,458,789	6.66%	1,161,269	\$297,520
Rent	3,252,019			B	3,252,019	14.84%	2,981,581	\$270,438
Maintenance & Repairs	521,350			B	521,350	2.38%	477,995	\$43,355
Travel/Automobile	1,539,197	(17,000)		B,D	1,522,197	6.95%	1,395,611	\$126,586
Insurance	1,250,110	(33,380)		A,E	1,216,730	5.55%	968,578	\$248,152
Telephone	663,989			B	663,989	3.03%	608,772	\$55,217
Utilities	151,884			B	151,884	0.69%	139,253	\$12,631
Taxes & Licenses	2,164,021	(1,566,559)		A,F	597,462	2.73%	475,610	\$121,852
Depreciation & Amortization	711,259	(4,953)		B,G	706,306	3.22%	647,570	\$58,736
Dues & Subscriptions	291,865			B	291,865	1.33%	267,594	\$24,271
Job Procurement	306,530			B	306,530	1.40%	281,039	\$25,491
Employee Train/Recruit/Moving	943,324	(167,477)		B,J	775,847	3.54%	711,328	\$64,519
Professional Fees	1,197,309	(387,104)		A,C,K	810,205	3.70%	644,964	\$165,241
Interest	60,656	(60,656)		B,L	0	0.00%	0	\$0
Computer	1,063,073			B	1,063,073	4.85%	974,668	\$88,405
Supplies & Miscellaneous	1,628,544	(447,423)		B,C,G,I,J,M,N,Z	1,181,121	5.39%	1,082,899	\$98,222
<b>Total General Overhead</b>	<u>\$29,103,800</u>	<u>(\$2,864,078)</u>	<u>\$0</u>		<u>\$26,239,722</u>	<u>119.77%</u>	<u>\$22,148,717</u>	<u>\$4,091,005</u>

**H.W. Lochner, Inc**  
**Overhead Schedule**  
**For the Year Ended April 30, 2011**

Description	Financial Statement Amount	Lochner Adjustments	WSDOT Adj.	Ref.	Field Rate Allocation			
					Accepted Amount	%	HOME	FIELD
<b>Total Overhead Costs</b>	<b>\$40,001,916</b>	<b>(\$2,864,078)</b>	<b>\$0</b>		<b>\$37,137,838</b>	<b>169.51%</b>	<b>\$30,782,252</b>	<b>\$6,313,676</b>
<b>Overhead Rate (Less FCC)</b>	<b>182.58%</b>	<b>169.51%</b>			<b>169.51%</b>		<b>178.19%</b>	<b>141.30%</b>
Facilities Cost of Capital	0.00%	\$48,978			\$48,978	0.22%		
					<u>\$37,186,816</u>			
<b>Overhead Rate (Includes FCC)</b>					<b>169.73%</b>		<b>178.41%</b>	<b>141.52%</b>

*H.W. Lochner, Inc. - Reviewed and Accepted 12/15/2011 JJ*  
*"Overhead Rate still subject to WSDOT Audit"*

**References**

*H.W. Lochner, Inc. Corp. Overhead Audited by Troy Washko, CPA*

- A Allocation A = Direct Field Labor / Total Direct Labor = \$4,468,404 / \$21,909,311 = 20.40%
- B Allocation B = (Indirect Labor\*Allocation A) / (Home Office Direct Labor + Indirect Labor) = (((\$11,899,881)\*Allocation A) / (\$17,275,427+\$11,899,881)) = 8.32%

**Lochner Adjustments:**

- C Lobbying and Political Activity Costs per 48 CFR 31.205-22
- D Fringe Benefit-Personal use of Company auto per 48 CFR 31.205-6(M)(2)
- E Key person life insurance unallowable per 48 CFR 31.205-19(e)(2)(v).
- F Unallowable taxes and licenses per 48 CFR 31.205-41.
- G Goodwill per FAR 31-205-49
- H Excess executive compensation unallowable per 48 CFR 31.205-6(p).
- I Public relations and advertising unallowable per 48 CFR 31.205-1.
- J Entertainment unallowable per 48 CFR 31.205-14.
- K Organization Costs per FAR 31.205-27
- L Interest unallowable per 48 CFR 31.205-20.
- M Contributions unallowable per 48 CFR 31.205-81.
- N Fines & Penalties per 48 CFR 31-205-15

**WSDOT Adjustments:**

- O Reclassified B&P labor in the amount of \$1,225,330.36. Added it as a separate line item per 48 CFR 31.205-18, CAS 420 and 2010 AASHTO Audit Guide Chapter 6.3.

### Certification of Final Indirect Costs

Firm Name: H.W. Lochner, Inc.

Indirect Cost Rate Proposal: Home (179.76%) / Field (136.14%)

Date of Proposal Preparation (mm/dd/yyyy): 08/22/2011

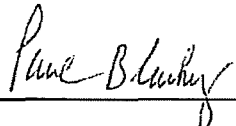
Fiscal Period Covered (mm/dd/yyyy to mm/dd/yyyy): 05/01/2010 to 04/30/2011

*I, the undersigned, certify that I have reviewed the proposal to establish final indirect cost rates for the fiscal period as specified above and to the best of my knowledge and belief:*

*1.) All costs included in this proposal to establish final indirect cost rates are allowable in accordance with the cost principles of the Federal Acquisition Regulations (FAR) of title 48, Code of Federal Regulations (CFR), part 31.*

*2.) This proposal does not include any costs which are expressly unallowable under the cost principles of the FAR of 48 CFR 31.*

*All known material transactions or events that have occurred affecting the firm's ownership, organization and indirect cost rates have been disclosed.*

Signature: 

Name of Certifying Official\* (Print): Paul Blachowicz

Title: CFO

Date of Certification (mm/dd/yyyy): 09/21/2011

\*The "Certifying Official" must be an individual executive or financial officer of the firm at a level no lower than a Vice President or Chief Financial Officer, or equivalent, who has the authority to represent the financial information utilized to establish the indirect cost rate for use under Agency contracts.

Ref. FHWA Directive 4470.1A available on line at:  
<http://www.fhwa.dot.gov/legisregs/directives/orders/44701a.htm>

**Exhibit G**  
**Subcontracted Work**

The AGENCY permits subcontracts for the following portions of work of this AGREEMENT:

Surveying, geotechnical evaluation and design, and environmental analysis and documentation.

**Exhibit G-1  
Subconsultant Fee Determination - Summary Sheet  
(Mandatory when Subconsultants are utilized)**

**Project:** Cushman Trail Project Phase III & IV 96th St. to Borgen Blvd.

**Sub Consultant:** Shannon & Wilson

**Direct Salary Cost (DSC):**

<u>Classification</u>	<u>Man Hours</u>	<u>Rate</u>	=	<u>Cost</u>
Principal	14 x	61.17	\$	856.38
Natural Resources Project Mgr	60 x	30.63	\$	1,837.80
Geotechnical Project Manager	34 x	36.74	\$	1,249.16
Professional Staff IV	2 x	31.09	\$	62.18
Professional Staff III	45 x	24.28	\$	1,092.60
Senior CADD Technician	18 x	30.73	\$	553.14
Administrative	4 x	32.08	\$	128.32
	x		\$	
	x		\$	
	x		\$	
<b>Total DSC</b>				<b>5,779</b>

**Overhead (OH Cost – Including Salary Additives):**

OH Rate x DSC of 210.57% x \$ 5,779 12,169

**Fixed Fee (FF):**

FF Rate x DSC of 28.00% x \$ 5,779 1,618

**Reimbursables:**

Itemized 556

**Subconsultant Total**

20,122

**Grand Total**

20,122

Prepared By: Per Johnson

Date: May 30, 2012



**Washington State**  
**Department of Transportation**  
**Paula J. Hammond, P.E.**  
Secretary of Transportation

**Transportation Building**  
310 Maple Park Avenue S.E.  
P.O. Box 47300  
Olympia, WA 98504-7300

360-705-7000  
TTY: 1-800-833-6388  
[www.wsdot.wa.gov](http://www.wsdot.wa.gov)

January 24, 2012

Jeannie Brozik, Accounting Manager  
Shannon & Wilson, Inc.  
400 N 34<sup>th</sup> Street, Suite 100  
PO Box 300303  
Seattle WA 98103-8600

Re: Shannon & Wilson, Inc. Overhead Schedule  
Fiscal Year End December 31, 2010

Dear Mrs. Brozik:

We have completed a desk review of your overhead schedule for the above referenced fiscal year. Our review included the documentation provided by Shannon & Wilson, Inc.

The reviewed data included, but was not limited to; the schedule of the indirect cost rate, a description of the company, basis of accounting and description of Shannon & Wilson, Inc. accounting system, and the basis of indirect costs.

Based on our work, we are issuing this letter of review establishing Shannon & Wilson, Inc. overhead rate for fiscal year ending December 31, 2010, at 210.57% (rate includes Facilities Cost of Capital) of direct labor. Costs billed to actual agreements will still be subject to audit of actual costs.

Please check with the WSDOT Consultant Services Office (HQ) and/or the WSDOT Area Consultant Liaison to determine when this reviewed rate will be applicable to your WSDOT agreement(s).

Also, remember that when you provide next year's overhead schedule to our office, you will also need to submit your *Compensation Analysis* for review. This analysis must be in compliance with the steps listed in the AASHTO Audit Guide, Chapter 7. We will need your *Compensation Analysis* in order to complete our review of your overhead schedule.

Mrs. Brozik  
January 24, 2012  
Page 2

If you, or any representative of Shannon & Wilson, Inc. have any questions, please contact Martha Roach, Jeri Sivertson or Steve McKerney at (360) 705-7003.

Sincerely,



Martha S. Roach  
Agreement Compliance Audit Manager

MR:ds  
Enclosures

cc: Steve McKerney, Director of Internal Audit  
Jeri Sivertson, Assistant Director of Internal Audit  
Larry Schofield, MS 47323  
File



Shannon & Wilson, Inc.  
Overhead Schedule  
Fiscal Year Ended December 31, 2010

Description	Amount	S&W Adj.	WSDOT Adj	Ref.	Accepted Amount	%
<b>Direct Labor Base</b>	\$12,064,771				\$12,064,771	
<b>Fringe Benefits</b>						
Additional Compensation	\$2,891,570		(\$59,091)	O	\$2,832,479	23.48%
Retirement Plan Contributions	1,531,128				1,531,128	12.69%
Vacation, Holiday, Sick	1,408,733				1,408,733	11.68%
Payroll Fringes	2,770,236				2,770,236	22.96%
<b>Total Fringe Benefits</b>	<u>\$8,601,667</u>	<u>\$0</u>	<u>(\$59,091)</u>		<u>\$8,542,576</u>	<u>70.81%</u>
<b>General Overhead Expenses</b>						
Administrative Salaries	\$3,235,771	(\$97)	(\$572,684)	A,P	\$2,662,990	22.07%
Proposal & Bus Dev Labor	3,029,556	(153,544)		B	2,876,012	23.84%
Vacation Holiday Sick	713,626				713,626	5.91%
Fringes on G&A Salaries	1,528,471	(125,145)		C,D	1,403,326	11.63%
Retirement Plan Contributions	775,628				775,628	6.43%
Equipment Expense	13,567				13,567	0.11%
Rent & Facility Expense	1,902,841	(8,619)		L	1,894,222	15.70%
Travel & Auto Expense	295,282	(1,944)		F	293,338	2.43%
Proposal & Bus Dev Expense	634,975	(385,405)		B,G,H	249,570	2.07%
Interest	2,978	(2,978)		I	0	0.00%
Supplies	532,583				532,583	4.41%
Outside Prof and Tech Srvcs	397,674	(450)		M	397,224	3.29%
Computer Expenses	492,436				492,436	4.08%
Telephone & Postage	374,019				374,019	3.10%
Conferences & Prof Activities	582,134	(39,619)		F	542,515	4.50%
Depreciation	647,328				647,328	5.37%
Insurance	657,931				657,931	5.45%
Taxes & Licenses	1,622,103	(796,387)		J	825,716	6.84%
Miscellaneous/Discount	0				0	0.00%
Bad Debt	175,398	(175,398)		K	0	0.00%
Additional Compensation	1,814,791	(350,000)		E	1,464,791	12.14%
<b>Total General Overhead</b>	<u>\$19,429,092</u>	<u>(\$2,039,586)</u>	<u>(\$572,684)</u>		<u>\$16,816,822</u>	<u>139.39%</u>
<b>Total Overhead Costs</b>	\$28,030,759	(\$2,039,586)	(\$631,775)		\$25,359,398	210.19%
<b>Overhead Rate (Less FCC)</b>	232.34%	215.43%			<u>210.19%</u>	
Facilities Capital Cost of Money		\$45,354		N	<u>\$45,354</u>	0.38%
<b>Total Overhead Costs w/FCC</b>					\$25,404,752	
<b>Overhead Rate (Includes FCC)</b>					<u>210.57%</u>	

Shannon & Wilson, Inc. - Reviewed & Accepted 01/24/12 LT  
"Overhead Rate still subject to WSDOT Audit"

**Shannon & Wilson, Inc.**  
**Overhead Schedule**  
**Fiscal Year Ended December 31, 2010**

Description	Amount	S&W Adj.	WSDOT Adj	Ref.	Accepted Amount	%
<b>References</b>						
<b>Shannon &amp; Wilson Adjustments:</b>						
<i>Shannon &amp; Wilson Overhead Audited by Kris Tryon, Voldal Wartelle &amp; Co.</i>						
A 31.205-3	Labor costs related to collection of bad debt					
B 31.205-1	Advertising and public relations labor and costs					
C 31.205-1	Taxes related to unallowable promotion labor					
D 31.205-13	Unallowable meals and employee gifts					
E 31.205-6	Accrued bonusues not paid in current year					
F 31.205-46	Excess per diem and travel expenses					
G 31.205-8	Unallowable contribtuion costs					
H 31.205-14	Unallowable entertainment costs					
I 31.205-20	Interest expense					
J 31.205-41	Federal income taxes					
K 31.205-3	Bad debts					
L 31.203(b)	Rent charged as direct costs to projects					
M 31.205-47	Unallowable legal expenses					
N 31.205-10(b)	Facilities Capital Cost of Money					
<b>WSDOT Adjustments:</b>						
O	Bonus payments of Signing, Referral and Service awards are not performance based and unallowable per 48 CFR 31.205-6(f) and the 2010 AASHTO Audit Guide.					
P	Excess Compensation adjusted for reasonableness in accordance with 48 CFR 31.205-6 and the 2010 AASHTO Audit Guide, Chapter 7.					

### Certification of Final Indirect Costs

Firm Name: Shannon & Wilson, Inc.

Indirect Cost Rate Proposal: 215.8%

Date of Proposal Preparation (mm/dd/yyyy): 4/19/2011

Fiscal Period Covered (mm/dd/yyyy to mm/dd/yyyy): 01/01/2010 to 12/31/2010

*I, the undersigned, certify that I have reviewed the proposal to establish final indirect cost rates for the fiscal period as specified above and to the best of my knowledge and belief:*

*1.) All costs included in this proposal to establish final indirect cost rates are allowable in accordance with the cost principles of the Federal Acquisition Regulations (FAR) of title 48, Code of Federal Regulations (CFR), part 31.*

*2.) This proposal does not include any costs which are expressly unallowable under the cost principles of the FAR of 48 CFR 31.*

*All known material transactions or events that have occurred affecting the firm's ownership, organization and indirect cost rates have been disclosed.*

Signature: 

Name of Certifying Official\* (Print): Hollie Ellis

Title: Senior Vice President

Date of Certification (mm/dd/yyyy): 05/19/2011

\*The "Certifying Official" must be an individual executive or financial officer of the firm at a level no lower than a Vice President or Chief Financial Officer, or equivalent, who has the authority to represent the financial information utilized to establish the indirect cost rate for use under Agency contracts.

Ref. FHWA Directive 4470.1A available on line at:  
<http://www.fhwa.dot.gov/legsregs/directives/orders/44701a.htm>

## Exhibit H Title VI Assurances

During the performance of this AGREEMENT, the CONSULTANT, for itself, its assignees, and successors in interest agrees as follows:

1. **Compliance with Regulations:** The CONSULTANT shall comply with the Regulations relative to non-discrimination in federally assisted programs of the AGENCY, Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time (hereinafter referred to as the "REGULATIONS"), which are herein incorporated by reference and made a part of this AGREEMENT.
2. **Non-discrimination:** The CONSULTANT, with regard to the work performed during the AGREEMENT, shall not discriminate on the grounds of race, color, sex, or national origin in the selection and retention of sub-consultants, including procurement of materials and leases of equipment. The CONSULTANT shall not participate either directly or indirectly in the discrimination prohibited by Section 21.5 of the REGULATIONS, including employment practices when the AGREEMENT covers a program set forth in Appendix B of the REGULATIONS.
3. **Solicitations for Sub-consultants, Including Procurement of Materials and Equipment:** In all solicitations either by competitive bidding or negotiations made by the CONSULTANT for work to be performed under a sub-contract, including procurement of materials or leases of equipment, each potential sub-consultant or supplier shall be notified by the CONSULTANT of the CONSULTANT'S obligations under this AGREEMENT and the REGULATIONS relative to non-discrimination on the grounds of race, color, sex, or national origin.
4. **Information and Reports:** The CONSULTANT shall provide all information and reports required by the REGULATIONS or directives issued pursuant thereto, and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by AGENCY, STATE or the Federal Highway Administration (FHWA) to be pertinent to ascertain compliance with such REGULATIONS, orders and instructions. Where any information required of a CONSULTANT is in the exclusive possession of another who fails or refuses to furnish this information, the CONSULTANT shall so certify to the AGENCY, STATE or the FHWA as appropriate, and shall set forth what efforts it has made to obtain the information.
5. **Sanctions for Non-compliance:** In the event of the CONSULTANT'S non-compliance with the non-discrimination provisions of this AGREEMENT, the AGENCY shall impose such AGREEMENT sanctions as it, the STATE or the FHWA may determine to be appropriate, including, but not limited to:
  - Withholding of payments to the CONSULTANT under the AGREEMENT until the CONSULTANT complies, and/or;
  - Cancellation, termination, or suspension of the AGREEMENT, in whole or in part

6. Incorporation of Provisions: The CONSULTANT shall include the provisions of paragraphs (1) through (5) in every sub-contract, including procurement of materials and leases of equipment, unless exempt by the REGULATIONS, or directives issued pursuant thereto. The CONSULTANT shall take such action with respect to any sub-consultant or procurement as the AGENCY, STATE or FHWA may direct as a means of enforcing such provisions including sanctions for non-compliance.

Provided, however, that in the event a CONSULTANT becomes involved in, or is threatened with, litigation with a sub-consultant or supplier as a result of such direction, the CONSULTANT may request the AGENCY and the STATE enter into such litigation to protect the interests of the AGENCY and the STATE and, in addition, the CONSULTANT may request the United States enter into such litigation to protect the interests of the United States.

**Exhibit I**  
**Payment Upon Termination of Agreement**  
**By the Agency Other Than for**  
**Fault of the Consultant**

**(Refer to Agreement, Section IX)**

**Lump Sum Contracts**

A final payment shall be made to the CONSULTANT which when added to any payments previously made shall total the same percentage of the Lump Sum Amount as the work completed at the time of termination is to the total work required for the PROJECT. In addition, the CONSULTANT shall be paid for any authorized extra work completed.

**Cost Plus Fixed Fee Contracts**

A final payment shall be made to the CONSULTANT which when added to any payments previously made, shall total the actual costs plus the same percentage of the fixed fee as the work completed at the time of termination is to the total work required for the Project. In addition, the CONSULTANT shall be paid for any authorized extra work completed.

**Specific Rates of Pay Contracts**

A final payment shall be made to the CONSULTANT for actual hours charged at the time of termination of this AGREEMENT plus any direct non-salary costs incurred at the time of termination of this AGREEMENT.

**Cost Per Unit of Work Contracts**

A final payment shall be made to the CONSULTANT for actual units of work completed at the time of termination of this AGREEMENT.

## **Exhibit J**

### **Alleged Consultant Design Error Procedures**

The purpose of this exhibit is to establish a procedure to determine if a consultant's alleged design error is of a nature that exceeds the accepted standard of care. In addition, it will establish a uniform method for the resolution and/or cost recovery procedures in those instances where the agency believes it has suffered some material damage due to the alleged error by the consultant.

#### Step 1 – Potential Consultant Design Error(s) is Identified by Agency's Project Manager

At the first indication of potential consultant design error(s), the first step in the process is for the Agency's project manager to notify the Director of Public Works or Agency Engineer regarding the potential design error(s). For federally funded projects, the Region Highways and Local Programs Engineer should be informed and involved in these procedures. (Note: The Director of Public Works or Agency Engineer may appoint an agency staff person other than the project manager, who has not been as directly involved in the project, to be responsible for the remaining steps in these procedures.)

#### Step 2 - Project Manager Documents the Alleged Consultant Design Error(s)

After discussion of the alleged design error(s) and the magnitude of the alleged error(s), and with the Director of Public Works or Agency Engineer's concurrence, the project manager obtains more detailed documentation than is normally required on the project. Examples include: all decisions and descriptions of work; photographs, records of labor, materials and equipment.

#### Step 3 – Contact the Consultant Regarding the Alleged Design Error(s)

If it is determined that there is a need to proceed further, the next step in the process is for the project manager to contact the consultant regarding the alleged design error(s) and the magnitude of the alleged error(s). The project manager and other appropriate agency staff should represent the agency and the consultant should be represented by their project manager and any personnel (including sub-consultants) deemed appropriate for the alleged design error(s) issue.

#### Step 4 – Attempt to Resolve Alleged Design Error with Consultant

After the meeting(s) with the consultant have been completed regarding the consultant's alleged design error(s), there are three possible scenarios:

- It is determined via mutual agreement that there is not a consultant design error(s). If this is the case, then the process will not proceed beyond this point.
- It is determined via mutual agreement that a consultant design error(s) occurred. If this is the case, then the Director of Public Works or Agency Engineer, or their representatives, negotiate a settlement with the consultant. The settlement would be paid to the agency or the amount would be reduced from the consultant's agreement with the agency for the services on the project in which the design error took place. The agency is to provide H&LP, through the Region

Local Programs Engineer, a summary of the settlement for review and to make adjustments, if any, as to how the settlement affects federal reimbursements. No further action is required.

- There is not a mutual agreement regarding the alleged consultant design error(s). The consultant may request that the alleged design error(s) issue be forwarded to the Director of Public Works or Agency Engineer for review. If the Director of Public Works or Agency Engineer, after review with their legal counsel, is not able to reach mutual agreement with the consultant, proceed to Step 5.

#### Step 5 – Forward Documents to Highways and Local Programs

For federally funded projects all available information, including costs, should be forwarded through the Region Highways and Local Programs Engineer to H&LP for their review and consultation with the FHWA. H&LP will meet with representatives of the agency and the consultant to review the alleged design error(s), and attempt to find a resolution to the issue. If necessary, H&LP will request assistance from the Attorney General's Office for legal interpretation. H&LP will also identify how the alleged error(s) affects eligibility of project costs for federal reimbursement.

- If mutual agreement is reached, the agency and consultant adjust the scope of work and costs to reflect the agreed upon resolution. H&LP, in consultation with FHWA, will identify the amount of federal participation in the agreed upon resolution of the issue.
- If mutual agreement is not reached, the agency and consultant may seek settlement by arbitration or by litigation.



## **Exhibit K**

### **Consultant Claim Procedures**

The purpose of this exhibit is to describe a procedure regarding claim(s) on a consultant agreement. The following procedures should only be utilized on consultant claims greater than \$1,000. If the consultant's claim(s) are a total of \$1,000 or less, it would not be cost effective to proceed through the outlined steps. It is suggested that the Director of Public Works or Agency Engineer negotiate a fair and reasonable price for the consultant's claim(s) that total \$1,000 or less.

This exhibit will outline the procedures to be followed by the consultant and the agency to consider a potential claim by the consultant.

#### **Step 1 – Consultant Files a Claim with the Agency Project Manager**

If the consultant determines that they were requested to perform additional services that were outside of the agreement's scope of work, they may be entitled to a claim. The first step that must be completed is the request for consideration of the claim to the Agency's project manager.

The consultant's claim must outline the following:

- Summation of hours by classification for each firm that is included in the claim;
- Any correspondence that directed the consultant to perform the additional work;
- Timeframe of the additional work that was outside of the project scope;
- Summary of direct labor dollars, overhead costs, profit and reimbursable costs associated with the additional work; and
- Explanation as to why the consultant believes the additional work was outside of the agreement scope of work.

#### **Step 2 – Review by Agency Personnel Regarding the Consultant's Claim for Additional Compensation**

After the consultant has completed step 1, the next step in the process is to forward the request to the Agency's project manager. The project manager will review the consultant's claim and will meet with the Director of Public Works or Agency Engineer to determine if the Agency agrees with the claim. If the FHWA is participating in the project's funding, forward a copy of the consultant's claim and the Agency's recommendation for federal participation in the claim to the WSDOT Highways and Local Programs through the Region Local Programs Engineer. If the claim is not eligible for federal participation, payment will need to be from agency funds.

If the Agency project manager, Director of Public Works or Agency Engineer, WSDOT Highways and Local Programs (if applicable), and FHWA (if applicable) agree with the consultant's claim, send a request memo, including backup documentation to the consultant to either supplement the agreement, or create a new agreement for the claim. After the request has been approved, the Agency shall write the supplement and/or new agreement and pay the consultant the amount of the claim. Inform the consultant that the final payment for the agreement is subject to audit. No further action is needed regarding the claim procedures.

If the Agency does not agree with the consultant's claim, proceed to step 3 of the procedures.

**Step 3 – Preparation of Support Documentation Regarding Consultant's Claim(s)**

If the Agency does not agree with the consultant's claim, the project manager shall prepare a summary for the Director of Public Works or Agency Engineer that included the following:

- Copy of information supplied by the consultant regarding the claim;
- Agency's summation of hours by classification for each firm that should be included in the claim;
- Any correspondence that directed the consultant to perform the additional work;
- Agency's summary of direct labor dollars, overhead costs, profit and reimbursable costs associated with the additional work;
- Explanation regarding those areas in which the Agency does/does not agree with the consultant's claim(s);
- Explanation to describe what has been instituted to preclude future consultant claim(s); and
- Recommendations to resolve the claim.

**Step 4 – Director of Public Works or Agency Engineer Reviews Consultant Claim and Agency Documentation**

The Director of Public Works or Agency Engineer shall review and administratively approve or disapprove the claim, or portions thereof, which may include getting Agency Council or Commission approval (as appropriate to agency dispute resolution procedures). If the project involves federal participation, obtain concurrence from WSDOT Highways and Local Programs and FHWA regarding final settlement of the claim. If the claim is not eligible for federal participation, payment will need to be from agency funds.

**Step 5 – Informing Consultant of Decision Regarding the Claim**

The Director of Public Works or Agency Engineer shall notify (in writing) the consultant of their final decision regarding the consultant's claim(s). Include the final dollar amount of the accepted claim(s) and rationale utilized for the decision.

**Step 6 – Preparation of Supplement or New Agreement for the Consultant's Claim(s)**

The agency shall write the supplement and/or new agreement and pay the consultant the amount of the claim. Inform the consultant that the final payment for the agreement is subject to audit.

**Exhibit M-1(a)**  
**Certification Of Consultant**

Project No. CPP-1126

Local Agency TCSP-11WA (26)

I hereby certify that I am Jorge Garcia, III and duly authorized representative of the firm of H. W. Lochner, Inc. whose address is 400 108th Ave NE, Suite 401, Bellevue, WA 98004 and that neither I nor the above firm I here represent has:

- (a) Employed or retained for a commission, percentage, brokerage, contingent fee, or other consideration, any firm or person (other than a bona fide employee working solely for me or the above CONSULTANT) to solicit or secure the AGREEMENT;
- (b) Agreed, as an express or implied condition for obtaining this contract, to employ or retain the services of any firm or person in connection with carrying out this AGREEMENT; or
- (c) Paid, or agreed to pay, to any firm, organization or person (other than a bona fide employee working solely for me or the above CONSULTANT) any fee, contribution, donation, or consideration of any kind for, or in connection with, procuring or carrying out this AGREEMENT; except as hereby expressly stated (if any);

I acknowledge that this certificate is to be available to the Washington State Department of Transportation and the Federal Highway Administration, U.S. Department of Transportation in connection with this AGREEMENT involving participation of Federal-aid highway funds, and is subject to applicable State and Federal laws, both criminal and civil.

June 10, 2012

Date

\_\_\_\_\_  
Signature

**Exhibit M-1(b)**  
**Certification Of Agency Official**

I hereby certify that I am the AGENCY Official of the Local Agency of City of Gig Harbor, Washington, and that the consulting firm or its representative has not been required, directly or indirectly as an express or implied condition in connection with obtaining or carrying out this AGREEMENT to:

- (a) Employ or retain, or agree to employ to retain, any firm or person; or
- (b) Pay, or agree to pay, to any firm, person, or organization, any fee, contribution, donation, or consideration of any kind; except as hereby expressly stated (if any):

I acknowledge that this certificate is to be available to the Washington State Department of Transportation and the Federal Highway Administration, U.S. Department of Transportation in connection with this AGREEMENT involving participation of Federal-aid highway funds, and is subject to applicable State and Federal laws, both criminal and civil.

**June 11, 2012**

Date

Signature

**Exhibit M-2**  
**Certification Regarding Debarment, Suspension, and Other Responsibility**  
**Matters-Primary Covered Transactions**

- I. The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:
- A. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any federal department or agency;
  - B. Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission or fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (federal, state, or local) transaction or contract under a public transaction; violation of federal or state antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
  - C. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (federal, state, or local) with commission of any of the offenses enumerated in paragraph (I)(B). of this certification; and
  - D. Have not within a three (3) year period preceding this application/proposal had one or more public transactions (federal, state, or local) terminated for cause or default.
- II. Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

Consultant (Firm): H. W. Lochner, Inc.

June 10, 2011

Date

(Signature) President or Authorized Official of Consultant

**Exhibit M-3**  
**Certification Regarding The Restrictions**  
**of The use of Federal Funds for Lobbying**

The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

1. No federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a member of Congress, an officer or employee of Congress, or an employee of a member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a member of Congress, an officer or employee of Congress, or an employee of a member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, Title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

The prospective participant also agrees by submitting his or her bid or proposal that he or she shall require that the language of this certification be included in all lower tier subcontracts which exceed \$100,000 and that all such subrecipients shall certify and disclose accordingly.

Consultant (Firm): H. W. Lochner, Inc.

January 10, 2012

Date

(Signature) President or Authorized Official of Consultant

**Exhibit M-4**  
**Certificate of Current Cost or Pricing Data**

This is to certify that, to the best of my knowledge and belief, the cost or pricing data (as defined in section 15.401 of the Federal Acquisition Regulation (FAR) and required under FAR subsection 15.403-4) submitted, either actually or by specific identification in writing, to the contracting officer or to the contracting officer's representative in support of **Cushman Trail Phase III and IV** \* are accurate, complete, and current as of **June 10, 2012** \*\*. This certification includes the cost or pricing data supporting any advance agreements and forward pricing rate agreements between the offeror and the Government that are part of the proposal.

Firm **H. W. Lochner, Inc.** \_\_\_\_\_

Name **Jorge Garcia, III** \_\_\_\_\_

Title **Vice President** \_\_\_\_\_

Date of Execution\*\*\* **June 10, 2012** \_\_\_\_\_

- \* Identify the proposal, quotation, request for price adjustment, or other submission involved, giving the appropriate identifying number (e.g., RFP No.).
- \*\* Insert the day, month, and year when price negotiations were concluded and price agreement was reached.
- \*\*\* Insert the day, month, and year of signing, which should be as close as practicable to the date when the price negotiations were concluded and the contract price was agreed to.

Business of the City Council  
City of Gig Harbor, WA

**Subject:** Wastewater Treatment Plant Buffer Monitoring – Year 1 Contract for Grette Associates.

**Proposed Council Action:** Authorize the Mayor to execute a Consultant Services Contract with Grette Associates for an amount not to exceed \$1,338.40.

**Dept. Origin:** Public Works/Engineering

**Prepared by:** Stephen Misiurak, PE  
City Engineer

**For Agenda of:** June 11, 2012 

**Exhibits:** Consultant Services Contract Exhibit A Scope of Work and Schedule of Rates and Estimated Hours

	Initial & Date
<b>Concurred by Mayor:</b>	 6/6/12
<b>Approved by City Administrator:</b>	 6/6/12
<b>Approved as to form by City Atty:</b>	approved via email 6/5/12
<b>Approved by Finance Director:</b>	 6/5
<b>Approved by Department Head:</b>	 6/5/2012

Expenditure	Amount	See Fiscal	1338.40	Appropriation	
Required	\$1,338.40	Budgeted	Consideration	Required	0

**INFORMATION / BACKGROUND**

The City issued land use permit for this project requires the City to conduct yearly monitoring of the wetland at the Wastewater Treatment Plant for up to three years. This contract provides for this monitoring and completion of a report summarizing results of the data collection and will compare the results against the site performance standards, as well as provide recommendations for maintenance activities at the site.

**FISCAL CONSIDERATION**

Funding is provided in the 2012 Budget, Wastewater Division under Objective No. 4, Wastewater Treatment Plant Expansion.

**BOARD OR COMMITTEE RECOMMENDATION**

None.

**RECOMMENDATION/MOTION**

Move to: Authorize the Mayor to execute the Consultant Services Contract with Grette Associates for the WWTP Buffer Monitoring of Year 1 in the not to exceed amount of \$1,338.40.



**CONSULTANT SERVICES CONTRACT  
BETWEEN THE CITY OF GIG HARBOR AND  
GRETTE ASSOCIATES**

---

THIS AGREEMENT is made by and between the City of Gig Harbor, a Washington municipal corporation (the "City"), and Grette Associates, a corporation organized under the laws of the State of Washington (the "Consultant").

**RECITALS**

WHEREAS, the City is presently engaged in Wastewater Treatment Plant Buffer Monitoring Year 1 and desires that the Consultant perform services necessary to provide the following consultation services; and

WHEREAS, the Consultant agrees to perform the services more specifically described in the Scope of Work including any addenda thereto as of the effective date of this Agreement, all of which are attached hereto as **Exhibit A – Scope of Work and Schedule of Rates and Estimated Hours**, and are incorporated by this reference as if fully set forth herein;

NOW, THEREFORE, in consideration of the mutual promises set forth herein, it is agreed by and between the parties as follows:

**TERMS**

1. **Retention of Consultant - Scope of Work**. The City hereby retains the Consultant to provide professional services as defined in this Agreement and as necessary to accomplish the scope of work attached hereto as **Exhibit A** and incorporated herein by this reference as if set forth in full. The Consultant shall furnish all services, labor and related equipment necessary to conduct and complete the work, except as specifically noted otherwise in this Agreement.

2. **Payment**.

A. The City shall pay the Consultant an amount based on time and materials, not to exceed One Thousand Three Hundred Thirty Eight Dollars and Forty Cents (\$1,338.40) for the services described in Section 1 herein. This is the maximum amount to be paid under this Agreement for the work described in **Exhibit A**, and shall not be exceeded without the prior written authorization of the City in the form of a negotiated and executed supplemental agreement. The Consultant's staff and billing rates shall be as described in **Exhibit A – Scope of Work and Schedule of Rates and Estimated Hours**. The Consultant shall not bill for Consultant's staff not identified or listed in **Exhibit A** or bill at rates in excess of the hourly rates shown in **Exhibit A**, unless the parties agree to a modification of this Contract, pursuant to Section 17 herein.

B. The Consultant shall submit monthly invoices to the City after such services have been performed, and a final bill upon completion of all the services described in this Agreement. The City shall pay the full amount of an invoice within forty-five (45) days of receipt. If the City objects to all or any portion of any invoice, it shall so notify the Consultant of the same within fifteen (15) days from the date of receipt and shall pay that portion of the invoice not in dispute, and the parties shall immediately make every effort to settle the disputed portion.

**3. Relationship of Parties.** The parties intend that an independent contractor-client relationship will be created by this Agreement. As the Consultant is customarily engaged in an independently established trade which encompasses the specific service provided to the City hereunder, no agent, employee, representative or subconsultant of the Consultant shall be or shall be deemed to be the employee, agent, representative or subconsultant of the City. In the performance of the work, the Consultant is an independent contractor with the ability to control and direct the performance and details of the work, the City being interested only in the results obtained under this Agreement. None of the benefits provided by the City to its employees, including, but not limited to, compensation, insurance, and unemployment insurance are available from the City to the employees, agents, representatives, or subconsultants of the Consultant. The Consultant will be solely and entirely responsible for its acts and for the acts of its agents, employees, representatives and subconsultants during the performance of this Agreement. The City may, during the term of this Agreement, engage other independent contractors to perform the same or similar work that the Consultant performs hereunder.

**4. Duration of Work.** The City and the Consultant agree that work will begin on the tasks described in **Exhibit A** immediately upon execution of this Agreement. The parties agree that the work described in **Exhibit A** shall be completed by August 15, 2012; provided however, that additional time shall be granted by the City for excusable days or extra work.

**5. Termination.** The City reserves the right to terminate this Agreement at any time upon ten (10) days written notice to the Consultant. Any such notice shall be given to the address specified above. In the event that this Agreement is terminated by the City other than for fault on the part of the Consultant, a final payment shall be made to the Consultant for all services performed. No payment shall be made for any work completed after ten (10) days following receipt by the Consultant of the notice to terminate. In the event that services of the Consultant are terminated by the City for fault on part of the Consultant, the amount to be paid shall be determined by the City with consideration given to the actual cost incurred by the Consultant in performing the work to the date of termination, the amount of work originally required which would satisfactorily complete it to date of termination, whether that work is in a form or type which is usable to the City at the time of termination, the cost of the City of employing another firm to complete the work required, and the time which may be required to do so.

**6. Non-Discrimination.** The Consultant agrees not to discriminate against any customer, employee or applicant for employment, subcontractor, supplier or materialman, because of race, color, creed, religion, national origin, marital status, sex, sexual orientation, age or handicap, except for a bona fide occupational qualification. The Consultant understands that if it violates this provision, this Agreement may be terminated by the City and that the Consultant may be barred from performing any services for the City now or in the future.

**7. Indemnification.**

A. The Consultant agrees to hold harmless, indemnify and defend the City, its officers, agents, and employees, from and against any and all claims, losses, or liability, for injuries, sickness or death of persons, including employees of the Consultant, or damage to property, arising out of any willful misconduct or negligent act, error, or omission of the Consultant, its officers, agents, subconsultants or employees, in connection with the services required by this Agreement; provided, however, that:

1. The Consultant's obligations to indemnify, defend and hold harmless shall not extend to injuries, sickness, death or damage caused by or resulting from the sole willful misconduct or sole negligence of the City, its officers, agents or employees; and

2. The Consultant's obligations to indemnify, defend and hold harmless for injuries, sickness, death or damage caused by or resulting from the concurrent negligence or willful misconduct of the Consultant and the City, or of the Consultant and a third party other than an officer, agent, subconsultant or employee of the Consultant, shall apply only to the extent of the negligence or willful misconduct of the Consultant.

B. It is further specifically and expressly understood that the indemnification provided herein constitutes the consultant's waiver of immunity under industrial insurance, title 51 RCW, solely for the purposes of this indemnification. The parties further acknowledge that they have mutually negotiated this waiver. The consultant's waiver of immunity under the provisions of this section does not include, or extend to, any claims by the consultant's employees directly against the consultant.

C. The provisions of this section shall survive the expiration or termination of this Agreement.

**8. Insurance.**

A. The Consultant shall procure and maintain for the duration of the Agreement, insurance against claims for injuries to persons or damage to property which may arise from or in connection with the Consultant's own work including the work of the Consultant's agents, representatives, employees, subconsultants or subcontractors.

B. Before beginning work on the project described in this Agreement, the Consultant shall provide evidence, in the form of a Certificate of Insurance, of the following insurance coverage and limits (at a minimum):

1. Business auto coverage for any auto no less than a \$1,000,000 each accident limit, and
2. Commercial General Liability insurance no less than \$1,000,000 per occurrence with a \$2,000,000 aggregate. Coverage shall include, but is not limited to, contractual liability, products and completed operations, property damage, and employers liability, and
3. Professional Liability insurance with no less than \$1,000,000 per occurrence. All policies and coverages shall be on an occurrence basis by an 'A' rated company licensed to conduct business in the State of Washington.

C. The Consultant is responsible for the payment of any deductible or self-insured retention that is required by any of the Consultant's insurance. If the City is required to contribute to the deductible under any of the Consultant's insurance policies, the Contractor shall reimburse the City the full amount of the deductible within 10 working days of the City's deductible payment.

D. The City of Gig Harbor shall be named as an additional insured on the Consultant's commercial general liability policy. This additional insured endorsement shall be included with evidence of insurance in the form of a Certificate of Insurance for coverage necessary in Section B. The City reserves the right to receive a certified and complete copy of all of the Consultant's insurance policies upon request.

E. Under this Agreement, the Consultant's insurance shall be considered primary in the event of a loss, damage or suit. The City's own comprehensive general liability policy will be considered excess coverage with respect to defense and indemnity of the City only and no other party. Additionally, the Consultant's commercial general liability policy must provide cross-liability coverage as could be achieved under a standard ISO separation of insured's clause.

F. The Consultant shall request from his insurer a modification of the ACORD certificate to include language that prior written notification will be given to the City of Gig Harbor at least 30 days in advance of any cancellation, suspension or material change in the Consultant's coverage.

**9. Ownership and Use of Work Product.** Any and all documents, drawings, reports, and other work product produced by the Consultant under this Agreement shall become the property of the City upon payment of the Consultant's fees and charges therefore. The City shall have the complete right to use and re-use such work product in any manner deemed appropriate by the City, provided, that use on any project other than

that for which the work product is prepared shall be at the City's risk unless such use is agreed to by the Consultant.

**10. City's Right of Inspection.** Even though the Consultant is an independent contractor with the authority to control and direct the performance and details of the work authorized under this Agreement, the work must meet the approval of the City and shall be subject to the City's general right of inspection to secure the satisfactory completion thereof. The Consultant agrees to comply with all federal, state, and municipal laws, rules, and regulations that are now effective or become applicable within the terms of this Agreement to the Consultant's business, equipment, and personnel engaged in operations covered by this Agreement or accruing out of the performance of such operations.

**11. Records.** The Consultant shall keep all records related to this Agreement for a period of three years following completion of the work for which the Consultant is retained. The Consultant shall permit any authorized representative of the City, and any person authorized by the City for audit purposes, to inspect such records at all reasonable times during regular business hours of the Consultant. Upon request, the Consultant will provide the City with reproducible copies of any such records. The copies will be provided without cost if required to substantiate any billing of the Consultant, but the Consultant may charge the City for copies requested for any other purpose.

**12. Work Performed at the Consultant's Risk.** The Consultant shall take all precautions necessary and shall be responsible for the safety of its employees, agents, and subconsultants in the performance of the work hereunder and shall utilize all protection necessary for that purpose. All work shall be done at the Consultant's own risk, and the Consultant shall be responsible for any loss of or damage to materials, tools, or other articles used or held by the Consultant for use in connection with the work.

**13. Non-Waiver of Breach.** The failure of the City to insist upon strict performance of any of the covenants and agreements contained herein, or to exercise any option herein conferred in one or more instances shall not be construed to be a waiver or relinquishment of said covenants, agreements, or options, and the same shall be and remain in full force and effect.

**14. Resolution of Disputes and Governing Law.**

A. Should any dispute, misunderstanding, or conflict arise as to the terms and conditions contained in this Agreement, the matter shall first be referred to the City Engineer or Director of Operations and the City shall determine the term or provision's true intent or meaning. The City Engineer or Director of Operations shall also decide all questions which may arise between the parties relative to the actual services provided or to the sufficiency of the performance hereunder.

B. If any dispute arises between the City and the Consultant under any of the provisions of this Agreement which cannot be resolved by the City Engineer or Director of Operations determination in a reasonable time, or if the Consultant does not agree with the City's decision on the disputed matter, jurisdiction of any resulting litigation shall be filed in Pierce County Superior Court, Pierce County, Washington. This Agreement shall be governed by and construed in accordance with the laws of the State of Washington. The prevailing party in any such litigation shall be entitled to recover its costs, including reasonable attorney's fees, in addition to any other award.

**15. Written Notice.** All notices required to be given by either party to the other under this Agreement shall be in writing and shall be given in person or by mail to the addresses set forth below. Notice by mail shall be deemed given as of the date the same is deposited in the United States mail, postage prepaid, addressed as provided in this paragraph.

CONSULTANT:

Grette Associates

ATTN:

Scott Maharry, Senior Biologist

2102 North 30<sup>th</sup> St., Suite A

Tacoma, WA 98403

(253) 573-9300

City of Gig Harbor

ATTN: Stephen Misiurak, P.E.

City Engineer

3510 Grandview Street

Gig Harbor, WA 98335

(253) 851-6170

**16. Subcontracting or Assignment.** The Consultant may not assign or subcontract any portion of the services to be provided under this Agreement without the express written consent of the City. If applicable, any subconsultants approved by the City at the outset of this Agreement are named on **Exhibit C** attached hereto and incorporated herein by this reference as if set forth in full.

**17. Entire Agreement.** This Agreement represents the entire integrated agreement between the City and the Consultant, superseding all prior negotiations, representations or agreements, written or oral. This Agreement may be modified, amended, or added to, only by written instrument properly signed by both parties hereto.

IN WITNESS WHEREOF, the parties have executed this Agreement this \_\_\_\_\_  
day of \_\_\_\_\_, 20\_\_\_\_.

CONSULTANT

CITY OF GIG HARBOR

By: \_\_\_\_\_  
Its: \_\_\_\_\_

By: \_\_\_\_\_  
Mayor Charles L. Hunter

ATTEST:

\_\_\_\_\_  
City Clerk

APPROVED AS TO FORM:

\_\_\_\_\_  
City Attorney



**To:** Steve Misiurak, City Engineer  
 City of Gig Harbor  
 3510 Grandview Street  
 Gig Harbor, WA 98335

**Date:** May 25, 2012  
**Project #:** 250.016

**Project Name:** Gig Harbor WWTP  
 Buffer Monitoring  
 Year 1

**Phone:** (253) 853-7626  
**Fax:** (253) 853-7597  
**E-Mail:** misieuraks@cityofgigharbor.net

**Project Manager:** Scott Maharry  
**Client File No.:** 250.000

**SENT VIA:**

- Mail  Hand Delivered  
 Fax  Email

**DESCRIPTION OF WORK:**

**Task 100 –Gig Harbor Wastewater Treatment Plant Buffer Monitoring – Year 1**

Grette Associates staff will conduct the Year 1 monitoring at the City of Gig Harbor’s Wastewater Treatment Plant (WWTP). Monitoring activities will include the collection of qualitative and quantitative data documenting the development of the planted buffer, as required in the approved *Waste Water Treatment Plant Wetland and Stream Analysis Report Habitat Management Plan and Stream Buffer Mitigation Plan* (Plan). According to the Plan, data will be collected along the five fixed transects that were established during the post-installation inspection last year. Photographs will also be taken at the transect endpoints, to further document site development. Upon completion of the field site visit, a technical memorandum will be prepared for submittal to the City. The memorandum will summarize the results of the data collection and compare the results against the site performance standards, as well as provide recommendations for maintenance activities at the site.

An estimated budget for Task 100 is as follows:

Staff	Rate	Units	Total
Biologist 5	\$120.00	0.5	\$60.00
Biologist 1	\$85.00	14	\$1,190.00
Administrative	\$70.00	1	\$70.00
Mileage	*	24	\$14.40
Bridge Toll	\$4.00**	1	\$4.00
<b>TOTAL TASK 100</b>			<b>\$1,338.40</b>

\* Mileage will be billed at the current WSDOT or federal rate plus applicable markup.

\*\* The Tacoma Narrows Bridge toll will increase to \$4.00 on July 1.

- TIME AND EXPENSE  
 FIXED FEE  
 RETAINER\*

Estimated Contract Amount: **\$1,338.40**  
 Fee Amount:  
 Retainer Amount:





Business of the City Council
City of Gig Harbor, WA

Subject: First reading - Ordinance amending the list of public Improvements within the Gig Harbor Hospital Benefit Zone

Proposed Council Action: Adopt ordinance after second reading

Dept. Origin: Finance

Prepared by: David Rodenbach, Finance Director

For Agenda of: June 11, 2012

Exhibits: Ordinance

Concurred by Mayor:

Approved by City Administrator

Approved as to form by City Atty:

Approved by Finance Director:

Initial & Date

Handwritten initials and dates: CLH 6/5/12, D-6/6/12, by e-mail, DR 6/5/12

Table with 4 columns: Expenditure Required, Amount Budgeted, Appropriation Required. Values are all \$0.

INFORMATION / BACKGROUND

The city established a Hospital Benefit Zone (HBZ) in July 2006. In October 2006, the zone was increased to include a small portion of unincorporated Pierce County.

The HBZ was created in order for the city to obtain state funding for certain infrastructure projects within the zone. The original project list, which was included as a part of the establishing ordinance, has become obsolete. Many of the projects envisioned in 2006 are no longer desirable and several projects which are now planned are not included on the list.

In order to receive the annual match, the city must spend money on eligible projects. Amending the HBZ project list will allow the city to maximize the HBZ annual match benefit.

Pierce County approved this amendment at the May 29, 2012 Council meeting.

FISCAL CONSIDERATION

The total cost of projects remains approximately \$60 million and specifies projects in more detail than the original list.

BOARD OR COMMITTEE RECOMMENDATION

N/A

RECOMMENDATION / MOTION

Move to: Adopt ordinance after second reading.

**ORDINANCE NO. \_\_\_\_\_**

**AN ORDINANCE OF THE CITY OF GIG HARBOR,  
WASHINGTON, AMENDING ORDINANCE NO. 1052 AS  
AMENDED BY ORDINANCE NO. 1057 TO ADD TO THE  
DEFINITION OF PUBLIC IMPROVEMENTS WITHIN THE  
GIG HARBOR HOSPITAL BENEFIT ZONE.**

---

WHEREAS, the Washington State Legislature in its 2006 Regular Session approved SHB 2670, as Chapter 111, Laws of 2006 (the "Act"), authorizing the formation of hospital benefit zones; and

WHEREAS, the Washington State Legislature in its 2011 Regular Session approved SSB 5525, as Chapter 363, Laws of 2011, amending the Act and permitting local governments to modify the public improvements to be financed with the use of hospital benefit zone financing; and

WHEREAS, a hearing was held on July 24, 2006, and the City Council (the "City Council") of the City of Gig Harbor, Washington (the "City") approved Ordinance No. 1052, forming the Gig Harbor Hospital Benefit Zone; and

WHEREAS a hearing was held on October 23, 2006, and the City Council approved Ordinance No. 1057, amending the boundaries of the Gig Harbor Hospital Benefit Zone;

WHEREAS, the City Council finds it in the best interests of the City to amend the list of Public Improvements identified Ordinance No. 1052, as amended;

WHEREAS, the City Council has found that the total cost of the Public Improvements will not be increased by the amended list of Public Improvements; and

WHEREAS, a public hearing has been properly noticed pursuant to RCW 39.100.020 and held regarding the amended list of Public Improvements;

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF GIG HARBOR, WASHINGTON, DOES ORDAIN; as follows:

Section 1. Amendment to Ordinance No. 1052, as amended. Ordinance No. 1052, as amended by Ordinance No. 1057, is hereby further amended as follows:

Exhibit A – the description of the Public Improvements is hereby amended to include the projects specified in the form attached hereto as Exhibit A; and

Exhibit B – the boundaries of the Benefit Zone, as set forth in Exhibit A to Ordinance No. 1057 shall be re-designated as Exhibit B.

Section 2. Findings. The City Council hereby reconfirms and repeats its findings made in Section 3 of Ordinance No. 1052 with respect to the Public Improvements.

Section 3. Affirmation. As further amended by this amendatory ordinance, Ordinance No. 1052, as amended by Ordinance No. 1057, is hereby ratified, approved and confirmed.

Section 4. Effective Date. This ordinance shall be effective five (5) days from and after the date of its final passage and publication as provided by law.

PASSED by the City Council and approved by the Mayor of the City of Gig Harbor, Washington, at a regular meeting thereof held this \_\_\_\_\_ day of \_\_\_\_\_, 2012.

CITY OF GIG HARBOR, WASHINGTON

\_\_\_\_\_  
CHARLES L. HUNTER, MAYOR

ATTEST/AUTHENTICATED:

By: \_\_\_\_\_  
MOLLY TOWSLEE, City Clerk

APPROVED AS TO FORM:

By: \_\_\_\_\_  
CYNTHIA WEED

FILED WITH THE CITY CLERK: 06/06/12  
PASSED BY THE CITY COUNCIL:  
PUBLISHED:  
EFFECTIVE DATE:  
ORDINANCE NO:

**CLERK'S CERTIFICATE**

I, the undersigned, the duly chosen, qualified, and acting Clerk of the City of Gig Harbor, Washington, and keeper of the records of the Council of the City (herein called the "Council"), DO HEREBY CERTIFY:

1. That the attached is a true and correct copy of Ordinance No. \_\_\_\_\_ (herein called the "Ordinance") of the Council as finally adopted at a meeting of the Council held on the \_\_\_\_\_ day of \_\_\_\_\_, 2012, and duly recorded in my office.

2. That said meeting was duly convened and held in all respects in accordance with law, and to the extent required by law, due and proper notice of such meeting was given; that a quorum was present throughout the meeting and a legally sufficient number of members of the Council voted in the proper manner for the adoption of the Ordinance; that all other requirements and proceedings incident to the proper adoption of the Ordinance have been duly fulfilled, carried out and otherwise observed, and that I am authorized to execute this certificate.

IN WITNESS WHEREOF, I have hereunto set my hand this \_\_\_\_\_ day of \_\_\_\_\_, 2012.

\_\_\_\_\_  
MOLLY TOWSLEE City Clerk

City of Gig Harbor  
Hospital Benefit Zone  
Proposed 30-Year Project List

Likely Local Match Projects		HBZ-Funded Projects	
1	Bumham Interchange Expansion 2008-2010	\$8,049,000	
2	Vernhardsen Street Upgrades	\$1,000,000	
3	Cushman Trail Contribution - 96th to Borgen	\$650,000	
4			
5			
6			
7	Harborview & Stinson Watermains	\$1,283,000	
8	Well 11 (Skansie)	\$1,500,000	
9	Well 9 (Gig Harbor North)	\$4,000,000	
10	Woodworth Watermain	\$500,000	
11			
12	Lift Station 1	\$4,000,000	
13	Lift Station 4	\$3,000,000	
14	Lift Station 12	\$4,000,000	
15	Lift Station 13	\$4,000,000	
16	WWTP Outfall	\$3,000,000	
17	WWTP Expansion I	\$5,000,000	
18	WWTP Expansion II	\$3,000,000	
19			
20			
21	Harbor Hill Park Land Acquisition	\$2,500,000	
22	City Park at Crescent Creek	\$200,000	
23			
24	Other Public Infrastructure Improvements (Transp., Storm, Sewer, & Water)		
25	Harbor Hill Multi Family I	\$2,000,000	
26	Harbor Hill Multi Family II	\$2,500,000	
27	Harbor Hill Village Center	\$500,000	
28	Harbor Hill Single Family Residential	\$3,500,000	
29	Bujacich NW Industrial	\$2,000,000	
30	Harbor Winds	\$500,000	
31	Smith Gravel Pit Development	\$500,000	
32	96th St. Gravel Pit Development	\$500,000	
33	McCormick Creek	\$3,000,000	
34			
	<b>Total</b>	<b>\$80,682,000</b>	
1	Bumham Interchange Expansion 2020-2030		TBD
2	Harbor Hill Drive Extension		\$15,000,000
3	BB16 Large Roundabout Gap Metering		\$190,000
4	SR302/Purdy Drive Intersection & Corridor Study		\$1,000,000
5	Arterial Overlays & Pavement Maintenance within the HBZ		\$5,000,000
6	Rosedale Sidewalk		\$450,000
7	Cushman Trail Phase 3 (96th to Borgen)		\$200,000
8	Cushman Trail Phase 4-a (Borgen to St. Anthony's Hospital)		\$400,000
9	Cushman Trail Phase 4-b (Borgen to Purdy)	\$1,000,000	-\$2,000,000
10	Sehmel Ave - Right Turn Lane at Bumham / SR16		\$210,000
11	Bumham Dr Bridge - (SR16) Reconfig to 4-lanes AND Ped Bridge at BB16		\$18,130,000
12	Bumham Drive Widening		\$3,500,000
13	Skansie / Rosedale Intersection Improvements (Turn-lane)		\$275,000
14	Vernhardsen St Improvements (storm, roadway, bicycle & peds)		\$2,650,000
15	Harborview Dr Ped & Pkg Improvements (Stinson to N.Harborview)		\$1,500,000
16	Harborview Dr Ped & Pkg Improvements (Rosedale to Stinson)		\$950,000
17	Stinson / Rosedale Intersection Imp (turn lanes to WB Rosedale)		\$280,000
18	Twawelkax Trail Construction & Trailhead		\$250,000
19			
20			
	Austin St. & Harborview Drive Intersection Improvements/ Austin Street widening and/or reconstruction / North Harborview Drive Bridge over Donkey Creek	\$780,000	-\$1,780,000
22	Downtown Parking Lot (no location identified, but within the HBZ)		\$200,000
23	GH North - 7acre Park Development		\$1,950,000
24	Wheeler Street-End Pocket Park		\$80,000
25			
26	Crescent Creek Park & Rohwer Property - Park Development		\$750,000
27	Masonic Building - Property Acquisition (PROS plan, p.49)		\$350,000
28	Donkey Creek Corridor Conservation Acquisitions (PROS , pg 48)		\$1,500,000
29			
30			
31	Harbor Hill Drive Watermain Extension		\$950,000
32	Bujacich Lift Station - (17A) and Force Main		\$2,150,000
33	PW Shop Facility Bulk Fuel Storage		\$27,000
34	PW Shop Facility Expansion		\$400,000
	<b>Total</b>		<b>\$61,122,000</b>

Exhibit A

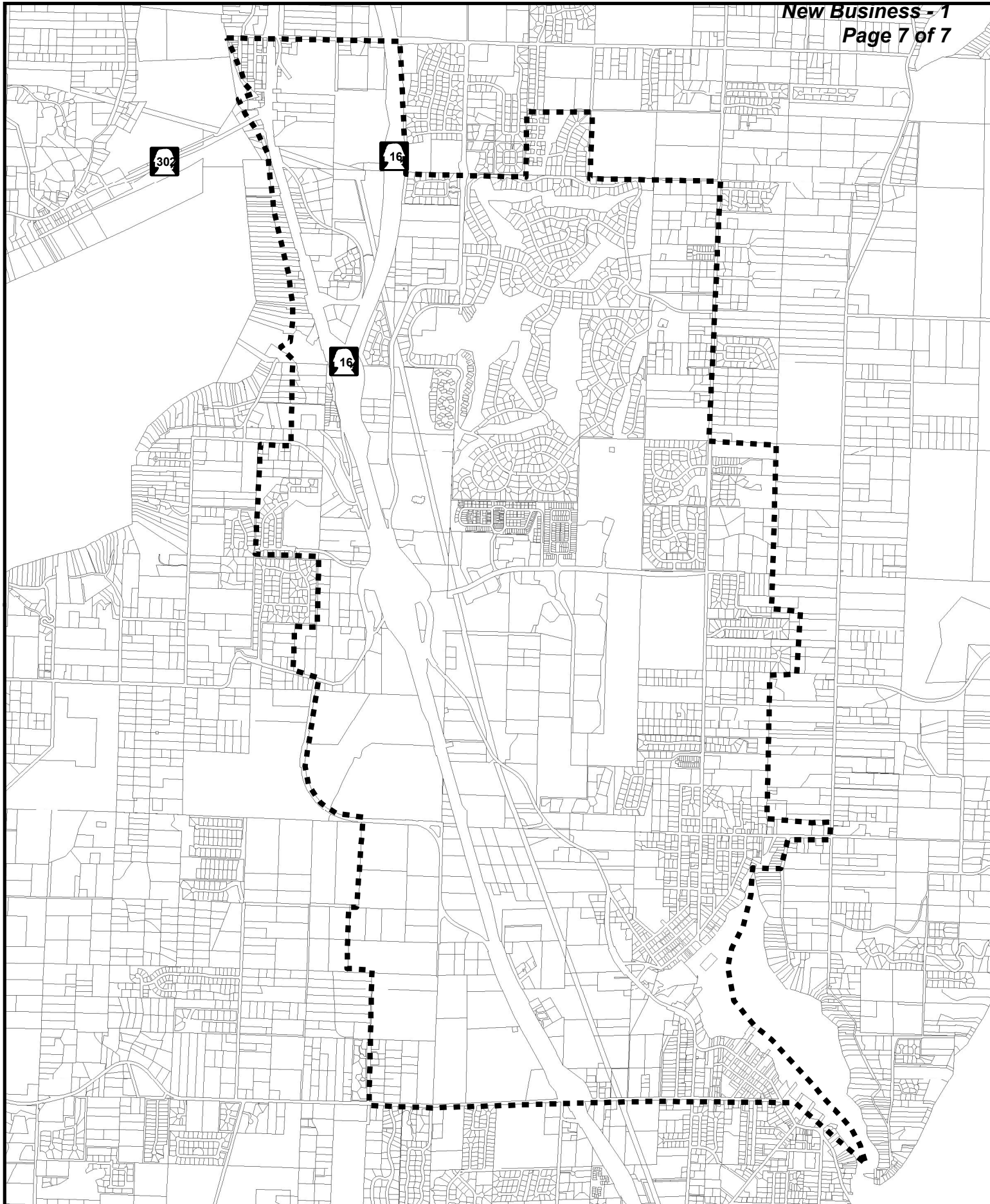


EXHIBIT B





Business of the City Council
City of Gig Harbor, WA

Subject: Public Hearing-Draft Shoreline Master Program

Proposed Council Action: Hold a public hearing, accept testimony and provide direction to staff.

Dept. Origin: Planning Department

Prepared by: Tom Dolan Planning Director

For Agenda of: June 11, 2012

Exhibits: Draft Shoreline Master Program dated February 29, 2012

Initial & Date

Concurred by Mayor:

Approved by City Administrator:

Approved as to form by City Atty:

Approved by Finance Director:

Approved by Department Head:

Handwritten initials and dates: CLH 6/6/12, Z-6/6/12, per e-mail dated 6.5.12, TD 6/5/12

Table with 4 columns: Expenditure Required, Amount Budgeted, Appropriation Required. Values are 0, 0, 0.

INFORMATION / BACKGROUND

The proposal is a non-project action to amend the City's existing Shoreline Master Program which guides and regulates activities/uses and development along the city's shorelines. The proposed Gig Harbor Shoreline Master Program (GHSMP) would replace the city's existing master program first adopted in 1975 and last amended in 1994. The city's Comprehensive Plan and GHMC Titles 17, 18 and 19 (zoning, critical areas and administration, respectively), would also be subsequently amended for consistency with the updated GHSMP.

The proposed GHSMP is the product of a comprehensive, city-wide update of the master program as required by RCW 90.58.080(2)(a)(iii). The updated master program has been prepared consistently with the Department of Ecology's (Ecology) guidelines set forth in WAC 173-26. The proposed GHSMP will affect activities/uses and development along Gig Harbor Bay, Colvos Passage, the Tacoma Narrows, Henderson Bay and Burley Lagoon. Marine areas waterward of extreme low tide are designated as "Shorelines of Statewide Significance," requiring additional attention.

For the purposes of analysis, shoreline areas were divided into six (6) distinct shoreline planning segments (A-F) based broadly on the physical distinction along the shoreline, the level of ecological functions provided by each segment, as well as existing land uses and zoning designations.



### Shoreline Planning Segments

Segment	Approximate Length (feet)	Approximate Segment Acreage	General Boundaries
A	1,656	4.8	Eastern Urban Growth Area (UGA) along Colvos Passage to the Gig Harbor spit
B	9,614	43.4	North of the Gig Harbor spit in UGA to North Harborview Drive NW/Rust Street Intersection in city limits
C	11,720	48.0	North Harborview Drive NW/Rust Street Intersection to Old Ferry Landing
D	13,092	52.8	Old Ferry Landing to southern UGA along the Narrows
E	4,981	19.3	Along Henderson Bay from McCormick Creek to northern city limits and continuing north in UGA to Goodnough Drive NW/Purdy Drive NW intersection (north of Goodnough Creek)
F	5,611	21.8	Goodnough Drive NW/Purdy Drive NW intersection (north of Goodnough Creek) to northwestern UGA limits along Burley Lagoon

Based on the findings of the city's April, 2011 Shoreline Inventory and Characterization Report, the six (6) shoreline planning segments were further divided into the following seven (7) Shoreline Environment Designations:

- **Natural:** Gig Harbor Spit; and Tacoma Narrows south of overwater beach cabins to southern Urban Growth Area limits;
- **Urban Conservancy:** Colvos Passage; stream mouths and estuarine wetlands of Crescent and Donkey Creeks; and stream mouths of Purdy, Goodnough, and McCormick Creeks;
- **Low Intensity:** East Gig Harbor Bay; overwater beach cabins along Tacoma Narrows; and Henderson Bay and Burley Lagoon excluding stream mouths of Purdy, Goodnough, and McCormick Creeks;
- **Purdy Commercial:** Henderson Bay and Burley Lagoon between the Urban Conservancy designation for the Goodnough Creek stream mouth and the Urban Conservancy designation for the Purdy Creek stream mouth;
- **City Waterfront:** Downtown Gig Harbor Bay excluding stream mouths and estuarine wetlands of Crescent and Donkey Creeks;

- **Historic Working Waterfront:** Downtown Gig Harbor Bay within the historic “Millville” District; and
- **Marine Deepwater:** Gig Harbor Bay, Henderson Bay and Burley Lagoon waterward of extreme low tide.

All environments extend waterward to the extreme low tide, except that the Marine Deepwater Environment extends waterward to city limits.

Shoreline Environment Designations have been determined after consideration of:

- The ecological functions and processes that characterize the shoreline, together with the degree of human alteration as determined by the 2011 Shoreline Inventory and Characterization Report and any subsequent investigations or analyses as may be required by this program;
- Existing development patterns together with the Gig Harbor Comprehensive Plan land use designations and other officially adopted plans; and
- The guidelines outlined in WAC 173-26-211, Environment Designation System.

The city’s shoreline environment designations function as an overlay to provide regulations, development standards, and protective environmental measures, in addition to the regulations and standards of the underlying zoning classifications.

Goals and policies are identified for each of the shoreline environment designations. Further, general goals, policies and regulations for Shoreline Use, Marine Shoreline and Critical Areas Protection, Flood Hazard Reduction, Historic, Cultural, Scientific and Educational Resources, Public Access, Water Quality and Quantity, Vegetation Conservation, Quality Waterfront Development along Gig Harbor Bay and Restoration and Remediation have also been developed as part of the SMP update process. The GHSMP also contains goals, policies and regulations for shoreline land use and modifications. In this regard, goals, policies and regulations have been developed for Aquaculture, Boating and Marinas: Piers, Docks and Moorage, Clearing and Grading, Commercial Uses, Commercial Fishing, Dredging and Dredge Material Disposal, Educational Facilities/Scientific, Historical Cultural, Educational Research Uses, Fill and Excavation, Historic Net Sheds, Industrial Development, In-stream Structures, Pedestrian Beach Access Structures, Recreation Uses and Development, Residential, Shoreline Habitat and Natural Systems Enhancement Projects, Shoreline Stabilization, Signs and Outdoor Advertising, Transportation Facilities and Utilities.

There is also a regulatory element in the proposed GHSMP. In this regard, the master program contains use and modification regulations and development standards to be applied in each shoreline environment designation. Use regulations refer to the allowance or prohibition of specific uses such as residential, commercial, or industrial uses in each shoreline environment designation. Modification regulations address development activities such as dredging, clearing and grading, fill and excavation and pedestrian beach access structures that modify existing natural and altered shoreline conditions. In general, such development standards as building and structure setbacks, height limitations, native vegetation requirements, and public access requirements are also addressed by the master program. The development standards also address the management and protection of

critical areas (wetlands, critical fish and wildlife habitat, steep slopes, etc.) located within the shoreline area. Some of the use, modification and development standards have been retained from the city's existing master program, others are newly created to address a specific shoreline management need or to ensure compliance with state guidelines.

Lastly, the proposed GHSMP contains administrative procedures such as permit submittal requirements and review procedures for Shoreline Substantial Development Permit exemptions, Shoreline Substantial Development Permits, Shoreline Conditional Use Permits and Shoreline Variance Permits, nonconforming uses and structures and enforcement actions. These elements have been updated from the existing master program to clarify procedural requirements and reflect current practice.

### **ENVIRONMENTAL ANALYSIS**

The SEPA Responsible Official issued a Determination of Non-Significance (DNS) for the proposed amendments on February 29, 2012 per WAC 197-11-340(2). The threshold determination was subsequently appealed by Robert Frisbie. On May 29, 2012, the City Council conducted an open record appeal hearing on the SEPA appeal and by a 6-0 vote, denied the appeal and upheld the Responsible Official's Threshold Determination.

### **FISCAL CONSIDERATION**

None

### **BOARD OR COMMITTEE RECOMMENDATION**

On April 21, 2011, by a 5-0 vote with one member absent, the Planning Commission recommended the draft Shoreline Master Program to the City Council for its review and consideration.

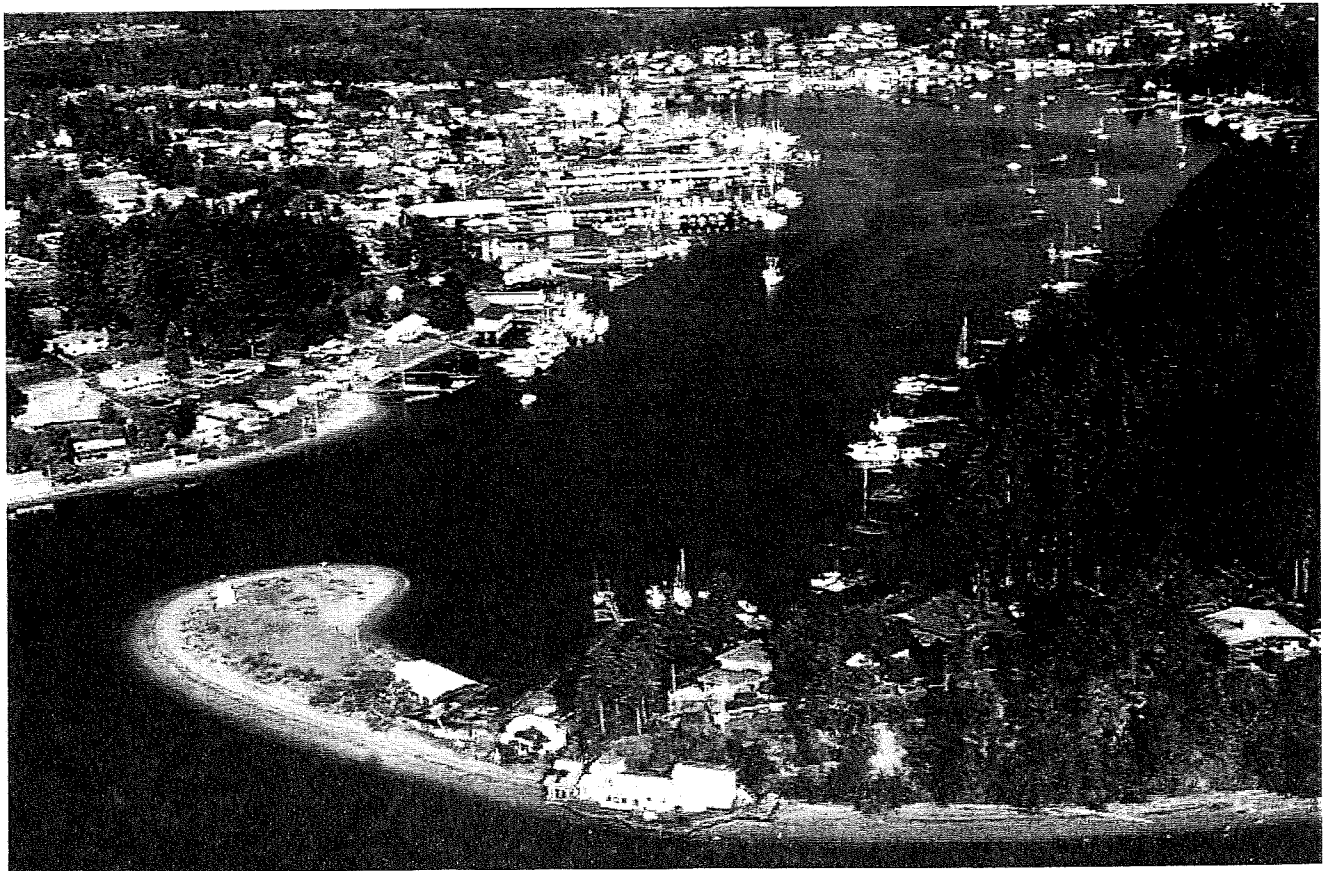
### **RECOMMENDATION / MOTION**

Hold a public hearing, accept testimony on the draft shoreline master program and provide direction to staff.

Planning Commission Recommended Draft, Revised

**CITY OF GIG HARBOR**  
Shoreline Master Program

April 21, 2011, revised February 29, 2012



# City of Gig Harbor Shoreline Master Program Update



# Background

- State Shoreline Management Act (RCW 90.58) establishes requirement for local Shoreline Master Programs
- New State Shoreline Master Program Guidelines (WAC 173-26) adopted by state in 2003
- 266 local jurisdictions must comply with guidelines



# Purpose & Applicability

- The Master Program contains goals, policies and regulations for regulating all shoreline development-first adopted in 1975; last amended in 1994.
- All areas located within 200 feet of the Ordinary High Water Mark of tidally influenced waters, streams with a flow greater than 20 cubic feet per second and lakes 20 acres or greater in size are regulated under the SMA.
- Only tidally influenced waters and those portion of streams affected by normal tidal changes are regulated in Gig Harbor/UGA

# Shoreline Jurisdiction

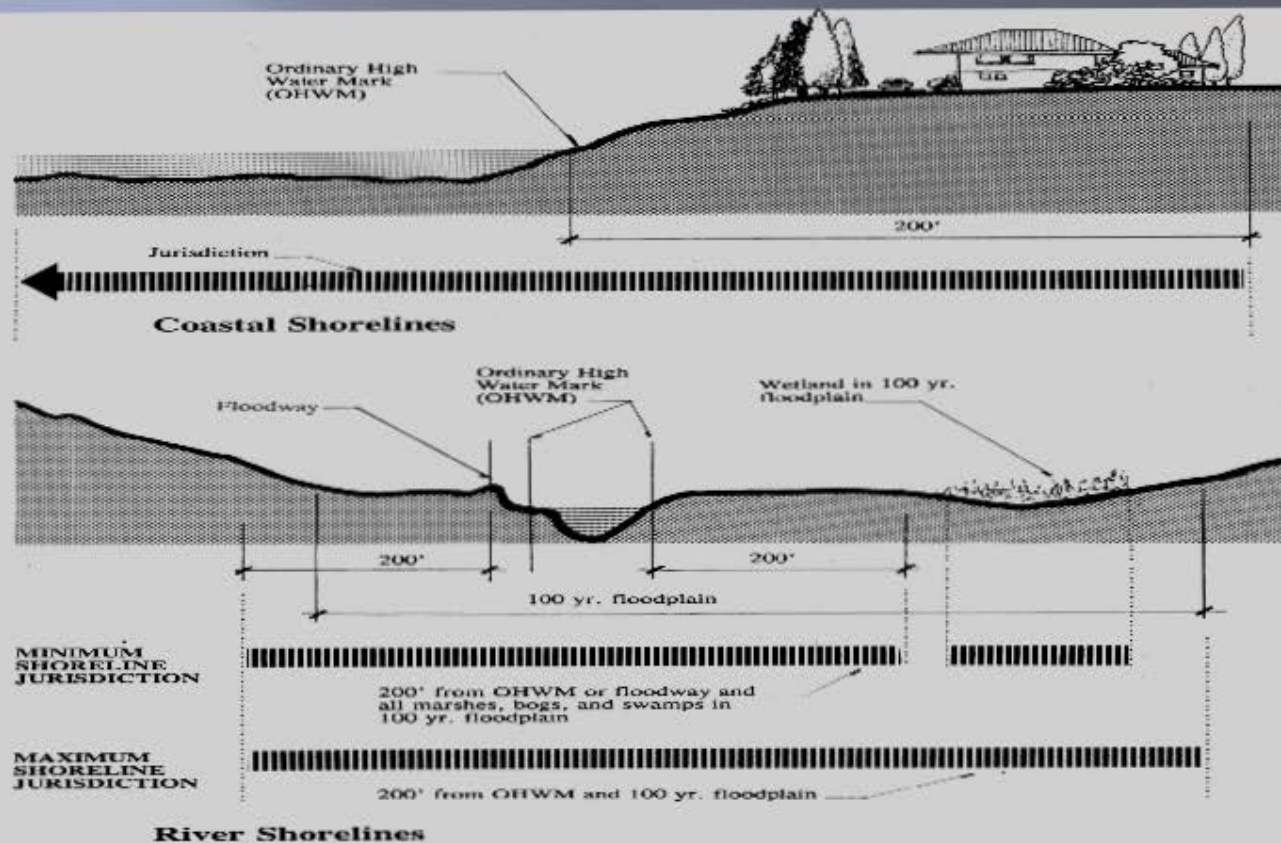


Figure 2-1. Cross Section of SMA Jurisdiction



# Major Changes from Existing Master Program

- Regulations apply to new development and redevelopment
- Existing development not required to comply
- Legally existing development that does not comply becomes nonconforming to new regulations

# New Shoreline Environmental Designations

- Existing Master Program contains 2
  - Urban
  - Urban Residential
- Proposed master program contains 7
  - City Waterfront
  - Historic Working Waterfront
  - Urban Conservancy
  - Low Intensity
  - Natural
  - Purdy Commercial
  - Marine Deepwater
- Environmental Designations – permitted property use and development standards vary by designation

# New Marine Setbacks from OHWM

- Proposed master program requires setbacks from OHWM –does not apply to water dependent uses
- Required setbacks vary based on environmental designation
- Reconstruction of nonconforming structures allowed within setback area provided no expansion occurs and minimum setback provided
- Setback averaging allowed for “infill” development of vacant parcels

# New Vegetation Conservation Area Requirements

- Setback area from OHWM or regulated critical area buffer must be reserved for native vegetation
- Existing vegetation within either setback area or critical area buffer area to be preserved
- Setback and critical area buffers without native vegetation must be planted with new vegetation

# New Shoreline Stabilization Regulations

- Proposed master program discourages the use of hard armoring to protect shorelines
  - New & expanded bulkhead proposals must demonstrate need to protect existing structures
- Proposed master program promotes “soft” approaches for shoreline stabilization
  - Increased building setbacks from OHWM
  - Flexible “defense works” i.e., use of logs and stumps through anchoring, vegetative stabilization, and beach nourishment
- Replacement of existing bulkheads allowed



# New Net Shed Regulations

- Net sheds currently allowed in association with active commercial fishing enterprises
- Proposed regulations would allow adaptive reuse of net sheds for non-water oriented uses subject to criteria

# New Shoreline Critical Area Regulations

- Per State Shoreline Master Program Guidelines local master programs must contain “stand alone” shoreline critical area regulations
- Proposed city master program incorporates existing critical area regulations (GHMC Chapter 18.08) amended to incorporate current DOE guidance on wetlands
- Relief from strict compliance with requirements requires authorization of a variance by DOE

# New Aquaculture Regulations

- Per State guidelines, proposed master program incorporates new aquaculture requirements
- Per guidelines, aquaculture is of statewide interest
- Aquaculture should not be permitted in areas where it would result in a net loss of ecological functions, adversely impact eelgrass & macroalgae, or significantly conflict with navigation & other water-dependent uses.
- Not allowed in Gig Harbor Bay-allowed in Henderson Bay and other areas



# New Nonconforming Use and Structure Regulations

- Proposed master program incorporates nonconforming use and structure regulations currently set forth in GHMC Chapter 17.68
- 50% replacement value threshold for nonconforming structures removed from requirements
- Time period for reconstructing nonconforming structures revised to allow for a maximum period of 3 years rather than 1 year

# Process Improvements

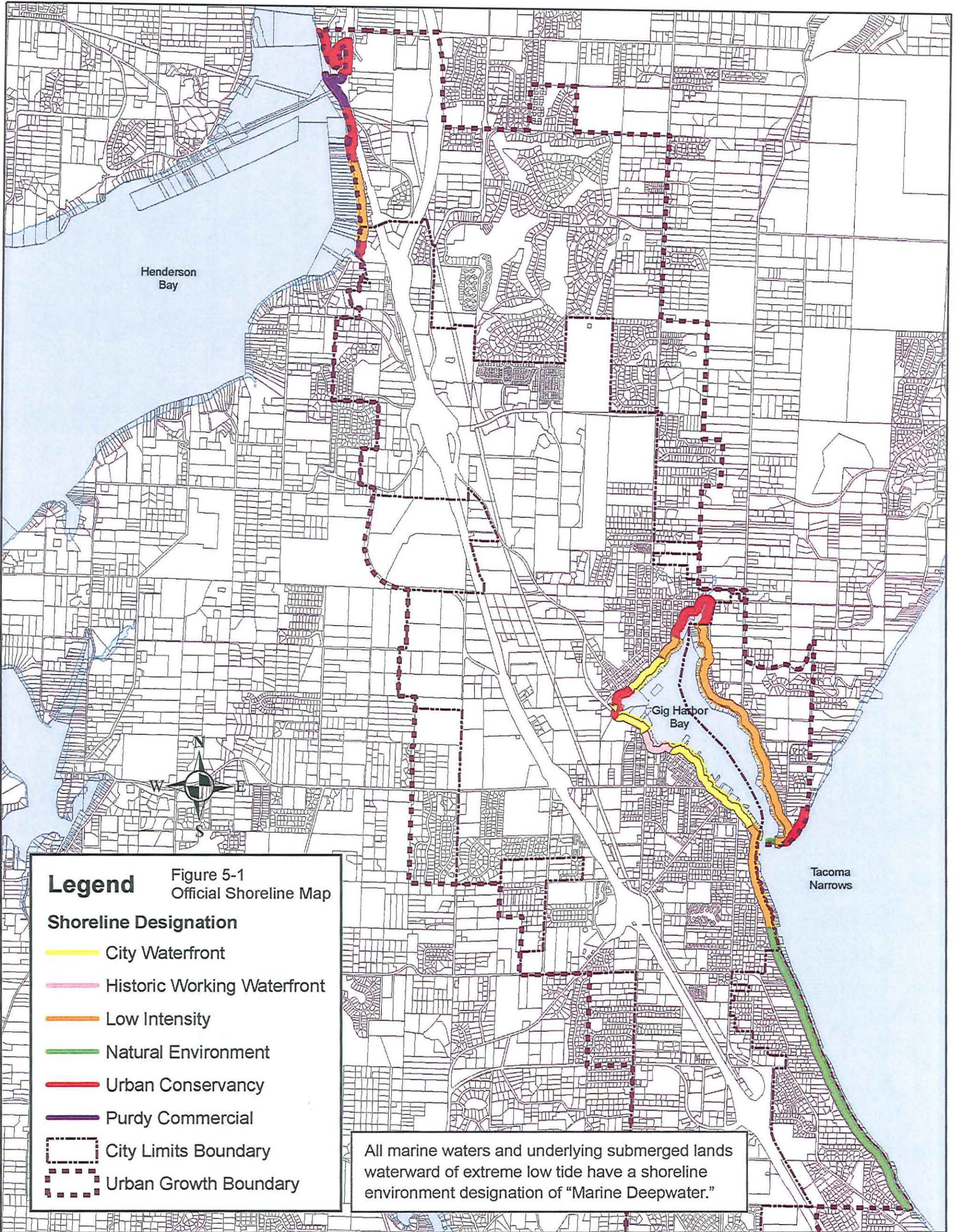
- Shoreline Permit Exemption Process Streamlined
  - Formal exemption only required when Army Corps Permit is required for proposed development activity
- Inconsistencies between zoning code and shoreline master program eliminated
- Use of one common set of nonconforming use and structure regulations to address existing development within entire city jurisdiction

# Next Steps

- City Council review- First & Second Reading of Ordinance, July-September, 2012
- DOE formal review and adoption process- November 2012-April 2013

# Questions







30 April 2012

Peter Katich - Senior Planner  
City of Gig Harbor Planning Department  
3510 Grandview Street  
Gig Harbor, WA 98335

**RE: Draft Gig Harbor Shoreline Master Program Comments  
Conflict between Program Goals and Program Regulations**

Dear Mr. Katich,

Upon my review of the Draft Gig Harbor Shoreline Master Program of April 21, 2011/Revised February 29, 2012, I am deeply concerned that once again the City of Gig Harbor is creating a direct conflict between its stated Program Goals and the corresponding implementing Regulations as part of a long range planning development effort.

This conflict is most clearly illustrated by comparing the Policies of Section 6.7 "Quality Waterfront Development along Gig Harbor Bay" and the specific development regulations of Section 6.2.3 "Regulations – Marine Shorelines."

Section 6.7 policy statement reads: *"It is the goal of the City of Gig Harbor to define and enforce the highest quality standards concerning present and future land use development within the Gig Harbor Bay waterfront areas, recognizing the unique historic character and scale of the Gig Harbor Bay Waterfront. This goal will be achieved through a balance of several different uses including those commercial endeavors such as commercial fishing, boating, marine shops and services, restaurants and retail shops, as well as residential uses which provide the bay's unique appeal."*

This goal is further defined with policy elements that look to balance waterfront uses and the appropriate scale of new structures, the encouragement of public amenities, and the support of infrastructure improvements along the City's waterfront.

Akin to the City of Gig Harbor's Comprehensive Plan for the Waterfront, these goals and aspirational policies are consistent with the existing uses and character of the urban waterfront; however, the implementation of the proposed Marine Shorelines Regulations – specifically the marine Vegetation Conservation Strip – will likely preclude any such quality privately financed commercial development from ever occurring.

For example, the explanation diagrams contained in Section 6.2.3.2 Marine – Vegetation Conservation Strip show generic site plans for explanation of the application of the regulation for the six different shoreline environmental designations of the Draft SMP; however, from my experience, many of the sites in the City's Waterfront and Historic Waterfront do not have the luxury of upland properties with a depth over 175 from the Ordinary High Water Mark (in fact many I have worked on have development depths less than 100 feet). While the taking of a combined 35 feet landward from an established bulkhead may not 'appear' to have development consequences, when applied to real sites with real topography, the regulation will significantly reduce the 'buildable area' for

705 Pacific Avenue

Tacoma, WA 98402

253 383 7762

Fax 383 8041

P. Katich – Senior Planner, City of Gig Harbor  
RE: Draft Gig Harbor Shoreline Master Program Comments  
Conflict between Program Goals and Program Regulations

30 April 2012  
Page 2 of 3

development (and upon application of the other City of Gig Harbor Zoning and Design Review Manual requirements, this will result in the reduction of the depth of the buildable area by over 40%).

As noted in our previous correspondences on this issue, you have stated that the City has not tested any of the proposed buffer widths in any formal development analysis which, in my professional opinion, is a significant omission of due diligence in the development of the Draft SMP. I can attest from my experience that this reduction of the depth of the buildable area for development will lead developers to look toward much more cost effective project that can follow an expedient regulatory permitting path for the use of their property – likely to be the subdivision of the property for single family residential uses (with the unintended but very probably consequences of reducing public access to and along the City's waterfront).

So while the use of the Vegetation Conservation Strip may be a tool to achieve ecological balance to the designated shoreline areas, the 'one size fits all' nature of the proposed regulations as contained in Table 6-1 will actually penalize the smaller urban waterfront properties to a much higher degree and will not achieve the required balance stated in the Washington State Department of Ecology goals for Shoreline Master Programs as outlined particularly in WAC 173-26-176 and WAC 173-26-186. While a variance mechanism may be provided for those seeking relief from strict compliance with this regulation for small sites, the reality is that a variance will likely be required of a majority of the properties within these two waterfront designated zones in order to achieve the quality waterfront development desired by the stated policy goals of the SMP.

Considering that much of the City's Waterfront has historically been used for the support of commercial fishing fleets (including boat building and maintenance facilities), transportation (both car and passenger ferry terminals), industrial uses such as saw mills, and the commercial shipping of agricultural and lumber products, new shoreline regulations must achieve a balance with these historic uses AND their relationship to the edge of the shoreline without the imposition of a suburban planting strip along the bulkheads (not to mention how this requirement will also stifle private redevelopment of net sheds – a priority contained within the City's Policy Goals of the Shoreline Master Program and the City's Comprehensive Plan).

Other municipalities, such as the City of Tacoma, have identified areas in their Shoreline Master Program where the existing character and ecological function is significantly different than undeveloped properties along their waterfront – and thus have proposed regulations that achieve to 'balance' ecological protection and enhancement while still recognizing the development realities in order to foster greater public access and enjoyment of the shorelines. This has required the proposed implementation of a much wider variety of mitigation regulations other than proposing a strict adherence to a single buffer method only varied in width to achieve ecological function compliance.

---

I strongly recommend that the City of Gig Harbor consider removing the requirement of a 25-foot wide Vegetation Conservation Strip specifically for properties located with the designated City Waterfront and Historic Waterfront areas. If mitigation of development impacts are to be considered, the City should look to more flexible measures such as mitigation banks or fee in-lieu program to allow for reasonable commercial development along the City's Waterfront – and to keep the proposed regulations consistent with both

P. Katich – Senior Planner, City of Gig Harbor  
RE: Draft Gig Harbor Shoreline Master Program Comments  
Conflict between Program Goals and Program Regulations

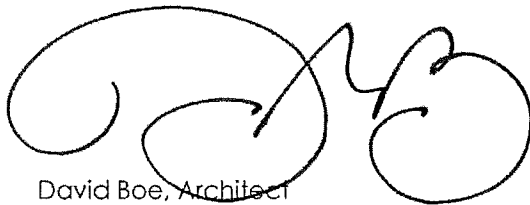
30 April 2012  
Page 3 of 3

the stated Policies of the SMP and the City's own adopted Comprehensive Plan. The City of Gig Harbor has many opportunities to look at areas and projects that can combine shoreline mitigation efforts to achieve 'no net loss' of ecological functions within its urban harbor. Project areas like the opening-up of Donkey Creek, the Crescent Creek shoreline and the many street right-of-ways ends that adjoin the harbor that are unique habitat sites that can be located in and along the waterfront (and likely have a much greater ecological function than vegetated strips atop existing bulkheads).

To maintain and enforce the regulations as currently proposed will provide further incentive for single-family residential development along the waterfront and will significantly discourage the opportunity of public access to and along the City's urban waterfront.

Thank you for the opportunity of providing comment on the Draft Shoreline Management Program for the City of Gig Harbor. If you have any questions on the outlined concerns above, or if the City's Planning Commission and/or City Council would like a demonstration of the negative impact these specific Draft Regulations will have on real properties within the City's Waterfront, please do not hesitate to contact me at (253) 383-7762.

Yours sincerely,



David Boe, Architect  
BOEarchitects, pllc

cc. J. Barline  
G. Meyers  
K. Kingman  
S. Thomas  
W. Perrow  
M. Perrow  
D. Shaw  
K. Van Zwalenburg – Wa Dept of Ecology

---

---



**HALSAN FREY, L.L.C.**  
REAL ESTATE DEVELOPMENT & CONSULTING SERVICES

June 6, 2012

Mayor Hunter & Members of the City Council  
3510 Grandview Street  
Gig Harbor, WA 98335

**RE: SHORELINE UPDATE**

Dear Mayor Hunter and Members of the Council:

Thanks you in advance for your consideration of the public comments on the Shoreline Update; we know it's a monumental process and appreciate all your efforts. You, the Planning Commission and staff have worked very hard and it has not gone unnoticed.

We are encouraging you to amend the Plan in a manner that specifically allows for and encourages joint use parking allowance for marinas in all the property designated City Waterfront under the SMP. The following policies from the draft support such an amendment. In particular, the parking standards need to allow for joint use parking in all zones, not based on a cumulative parking count in just one targeted zone.

As it is today, our marinas have far too much parking and useable land is covered with asphalt to a degree that is unnecessary. In looking at other Puget Sound cities, Gig Harbor requires more marina parking than any other we could find. After Gig Harbor, the next most restrictive are Poulsbo, Kirkland, Anacortes and Des Moines who require 1 stall per two slips regardless of slip size, and none require transient moorage parking. Bainbridge requires 1 per two slips up to 50 slips, but then reduces down to 1 per 3 for the next 50 and 1 per 4 beyond 100. Port Townsend only requires 1 per 20 slips with a maximum of 1 per 10. Edmonds has no requirement at all, but allows for each project to determine what is needed on a case-by-case basis. I think we all know that we require too many parking stalls for marinas . . . all one has to do is drive by any one in town and look at the parking lots to see that they are 90% vacant 90% of the time.

Our existing and proposed official policies all encourage joint use parking and shared facilities. We need to implement this in all zones. We should not be using our parking regulations to implement some tacit policy to keep certain sacrosanct areas from being developed like the rest of our waterfront.

**Shoreline Use Policy 6.1.1 C**

Retain a mixed use waterfront in Gig Harbor Bay including those commercial endeavors such as commercial fishing, boating, marine shops and services, restaurants and retail shops, as well as residential uses which provide the bay's unique appeal. Continue to develop and enhance the recreation and tourism industry along Gig Harbor Bay, as an economic asset, in a manner that will enhance the public enjoyment of, and public access to the bay.

**Quality Waterfront Development along Gig Harbor Bay Policy 6.8.1 C**

Enforce suitable standards governing the development of supporting improvements (e.g., parking areas, sidewalks, stormwater facilities) equal to the standards enforced in other developed areas in the planning area. In addition, illustrate and enforce design standards which control scale, construction methods and materials, drainage patterns, site coverage, landscaping and screening, signage, and other features of unique importance to the waterfront setting. Encourage innovative, effective solutions which cluster and share common improvements, reduce paved areas and otherwise blend construction with the natural setting or with desirable features of the built environment.

**Marina Policy 7.4.2 B**

Upland marina uses: Encourage upland uses at marinas to have water-related uses and water-enjoyment uses, or uses that provide physical or visual shoreline access to the general public.

**Parking Policy 7.20.2 A**

Allow parking when necessary to support an approved shoreline use. Encourage shared parking areas between multiple uses and underground parking. Parking as a primary use (e.g., commercial pay lots and parking not associated with a permitted or conditionally allowed shoreline use) should not be allowed. Locate surface parking outside of shoreline jurisdiction whenever possible or otherwise as far from the shoreline as possible. However, on street parking is acceptable within an approved transportation facility.

We need to add some regulatory language under 7.20.4 that actually implements the above policies in all zones within the area designated City Waterfront.

Please call me with any questions at (253) 307-1922 or email me [carl@halsanfrey.com](mailto:carl@halsanfrey.com).

Sincerely,

*Carl E. Halsan*

Carl E. Halsan  
Member



STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

PO Box 47775 • Olympia, Washington 98504-7775 • (360) 407-6300

June 7, 2012

Tom Dolan  
Community Development Department  
3510 Grandview Street  
Gig Harbor, WA 98335

Subject: Review of February 2012 Revised Draft – Gig Harbor Shoreline Master Program

Dear Mr. Dolan:

Let me first say thank you for the significant effort put forth by the City to be responsive to my comments and concerns detailed in a letter sent July 5, 2011. I recognize the tremendous amount of work done by both the Planning Commission and City staff in developing the draft Program and it has been a privilege to be a partner with you in this work.

Comments are provided sequentially by chapter and citations correspond to the February 2012 draft document. Comments on the wetland provisions incorporate technical input from Alex Callender.

Almost without exception, these comments are recommendations to help clarify provisions I found a bit confusing, or identifying incorrect citations and inconsistencies within the document. The two exceptions are the comments on Section 1.8 Optional Shoreline Jurisdiction and 6.2.5.12 Permitted uses in (wetland) buffer areas.

**Chapter 1 Introduction:**

**Section 1.8 Optional Shoreline Jurisdiction** (pages 1-6 to 1-7): While I recognize you rewrote this in response to my previous comment, this is still a bit misleading. This is how I understand it works: when you chose not to exercise the option to increase shoreline jurisdiction to include land necessary for buffers for critical areas located within shoreline jurisdiction (RCW 90.58.030 (2) (f) (ii)), then as required by RCW 36.70A.480 (6), for those designated critical areas with buffers that extend beyond SMA jurisdiction, the critical area and its associated buffer shall continue to be regulated by the City's critical areas ordinance. In such cases, the updated SMP shall also continue to apply to the designated critical area, but not the portion of the buffer area that lies outside of SMA jurisdiction. All remaining designated critical areas and their buffer areas (that don't extend beyond SMA jurisdiction) shall be regulated solely by the SMP. (In other words, you have a few critical areas that have dual coverage under both sets of

Mr. Tom Dolan  
June 7, 2012  
Page 2

regulations). Please revise this section to make this clear. As written, it sounds like a critical area located in shoreline jurisdiction is not regulated by the SMP if the necessary buffer extends outside shoreline jurisdiction.

### **Chapter 2 Definitions:**

I recommend you include a definition for “date of filing”.

Page 2-15, “Floating Home” – I recommend you revise this slightly to be consistent with the definition found in RCW 90.58.270. It may not be that important because I don’t recall any existing floating homes in Gig Harbor.

Page 2-26, “Off-site Shoreline Mitigation” and page 2-27 “Out –of-kind Shoreline Mitigation”– These definitions seem slightly inconsistent with the subject being defined. As I read the definitions, they seem to imply that it is for impacts to critical areas. However, shoreline mitigation should be for impacts to shoreline resources and not necessarily limited to impacts to critical areas.

### **Chapter 6 General Goals Policies and Regulations:**

**Section 6.2.2 No Net Loss and Mitigation** (page 6-8): Section 6.2.2 – Regulation 7(c) discusses protection of the restoration area by complying with 6.2.4 Regulation #7. This regulation discusses the use of native plants. Did you intend to point to some other regulation such as #6?

**Section 6.2.3.2 Marine Vegetation Conservation Strip – Table 6-1** (page 6-11): The SMP allows for reduction in the minimum structure setback from 50 feet to 25 feet in the Purdy Commercial environment designation with restoration. Footnote #6 cites 6.2.3.3, Regulation #5. I believe you mean Regulation #4.

The following comment is paraphrased from my July 12, 2011 memo commenting on the revised draft Cumulative Impacts Analysis. I note that Table 6.1 and the text in Section 6.2.3.3 are not completely consistent with regard to the Natural designation. In addition, as written it appears that only 6.2.3.3(1) does not apply in the Natural designation. The other provisions aren’t clearly precluded from being applied in the Natural designation. Did you intend for this to be this case?

**Section 6.2.5.1 Maintenance of existing structures and developments** (page 6-30): Regulation 1 points to Section 8.11, Nonconforming Uses and Structures but the title of this section seems to address all existing structures nonconforming or not. You might want to clarify this.

**Section 6.2.5.6 Wetlands – Regulated Activities** (page 6-33): Regulation 2 appears to point to the wrong citation. Section 6.2.5.3, Regulation #1 addresses variance from critical area regulations. I believe you mean to point to 6.2.5.6 Regulation #1.

**6.2.5.10 Wetlands – Buffer areas:** In my previous letter, I made the following comment:  
*“Page 6-26, Section 6.2.4.6 – Regulation 8 specifies a 15-foot building setback. This setback,*

Mr. Tom Dolan  
June 7, 2012  
Page 3

*along with those identified for other critical areas, is not reflected in the dimensional standards table (Table 6-1). A footnote about this should be added to the table.”* I believe I was suggesting this footnote be added to Table 6-1, though upon review that is probably not appropriate. Is the building setback intended to apply to all wetland categories? It appears that this footnote was added to Table 6-3 but not to tables 6-4 through 6-6. If so, it should either be added to all the tables or reinserted as a regulation. I apologize for the confusion.

**6.2.5.11 Wetlands – Alteration of buffers** (page 6-42): Regulation #1 - I recommend you delete this regulation as it doesn't seem to add anything to the section and is misleading since there are only allowances for buffer averaging (where the total buffer area remains the same), and wetland buffer increases where presumably the total buffer area would increase.

**6.2.5.12 Wetlands – Permitted uses in buffer areas** (page 6-46): The following are additional regulatory criteria that should be added for all permitted uses in buffers:

- a. No other location is feasible; and
- b. The location of such facilities will not degrade the functions or values of the wetland

Regulation 1 (b) addresses the allowance of pervious trails and associated viewing platforms in Category 1 wetland buffers. In general, Ecology requires that pervious trails maintain a minimum distance of 75% on Category I, **II and III** wetlands. Please add the additional two wetland categories to this regulation. In addition, here is an additional recommended regulation:

*Passive recreation facilities designed and in accordance with an approved critical area report, including walkways and trails, provided that those pathways are limited to minor crossings having no adverse impact on water quality. They should be generally parallel to the perimeter of the wetland, located only in the outer twenty-five percent (25%) of the wetland buffer area, and located to avoid removal of significant trees. They should be limited to pervious surfaces no more than five (5) feet in width for pedestrian use only. Raised boardwalks utilizing non-treated pilings may be acceptable.*

Finally please explicitly state that stormwater management facilities are not allowed in buffers of Category I or II wetlands.

**6.2.5.16 Wetlands – Replacement criteria** (page 6-53): You should include a regulation on wetland buffer replacement (these should be replaced at a 1:1 ratio). Wetland mitigation assumes that the appropriate wetland buffer will be included to protect the functions and values of the mitigation site.

Page 6-55, Regulation #5: I recommend you clarify up front that Regulation 5 is an allowance provided if mitigation is completed in advance of a project. It's implied but not explicitly stated.

**6.2.5.17 Wetlands – Monitoring program and contingency plan** (page 6-58): Regulation 4(c) sets a vegetative success standard based on survival rates of planted trees and shrubs. Usually agencies look at performance standards in mitigation reports based on aerial coverage. The

Mr. Tom Dolan  
June 7, 2012  
Page 4

recommended performance standards are: Year 1, 100% survival; Year 3, 35% aerial coverage; Year 5, 50% aerial coverage and Year 10, 75% aerial coverage.

**6.2.5.25 Landslide and erosion hazard areas** (page 6-75): Regulation 4(a) references Section 6.2.5.2 Regulation #1 for buffer requirements. Is this a correct citation because the referenced section is about mitigation conservation easements?

**6.5 Public Access** (page 6-81): Language regarding nexus and proportionality, such as that found in Policy 7.12.1.B (page 7-61), is appropriate language to include in this section since the requirement to demonstrate nexus and proportionality is a universal one based on case law and not specific to any kind of proposed use or development.

### **Chapter 7 Shoreline Use and Modification – Policies and Regulations:**

**Section 7.1.1 Permitted Use Tables; Table 7-1 Shoreline Modification Matrix** (page 7-2): Do you want to require a conditional use permit for maintenance dredging in the Low Intensity environment?

Page 7-3, Fill and excavation (upland areas) – I found this line in the table a bit unclear. In the Natural environment designation there are three listed provisions that allow fill, including for an allowed shoreline use. All the other designations list fill as allowed in association with an allowed shoreline development, but don't list shoreline restoration or public access improvements. Wouldn't these be allowed in all environments?

Page 7-4, Pedestrian Beach Access Structures – In the Natural column the citation appears to be incorrect (subsection 7.14.2). Do you mean Section 7.7.2?

Page 7-5, Shoreline Stabilization (Bulkheads and Revetments) references Section 7.9.4. It appears you should also reference Section 7.9.2.

Page 7-6, Structural flood hazard reduction (dikes and levees) – I am a bit confused about how the SMP is addressing municipal surface water management activities. It appears that it is being categorized as part of flood hazard reduction, however much of the infrastructure associated with managing stormwater (transmission pipes, outfalls, detention and treatment facilities) is considered/categorized as a utility use.

**Table 7-2 Shoreline Use Matrix** (page 7-10): A number of changes have been made to the Commercial uses section of the matrix in response to my previous comments. However neither the matrix nor Section 7.12 is clear about whether new non-water oriented, water-related or water-enjoyment uses can be located waterward of the OHWM in the Urban Conservancy and Low Intensity environments. I believe the intent was to prohibit these but all the language has been struck.

Page 7-11, Commercial Fishing Moorage refers to Section 7.13 but this topic is addressed in Section 7.11.11 in the text.

Mr. Tom Dolan  
June 7, 2012  
Page 5

**Section 7.7 Pedestrian Beach Access Structures** (page 7-30): Regulation 4(a) which allows a 5-foot wide walkway or staircase conflicts with Regulation 6.2.4(8) which allows 6-feet in width. I can't tell if 'old' regulations 3 and 4 are still included or not. They are not entirely struck and appear to have new language but the formatting is unclear. If they are still included, the citation in 'old' Regulation 3 to subsection 6.2.4.9 is incorrect. It should be subsection 6.2.4.8.

**Section 7.9.2 Regulations/Demonstration of Need – New, Expanded or Replaced Bulkheads** (page 7-34): While the title says 'bulkheads', it appears the language is intended to address more than just bulkheads but rather all structural shoreline stabilization (including rip rap or revetments, both of which are defined in Chapter 2) consistent with the Guidelines. This should probably re-titled "Regulations/Demonstration of Need - New, Expanded or Replaced Shoreline Stabilization Structures".

**Section 7.9.5 Regulations – Jetties, Breakwaters, Groin Systems** (page 7-40): Based on the definitions in Chapter 2, I believe you intend to allow breakwaters and not groins. A groin is described as *"a barrier structure extending from the shoreline to the water. It is used to interrupt lateral sediment movement along the shore"* (page 2-18). You have defined "breakwater" as *"an offshore structure that is generally built parallel to shore that may or may not be connected to land, and may be floating or stationary. Their primary purpose is to protect harbors, moorages and navigation activity from wave and wind action by creating stillwater areas along shore. A secondary purpose is to protect shorelines from wave caused erosion"* (page 2-6). By the way, this category of stabilization was not included in Table 7-2.

**Section 7.11.6 Regulations – Boat Launch Ramps** (page 7-53): Regulation 5, which requires gravel or other permeable material, does not appear to be consistent with Table 7-2 which notes, in at least a couple of boxes, that for hand launch facilities the ramp is made of "planks or rails only". I recommend deleting the word "only" where it appears.

**Section 7.11.7 Piers, Docks, Floats, and Lifts - Non-residential** (page 7-54): I appreciate the changes made in response to my comments but upon review I realize that my dimensional comments should have been for residential moorage structures. Most non-residential structures are designed to the size needed for the projected use, and are relatively few in number. For residential moorage facilities, on the other hand, we are generally looking for clear standards beyond which a variance would be required, simply because there can be significant numbers of residential docks.

**Section 7.11.8 Piers, Docks, Floats and Lifts – Accessory to Residential Use** (page 7-56): Regulation 8 and the definition for "community moorage" don't appear to be entirely consistent. The definition describes a facility that allows moorage for more than four shoreline residents [SIC – this should be residences]. Regulation 8 seems to allow for multiple community moorage docks just as long as a minimum of two owners share the dock. This should be clarified. See also my comment above in Section 7.11.7.

Mr. Tom Dolan  
June 7, 2012  
Page 6

**Section 7.16 Historic Net Sheds** (page 7-68): This has become a much stronger section with the proposed changes. Thank you. I have just one question about accommodating changes related to life safety that still maintain the historic integrity of the structure. Is this something we need to consider?

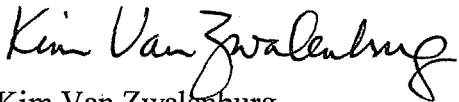
### **Chapter 8 Administrative Procedures**

**Section 8.1.3 Hearing Examiner** (page 8-3): I recommend this be rewritten to say the Hearing Examiner is responsible for hearing and making final decisions for the City on the following matters.

**Section 8.2.2 Exemptions from Substantial Development Permit** (page 8-9): Provision (g) contains the statewide definition of normal appurtenances. Since the City has identified your own interpretation of normal appurtenances, you might want to use those.

Again, thank you for all your hard work on this effort. Please feel free to contact me with any questions you might have either by phone: 360-407-6520 or e-mail: [kim.vanzwalenburg@ecy.wa.gov](mailto:kim.vanzwalenburg@ecy.wa.gov).

Sincerely,



Kim Van Zwalenburg  
Shoreline Planner  
Shorelands and Environmental Assistance Program

cc: Peter Katich, City of Gig Harbor

e-cc: Alex Callender, Ecology SWRO

KVZ:dn





## Dennis D. Reynolds Law Office

200 Winslow Way W. Suite 380 Bainbridge Island, WA 98110

Land Use • Fisheries Law • Environmental Law • Business Law • Indian Law • Real Estate  
206.780.6777 206.780.6865 fax www.ddrlaw.com

June 6, 2012

By Email (towsleem@cityofgigharbor.net) Only

Gig Harbor City Council

Attn: Charles L. Hunter, Mayor

c/o Molly Towslee, City Clerk

3510 Grandview Street

Gig Harbor, WA 98335

Re: Shoreline Master Program Update

Dear Mayor Hunter and Members of the Council:

These comments are submitted on behalf of Gig Harbor Marina, Inc., Stanley and Judith Stearns ("GHM"). GHM's comments address the Shoreline Master Program draft dated April 21, 2011, revised February 29, 2012 ("the Draft SMP"). GHM also comments on the Revised Cumulative Impacts Analysis ("CIA") dated March 17, 2011, and the Revised Inventory and Characterization Report dated April 2011 ("the Report"). These comments are in addition to those submitted November 17, 2010 and March 31, 2011 to the Gig Harbor Planning Commission.

GHM owns a marina and related uplands, commercial and residential developments located in the Waterfront Millville Zone. Mr. and Mrs. Stearns are long-time business owners and citizens of the City of Gig Harbor and the owners of GHM. They are considering additional in-fill development of their property. My clients favor balanced regulation and fostering reasonable commercial and residential use of the shorelines. In particular, they support business to aid boaters and to promote a robust downtown waterfront. They recently purchased an existing marine supply business and moved it onto their property.

GHM commends the hard work of citizens, Staff and the Planning Commission to prepare the Draft SMP pending before the City Council. GHM has concerns and suggestions which it trusts will improve the current Draft. These are offered as constructive comment and should not be construed as criticism of the efforts of citizens and the Planning Commission. GHM sees the Shoreline Management Act ("SMA") as a partnership between government and property owners to collaboratively promote the use and development of shorelines. GHM believes a Final SMP can both protect the environment and preserve constitutionally protected private property rights.

### **WHAT IS BEFORE THE CITY COUNCIL**

It is clear major changes are envisioned in the Planning Commission Draft. The Public Notice states:

Gig Harbor City Council  
June 6, 2012  
Page 2

What Major Changes to the Shoreline Master Program are being Considered?

1. New Shoreline Environmental Designations.
2. New marine setbacks from the OHWM for commercial and residential structures and off-street parking areas.
3. New required vegetation conservation areas adjacent to marine shorelines.
4. New restrictions on the use of “hard” armoring for shoreline stabilization proposals.
5. New regulations that allow the adaptive re-use of over water commercial fishing net sheds.
6. “Stand Alone” Shoreline Critical Area Regulations.
7. New nonconforming use and structure regulations.

GHM believes that the existing SMP has worked well. The record, the actual facts, the law and sound public policy do not require the City Council to go as far as the Planning Commission recommends with respect to updating Gig Harbor’s shoreline regulations, in particular, as to Items (2)-(4) and (7). On Item (6), critical area regulations, the City has over-designated these areas.

**HOW SHOULD THE CITY COUNCIL  
DEAL WITH THE CURRENT DRAFT SMP?**

GHM believes that the City is moving too fast with the Update. It also believes that as currently drafted, the Draft SMP could be subject to legal attack which would result in a protracted and expensive litigation because it unduly and impermissibly regulates the built environment. This is not in anyone’s interest.

What GHM is asking the Council to do is to first read its comments. Yes, they are substantial and detailed. It asks the City Council to particularly (a) focus on process issues, (b) determine if the critical area designations need to be more specific and much less extensive, and (c) look carefully at the effects of the proposed development regulations to ensure that they do not detract from the City of Gig Harbor’s vision for the Downtown Area. Then, GHM respectfully requests the City Council turn to and consider its recommendations set out on the next page.

Most importantly, the City Council needs to understand that it has the authority to **not** apply new buffers or vegetation set asides to the built environment. To the contrary, the City has the discretion to consider the entire built environment as conforming and not put the public

Gig Harbor City Council  
June 6, 2012  
Page 3

through the expensive and time consuming process of working with the proposed “nonconforming” regulations set out in the SMP.

### RECOMMENDATIONS

Upon deliberation, the City Council should:

- Specify for the public the changed local circumstances, new information and improved data Staff is relying upon for the Draft SMP proposal, then allow additional public comment on the analysis before proceeding to deliberate on the proposed SMP.
- Insist that Staff prepare a compliant CIA which (1) adequately assesses the effectiveness of the existing regulatory regime, (2) identifies impacts reasonably foreseeable caused by future development, and (3) sets out the level of expected mitigation of impacts which must occur, then allow public comment on the revised CIA before proceeding to deliberate on the proposed SMP.
- Reject that all shorelines are “critical areas.”
- Reject designation of near shore marine areas as “critical” simply because of yearly juvenile salmonid outmigration and use between March and June.
- Assess regulation of critical areas solely under SMA standards which allow alteration of the natural condition of the shorelines for preferred uses, subject to appropriate project mitigation.
- Do not apply new buffers or vegetation conservation set asides to the existing highly developed shorelines.
- Mandate establishment of marine buffers (if any) on a case-by-case basis for new commercial and industrial development, and large subdivisions, through the existing SEPA and SMA permit processes.
- Prepare a regulatory taking analysis, then allow additional public comment on the assessment before proceeding to deliberate on the proposed SMP.
- Eliminate the concept of “nonconforming uses and structures” for the existing highly built environment, thereby precluding illegal forced restoration.

Gig Harbor City Council  
June 6, 2012  
Page 4

## PROCESS

There are process issues which GHM believes require the immediate attention of the Council.

First, the City is required to “periodically review” its existing Shoreline Master Program. Such review, however, does not equate to creating an entirely new SMP. Changes to the existing SMP are not required unless “... deemed necessary to reflect changing local circumstances, new information or improved data.” WAC 173-26-090. The record does not support the wholesale adoption of a new SMP under the guise of periodic review.<sup>1</sup> At a minimum, Staff should be required to identify each changed local circumstances, new information or improved data ostensibly justifying each proposed change to the current SMP before closing public comment and the City Council deliberates. There is no integrated analysis or document in the record which provides required justification for the proposed changes such to allow meaningful public comment.

Second, upon inquiry, Staff states that there is not a map which specifies the “critical areas” located within shoreline jurisdiction. The Guidelines require this. *See* WAC 173-26-201(2)(c)(ii). For instance, the Draft SMP simply alludes to a number of general studies, with no precise specification as to areas actually classified as critical fish and wildlife habitat areas. *See* Draft, pp.6-65, 6-66, Section 6.2.5.22. *See also* Figure 10, Report. Without a precise understanding as to the extent and location of shoreline regulated critical areas, meaningful public comment is precluded. Based on the Draft SMP language, it appears the entire shoreline is considered a Fish and Wildlife conservation “critical area.” If so, this is a severe over-designation.

Third, there is no “cause and effect” analysis justifying new regulations. Dr. Donald F. Flora<sup>2</sup> has reviewed a Bainbridge Island Nearshore study, to correlate the “cause-and-effects” scientific link between the ecological stressors and the degree of development impacts. Dr. Flora’s final analysis is annexed hereto as **Exhibit 2**. *See also* **Exhibit 3** through **Exhibit 6**, Flora follow-up analysis on absence of documented cause and effect. As the Council can see, Dr. Flora found that there is no direct cause-and-effect correlation between identified and perceived development impacts. It is respectfully submitted that the Council ignore presumptions based upon general studies in the CIA and Report<sup>3</sup> (pp.27-30, p.40, p.42), in favor

---

<sup>1</sup> *See* GHM’s comment letter, November 17, 2010, p.1.

<sup>2</sup> Dr. Flora’s resume is attached as **Exhibit 1**.

<sup>3</sup> Courts routinely exercise their “gate-keeper” authority to exclude the admission of “junk science” under the authority of *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 588 (1993) and *Frye v. United States*, 293 F. 1013 (D.C. Cir. 1923). Expert witness opinions must be soundly based in scientific methodology, generally accepted and reliable, based on the specific facts at hand. *See Anderson v. Akzo Nobel Coatings, Inc.*, 172 Wn.2d 593, 606-07, 260 P.3d 857 (2011) (noting that “[e]videntiary rules provide significant protection against unreliable, untested, or junk science”) (citing 5B KARL B. TEGLAND, WASHINGTON PRACTICE: EVIDENCE LAW & PRACTICE § 702.19, at 88 (5th ed. 2007)). Although some courts have declined to directly apply the *Daubert* standard to decision making at the administrative level, they nonetheless recognize that, “however valid a general

Gig Harbor City Council  
June 6, 2012  
Page 5

of demonstrated cause-and-effect. Undocumented presumptions or narrow agency perspective to “regulate at all cost” is not a legally sufficient basis to preclude common shoreline development, *e.g.*, bulkheads.

According to studies, one-third of Puget Sound is armored, and 95% of the shorelines in Gig Harbor Bay are armored. If the hypothesis is true that armoring has potential consequences on beaches and the aquatic environment, one would think that these effects or impacts would be easily recognized and well documented; but they are not.

Fourth, the CIA is not compliant with the Guidelines.<sup>4</sup> The State Guidelines mandate preparation of a Cumulative Impacts Assessment (CIA) “... that **identifies, inventories** and ensures meaningful understanding of the current and potential ecological functions provided by affected shorelines.” WAC 173-26-186(8)(a) (emphasis supplied). A compliant CIA must be prepared before a new SMP can be adopted. The CIA must also consider and assess the benefits provided by existing regulations and project mitigation imposed under the SMA permitting and State Environmental Policy Act (SEPA) authority. On this last point, the Guidelines require a cumulative impact analysis which includes such analysis, along with an evaluation of reasonably foreseeable future development:

Local master programs shall evaluate and consider cumulative impacts of reasonably foreseeable future development on shoreline ecological functions and other shoreline functions fostered by the policy goals of the act . . . Evaluation of such cumulative impacts should consider: (i) **Current circumstances** affecting the shorelines and relevant natural processes; (ii) Reasonably foreseeable future development and use of the shoreline: and

---

theory may be, it does not translate into a management tool unless one can apply it to a concrete situation.” *Sierra Club v. Marita*, 43 F.3d 606, 622-23 (7<sup>th</sup> Cir. 1995). In fact, in *Green Mountain Chrysler Plymouth Dodge Jeep v. Crombie*, 508 F. Supp.2d 295, 310-12 (D. Vt. 2007), the court engaged in a lengthy evaluation of the reliability of expert testimony, proffered to justify greenhouse gas emissions standards for vehicles, under the *Daubert* standard.

The Washington State Constitution accords citizens of this state a heightened protection of private property rights, See Wash. Const. Article 1, sec. 16. The right to use and enjoy land for any legitimate purpose is a well-recognized, fundamental property right in Washington. See *e.g.*, *Washington ex rel. Seattle Title Trust Co. v. Roberge*, 278 U.S. 116, 120, 49 S. Ct. 50, 73 L. Ed. 210 (1928); *Manufactured Housing Cmty. v. State*, 142 Wn.2d 347, 364, 13 P.3d 183 (2000); *Ackerman v. Port of Seattle*, 55 Wn.2d 400, 409, 348 P.2d 664 (1960) In order to avoid being invalidated as arbitrary and capricious, restrictions on development must be reasonably necessary based on specific, identifiable facts, rather than generalized impacts or needs. See *Isla Verde International Holdings, Inc. v. City of Camas*, 146 Wn.2d 740, 760-61, 49 P.2d 867 (2002); see also *Environmental Coalition of Ojai v. Brown*, 72 F.3d 1411 (9<sup>th</sup> Cir. 1995) (ruling “if it appears from the record that the Government based its decision on a ‘reasoned evaluation’ of the relevant factors thoroughly evaluated recent scientific developments . . . [and] Having done so, and having determined based on careful scientific analysis that its initial conclusion remained valid,” a decision is not arbitrary and capricious). Thus, the City Council should consider the reliability of the “science” proffered to support the Draft SMP to determine if it meets the *Daubert* and ER 702 admissibility standards. If not, it may not legally be used to support the proposed development restrictions.

<sup>4</sup> See also GHM Comment Letter, November 17, 2010, comments on City’s Shoreline Inventory and Characterization Report, pp.6-7.

Gig Harbor City Council  
June 6, 2012  
Page 6

(iii) **Beneficial effects** of any established regulatory programs under the other local, state, and federal laws.

WAC 173-26-186(8)(d) (emphasis supplied). Existing regulatory systems include the State Environmental Policy Act, storm water management regulations, updated health regulations, the State Hydraulic Code for overwater development, and many other laws such as Section 404 Clean Water Act provisions for docks or bulkheads. The CIA does not meet required standards to meaningfully discuss the efficacy of these regimes.

Fifth, the State Guidelines require that a “mechanism” be in place in the SMP for documenting all project review actions in shoreline areas. Local governments are required to identify a process for “periodically evaluating” cumulative facts, which includes monitoring of impacts of approved projects. *See* WAC 173-26-191(2)(a)(ii)(B). GHM does not find such a mechanism set out in the Draft SMP. This is a critical oversight, as it denies the public and the City an opportunity to monitor impacts and revise regulations if necessary based upon actual experience. It also takes away the ability to use adaptive management principles. As the State Guidelines state:

Effective shoreline management requires the evaluation of changing conditions and the modification of policies and regulations to address identified trends and new information. Local governments should monitor actions taken to implement the master program and shoreline condition to facilitate appropriate updates to master program provisions to improve shoreline management over time.”

WAC 173-26-201(2)(b).

Sixth, there is no showing of coordination with the Washington State Department of Natural Resources as required by the State Guidelines. *See* WAC 173-26-201(3)(d)(i)(E)(ii).

### **SUMMARY OF SUBSTANTIVE COMMENTS**

These comments are addressed to several defects in the proposed Draft SMP including: (a) inconsistencies with the Shoreline Management Act, RCW 90.58 (“SMA”); (b) inconsistencies with the State Guidelines for an SMP Update, WAC Chapter 173-26 as revised in 2011 (“the State Guidelines”); (c) inconsistencies between the proposed Draft SMP and the Gig Harbor Comprehensive Land Use Plan; (c) internal inconsistencies, and (e) the failure to recognize and consider several key legislative changes dealing with critical areas and shorelines.

The Draft SMP fails both legal and factual tests for reasonableness, consistency and compliance with legitimate purposes under the SMA in several key respects, and as such, should be materially revised. I am happy to meet with Staff and the City Attorney to go over suggested language changes since the limits on public comment preclude any meaningful dialog.

Gig Harbor City Council  
June 6, 2012  
Page 7

GHM's primary complaint is that the Draft SMP fails to consider or acknowledge changes in the last ten years to both the Growth Management Act (Chapter 36.70A RCW) ("the GMA") and the SMA. Despite these changes, Staff and the Planning Commission appear to have the false assumption that:

- (a) All shorelines are critical;<sup>5</sup>
- (b) Buffers and/or vegetation conservation areas or set asides are required on all shorelines; and
- (c) Existing single-family residences should not be exempt from new generic buffer and vegetation set aside regulations.

If GHM correctly understands the process to date, the Planning Commission overlooked legislation which precludes the wholesale designation of shorelines as critical areas. In GHM's opinion, local governments are forced to (1) look at the definitions of critical areas, (2) identify science that enables them to distinguish between those areas that are "critical" and those that are not, and (3) enable the SMA to continue with its goal of fostering all appropriate uses, consistent with protecting both the environment and navigability. RCW 90.58.020.

It is respectfully submitted that the City Council should request that Staff go back and relook at the critical area designations for fish and wildlife conservation areas, since not all shorelines are critical areas. In addition, the policies and goals of the SMA "shall be the sole basis for determining compliance of the Shoreline Master Program" with GMA Chapter 36.70A. *See* RCW 36.70A.430(3)(a). The SMA policies control and since those policies differ from the GMA, the public needs to be assured that the proposed regulations for shoreline critical areas comport with the SMA.

On the last point, the GMA standard is to "protect" critical areas. The SMA standard is one which fosters balanced development. The SMA explicitly allows "alterations of the natural condition of the shorelines and shorelands of the state, which **shall be recognized** by the Department." RCW 90.58.020 (emphasis supplied). Permitted alterations favor "single-family

---

<sup>5</sup> The Central Board and the Washington State Attorney General have concluded that blanket treatment of SMA regulated shorelines as critical areas under the GMA is not appropriate. *See, Tahoma Audubon Society v. Pierce County*, CPSGMHB No. 05-3-0004c, Final Decision and Order (July 12, 2005) and AGO 2006 No. 2 at 4 (Jan. 27, 2006) ("The Legislature explicitly repudiated the Board's conclusion that shorelines of statewide significance are categorically critical areas which must be protected both under the SMA and GMA.") In *Tahoma v. Pierce County*, the Central Board rejected a wholesale designation of marine shorelines as critical areas and commented favorably on the County consultants' work distinguishing "high value" and "low value shorelines." *Id.* at 44. The record in that case included a detailed marine shoreline inventory and ranking of areas according to their quality as habitat for salmon in response to a listing of Chinook Salmon under the Endangered Species Act. *Id.* at 53. Specifically, Pierce County used a "scientific study which included data collection, field observations, and a recognized methodology . . . that can be replicated" to identify "stretches of marine shoreline with high habitat values for salmon." *Id.* at 4. Using a scientifically replicable method, Pierce County was able to identify and designate approximately 20 miles of its 179-mile of shoreline as salmon habitat justifying a 100-foot buffer. *Id.* at 2.



Gig Harbor City Council  
June 6, 2012  
Page 8

residences and their appurtenant structures, ports, shoreline recreational uses including but not limited to parks, marinas, piers and other improvements facilitating public access to shorelines of the state, industrial and commercial developments which are particularly dependent on their location on or use of the shorelines of the state,” and shoreline development which provides an opportunity for a substantial number of people “to enjoy the shorelines of the state.”  
RCW 90.58.020.

The SMA as interpreted by the courts is not a law that seeks only to preserve the shorelines:

[I]t is tempting to rhapsodize about the pristine beauty of the Nisqually Delta. It is also tempting to express the wish that time and human hands not disturb its natural tranquility. This is not, however, the task before this court. Rather, our obligation is to interpret state and local laws as they apply to the issuance of permits to build an export facility within the City of DuPont in an area designated for urban uses.

In applying the law, we look first to its overall policy. The SMA does not prohibit development of the state’s shorelines, but calls instead for “coordinated planning ... recognizing and protecting private property rights consistent with the public interest.” RCW 90.58.020. Designation of a shoreline as of “state-wide significance” does not prevent all development. That designation provides greater procedural safeguards, but permits limited alteration of the natural shorelines, with priority given to “residences, ports, shoreline recreational uses including ... industrial and commercial developments which are particularly dependent on their location on or use of the shorelines of the state ...” RCW 90.58.020.

*Nisqually Delta Ass’n v. DuPont*, 103 Wn.2d 720, 726, 696 P.2d 1222 (1985).

### **POLICY CONCERNS**

GHM believes there is a significant policy choice facing the City Council. In its opinion, the Draft SMP does an excellent job of articulating a vision for the downtown commercial zones, including Waterfront Millville. The City’s vision encourages businesses, including restaurants, as appropriate in shoreline areas. Commercial development provides public access to waters of the state and promotes an active robust waterfront. Restaurants bring people to the water and promote the quality of life, as is attested to by many Puget Sound cities which have “show-case” waterfront restaurants.



Gig Harbor City Council  
June 6, 2012  
Page 9

GHM's concern is the effect of proposed regulations in the Draft SMP which are imposed as if the built environment does not exist.<sup>6</sup> There is no point to promote a viable waterfront, on the one hand, and then constrain its development or redevelopment on the other, by imposing generic buffers or vegetation set asides to existing structures and uses. Redevelopment should be encouraged in the downtown area to maintain its vitality. It is respectfully suggested that the City Council relook at the whole concept of "nonconforming" uses and structures.

Instead of over-regulation of the built environment, GHM respectfully submits that the City Council should: (1) declare all existing residential structures and uses within shorelines conforming, (2) allow incremental redevelopment with insertion of a strong policy statement that such development is not considered a threat to the aquatic environment;<sup>7</sup> and (3) recognize the benefits of regional restoration projects. The State Guidelines mandate recognition of regional mitigation. *See* WAC 173-26-186(8)(c).

Support for this approach is found in the Puget Sound Partnership ("PSP"), its "Action Plan," and the Puget Sound Nearshore Ecosystem Restoration Project. These are among several existing plans and programs identified in the City of Gig Harbor's Shoreline Restoration Plan Element Draft, April 2011. Over time, PSP's regional restoration efforts will provide a net gain to the environment. These benefits will more than offset the almost immeasurable incremental impacts that may be associated with redevelopment of the existing built environment in shoreline areas, but do not appear to have been a factor for consideration.

A concern is the narrow perspective exhibited by some scientists or regulators and how policy-makers such as yourselves must factor in "science" with statutory, social, political, legal, constitutional and economic considerations. As one former federal official has stated:

What constitutes an allowable cost is not a matter solely of science. These deliberations require multi-faceted consideration of all of the consequences of the decision to include the effects on natural resources **and** the legal, social, political and economic consequences of the decision. Resource agencies must follow legislative mandates and rigorous rule making procedures before environmental criteria are codified in regulatory (RCW) or administrative (WAC) codes. Natural resource agencies such as the Department of Ecology and the Department of Fish and Wildlife are not generally charged with making multi-faceted appraisals, they are charged with protecting fish and wildlife, water, air, soil and sediment quality, etc. These one-dimensional tasks lead to one-dimensional thinking that is evident in the *Best*

---

<sup>6</sup> The State Guidelines provide that a master program must address "the full variety of conditions on the shoreline." WAC 173-26-191(1)(a).

<sup>7</sup> Specific projects can be mitigated on a case-by-case basis.

Gig Harbor City Council  
June 6, 2012  
Page 10

*Available Science* (Sheldon *et al*, 2005) written by WDOE and even more so in the WDFW recommendations of (Knutson and Naef, 1997) describing perceived wetland and stream buffer requirements for protecting water quality and wildlife.<sup>8</sup>

Finally, there are unintended consequences of some existing regulations, *e.g.*, parking. This is discussed in a comment letter submitted on behalf of GHM by Mr. Carl Halsan.

### RELEVANT LEGISLATIVE ENACTMENTS

In 2003, the Central Puget Sound Growth Management Hearings Board held in *Everett Shoreline Coalition, et al. v. City of Everett and Dept. of Ecology*, Case No. 02-3-00090 (FDO, January 2003) that all shorelines of statewide significance were critical areas under the GMA, RCW 36.70A.030(5).

While the case was on appeal, the state legislature stepped in and adopted amendments to RCW 36.70A.480, making the point that all shorelines are not critical areas. The precise language adopted to clarify the situation is as follows:

(5) Shorelines of the state ***shall not*** be considered critical areas under this chapter except to the extent that specific areas located within shorelines of the state ***qualify for critical area designation*** based on the definition of critical areas provided by RCW 36.70A.030(5) ***and*** have been designated as such by a local government pursuant to RCW 36.70A.060(2).

RCW 36.70A.480(5) (2003 amendments).

In adopting the 2003 amendments the legislature specifically addressed the *Everett Shoreline Coalition* case to correct the mischaracterization of the SMA and GMA priorities in areas of overlap. The legislative note provides:

Finding -- Intent -- 2003 c 321: "(1) The legislature finds that the final decision and order in *Everett Shorelines Coalition v. City of Everett and Washington State Department of Ecology*, Case No. 02-3-0009c, issued on January 9, 2003, by the central Puget Sound growth management hearings board was a case of first impression interpreting the addition of the shoreline management act into the growth management act, and that the board considered the appeal and issued its final order and decision without the benefit of shorelines guidelines to provide guidance on the implementation of

---

<sup>8</sup> Dr. Kenneth M. Brooks, *Supplemental Best Available Science Supporting Buffer Widths in Jefferson County*, Washington, p. 3. (2007)

Gig Harbor City Council  
June 6, 2012  
Page 11

the shoreline management act and the adoption of shoreline master programs.

(2) This act is intended to affirm the legislature's intent that:

(a) The shoreline management act be read, interpreted, applied, and implemented as a whole consistent with decisions of the shoreline[s] hearings board and Washington courts prior to the decision of the central Puget Sound growth management hearings board in *Everett Shorelines Coalition v. City of Everett and Washington State Department of Ecology*;

\* \* \*

(c) Shorelines of statewide significance **may include critical areas** as defined by RCW 36.70A.030(5), **but that shorelines of statewide significance are not critical areas simply because they are shorelines of statewide significance.**

(3) The legislature intends that critical areas within the jurisdiction of the shoreline management act shall be governed by the shoreline management act and that critical areas outside the jurisdiction of the shoreline management act shall be governed by the growth management act. **The legislature further intends that the quality of information currently required by the shoreline management act to be applied to the protection of critical areas within shorelines of the state shall not be limited or changed by the provisions of the growth management act.**" [2003 c 321 § 1.]

RCW 90.58.030, Definitions and Concepts (legislative intent note), emphasis supplied.

Subsequently, in 2010, a dispute arose over whether GMA critical area or SMA rules prevailed in the shoreline areas. To resolve that debate, the law was amended to provide that GMA critical area regulations were applicable to undeveloped properties until the shoreline update process was completed (RCW 36.70A.480(3)(c)), but that existing uses and structures were to be governed by the existing shoreline master program and not the GMA CAO ordinance. (RCW 36.70A.480(3)(c)(i)(ii)).

The changes were included in HB 1653, which provided as follows, with the key distinction in subsection (c)(i):

(c)(i) Until the department of ecology approves a master program or segment of a master program as provided in (b) of this subsection, ***a use or structure legally located within shorelines of the state that was established or vested on or before the effective date of the local government's development regulations to protect critical areas may continue as a conforming use and may be***

Gig Harbor City Council  
June 6, 2012  
Page 12

*redeveloped or modified if: (A) The redevelopment or modification is consistent with the local government's master program; and (B) the local government determines that the proposed redevelopment or modification will result in no net loss of shoreline ecological functions.* The local government may waive this requirement if the redevelopment or modification is consistent with the master program and the local government's development regulations to protect critical areas.

RCW 36.70A.480(3)(b)(c)(i) (emphasis supplied).

In 2011, the Legislature enacted Substitute Senate Bill 5451 ("SSB 5451") (Chapter 323, Laws of 2011). That law addressed public concerns: "... expressed by residential property owners during Shoreline Master Program Updates regarding the legal status of existing shoreline structures that may not meet current standards for new development." Chapter 323, § 1. The Legislature stated that it intended to clarify "the legal status" of the structures that will apply after shoreline regulations are updated. The solution was to give power to local governments to classify existing structures as **legally conforming**:

(1) New or amended master programs approved by the department on or after September 1, 2011, may include provisions authorizing:

(a) Residential structures and appurtenant structures that were legally established and are used for a conforming use, but that do not meet standards for the following to be considered a conforming structure: Setbacks, buffers, or yards; area; bulk; height; or density; and ....

Washington Laws, 2011, Ch. 323, p.283.<sup>9</sup>

GHM will factor in the directives of these new laws in its comments which follow. Briefly, the major implications are that the City has an affirmative obligation to look at and classify "critical areas" under SMA standards without resort to generalized studies. The City's current approach to rely on general public agency materials or to essentially insert substantial portions of its GMA Critical Areas Ordinance adopted under the Growth Management Act without further analysis does not comply with the new legislation.

GHM is unaware of any articulated reason why the City Council should not implement the authority delegated to it under SSB 5451 and continue to characterize legally established

---

<sup>9</sup> GHM notes that redevelopment, expansion or change or replacing a residential structure is allowed: "... if it is consistent with the master program including requirements for no net loss of shoreline ecological functions." Washington Laws, 2011, Ch. 323, § 2(1)(b).

Gig Harbor City Council  
June 6, 2012  
Page 13

residential structures and appurtenant structures as conforming, rather than impose new setbacks or buffers, among other regulatory requirements set out in the proposed Draft SMP.

### **SUGGESTED APPROACH TO DESIGNATE MARINE “CRITICAL AREAS”**

There is a three-pronged inquiry for the City Council in assessing fish and wildlife conservation areas designation and regulation under the Draft SMP. First, the shoreline must meet the definition of a “critical area” as defined in the Minimum Guidelines, WAC Chapter 365-190. Second, the City must comply with the SMA Guidelines that require that an SMP “... provide a level of protection to the shorelines that assures no net loss of shoreline ecological functions necessary to sustain shoreline natural resources.” WAC 173-26-221(2)(ii). Third, the City must comply with the SMA and its policies which allow alteration of the shorelines, including critical areas, for certain preferred uses, as confirmed by the SMA Guidelines.

#### 1. Minimum Guidelines

The City’s definition of “critical areas” (Draft, p.2-9) is too broad and needs to be tied into the Minimum Guidelines. In addition, the definition of “priority habitat” (Draft, p.2-29) is very broad, although admittedly consistent with the State Guidelines. On paper, all waters of the state would become “priority habitat.”

WAC 365-190-030, definitions, sets the parameters for a “Critical Area” as distinguished from other habitat.

(6)(a) “Fish and wildlife habitat conservation areas” ***are areas that serve a critical role in sustaining needed habitats and species for the functional integrity of the ecosystem, and which, if altered, may reduce the likelihood that the species will persist over the long term.***

WAC 365-190-030(6)(a) (emphasis supplied).

There are a number of qualifiers applicable to a specific habitat area before the City may designate certain habitat as “critical.”

- The area must serve a “critical role” in sustaining needed habitats and species for the ecosystem as a whole, and
- The area must be so important to long-term viability that “If altered may reduce the likelihood that the species will persist over the long term.”

Gig Harbor City Council  
June 6, 2012  
Page 14

The regulation goes on to address a number of areas that “may be” considered for designation, but that list is not a short cut to making the factual determination set forth in the initial phrase.

A similar set of qualifications exists in the minimum guidelines for Fish and Wildlife Habitat Conservation Areas detailed at WAC 365-190-130, which specifically rejects the notion that all species must be protected in all locations to the exclusion of waterfront development or enjoyment of waterfront properties and focuses instead on the issue of regional management. WAC 365-190-130. GHM points out the emphasis on maintaining long-term viability, rather than a prohibition against any activity that affects all shorelines, whether meeting the definition of critical or not.

A second provision of the referenced WAC addresses areas that must be “considered” for designation as Fish and Wildlife Habitat Conservation Area critical areas. *See* WAC 365-190-130(2). GHM believes that the emphasis on the term “considered,” combined with the need to apply the qualifiers from WAC 365-190-030(6)(a) and WAC 365-190-130, demonstrate that a tailored approach is required.

The key point here is that the areas listed must be considered by the City to see if they meet the test for designation as a critical area set forth in WAC 365-190-030(6)(a). The requirement to provide an accurate inventory directed to the distinction between shorelines available for managed activity and those requiring a higher degree of protection is fundamental but missing in the analysis to date provided to the City Council. This oversight must be corrected.

A question is how to deal with the near shore areas where young salmon reside and migrate for several months per year. There is no science stating extensive buffers are required to protect this species’ sporadic use of the near shore area, especially where the existing condition is a highly developed urban waterfront. Existing regulations preclude virtually any new development or construction during this period of use.<sup>10</sup> Thus, any alteration of the nearshore environment will not reduce the likelihood that salmon species will perish over the long term since the key threat is construction impacts. Modern regulations as set out in the Draft SMP provide for light and other provisions to ensure juvenile salmonids can go under overwater structures. *See, e.g.,* Draft SMP, Section 7.11. p.50.

## 2. State Guidelines

The State Guidelines, WAC 173-26-221(2), largely defer to the designation criteria set out in RCW 36.70A.170(1)(d). Local governments, however, have discretion to “identify additional shoreline areas that warrant special protection” without labeling these areas “critical areas.” WAC 173-26-221(2)(a). An option is to designate “critical saltwater habitats” as defined

---

<sup>10</sup> *See* State Hydraulic Code Regulations, WAC Chapter 220-110.

Gig Harbor City Council  
June 6, 2012  
Page 15

in the SMA Guidelines. These are discrete areas, “all kelp beds, eelgrass beds, spawning and holding areas for forage fish ... subsistence, commercial and recreational shellfish beds, mud flats, intertidal habitats with vascular plants, and areas with which priority species have a primary association.” WAC 173-26-221(2)(c)(iii)(A). GHM urges the City Council to relook at the matter, and designate for enhanced protection only truly critical saltwater habitat.

### 3. SMA

The legislative amendments discussed *infra*, pp.9-12, say it all: Not all salt waters are automatically “critical areas.”

#### **FAILURE TO INCLUDE “SOCIAL SCIENCES” OR ASSESS STATUTORY AND CONSTITUTIONAL LIMITS**

The SMA standard for an SMP update is to “utilize a systematic, interdisciplinary approach which will ensure the integrated use of the natural and social sciences and the environmental design arts ....” RCW 90.58.100(1)(a).

GMH has reviewed the record and found nothing that, in its opinion, attempts an “interdisciplinary approach.” There is no study incorporating social sciences, including the economics of extensive proposed new regulation or the social effects or aspects on property owners who may need to deal with nonconforming use and other onerous regulations. There is no study or analysis of how the regulations proposed in the Draft SMP may preclude desired downtown waterfront development. Most importantly, nothing is said about the Draft SMP applying new buffers and set asides as if the existing condition is one of pristine undeveloped shorelines and the social consequences of making significant portions of the existing built environment “nonconforming.”

Allusions are made to the “best available science” in various documents, but the SMA standard is to “utilize a systematic interdisciplinary approach.” Without regard to the applicable standard, science cannot be used in isolation from constitutional and statutory requirements. *See HEAL v. Central Puget Sound Growth Management Hearings Board*, 96 Wn. App. 522, 979 P.2d 864 (1999). It is recommended that the City Council empower the Office of City Attorney to provide an analysis of the Draft SMP’s consistency with statutory and constitutional standards, then allow public comment on that assessment.

#### **THE LIMITS OF CURRENT SCIENCE AS TO IMPACTS OF SHORELINE DEVELOPMENT ON NEARSHORE FUNCTIONS AND VALUES**

Staff and the public agencies express concern about adverse impacts to sediment transport rates among other negative effects associated with shoreline armoring. But the cited supporting science relates to huge down beach structures that were built decades ago before modern regulatory systems which now require that bulkheads be placed at or above the ordinary high water mark. A review of the literature demonstrates that adverse impacts, if any, are much

Gig Harbor City Council  
June 6, 2012  
Page 16

less with structures placed at or above the ordinary high water mark than with those constructed down the beach as was the historic practice.

The alleged “cause and effect,” particularly for shoreline development, is not black and white. The Department of Ecology and other researchers have recently commented that the effects of bulkheads have not been documented. *See* Introductory Comments of Peter Ruggiero, Oregon State University (“However, it has not been confirmed in the field or the laboratory whether currents and sediment transport rates will increase or decrease in front of the hardened bulkhead as compared to an unarmored section of beach, and whether the sedimentary environment would be significantly modified”). *See also* comments of Department of Ecology official Mr. Hugh Shipman as to the “limited amount” of science that has been done in Puget Sound on the effects of armoring.<sup>11</sup>

The study *Marine and Estuarine Shoreline Modification Issues* concludes that the current science on marine riparian vegetation is inconclusive and that additional study is required:

[F]unctions of marine riparian vegetation need to be better documented in the scientific literature in order to create adequate policies for protection (*e.g.*, functional buffer widths) and restoration . . . Experimental research now will allow us to fill knowledge gaps, learn from our actions, and minimize repetition of failures and wasteful expenditure of resources.

G.D. Williams and R.M. Thom, *Marine and Estuarine Shoreline Modification Issues*, Batelle Marine Sciences Laboratory, White Paper submitted to Washington Department of Fish and Wildlife at 81 (Apr. 2001).

In 2007, a report on marine riparian functions was prepared in support of the Puget Sound Nearshore Partnership (Technical Report 2007-02). On p.17 of the report, the author lists the following gaps in research:

**Major Gaps/Critical Uncertainties**

- Studies/data on marine riparian functions for the Puget Sound region are very limited.
- Inventories (types, locations, size) of shoreline vegetation and community types or associations are lacking, and there is no monitoring or assessment of modification and loss.
- Protection, enhancement, and restoration standards for marine riparian vegetation are limited.

---

<sup>11</sup> *See*, **Exhibit 7** and **Exhibit 8**, attached. *See also* **Exhibit 9**, attached, symposium abstracts (Rice: “Human alteration of Puget Sound shorelines is extensive yet its ecological consequences are largely unknown.”).



Gig Harbor City Council  
June 6, 2012  
Page 17

- Fish and wildlife inventories and dependencies on marine riparian areas are not well documented.
- Appropriate buffer widths and setbacks for protecting marine riparian and marine aquatic systems are poorly understood and inconsistently applied (if applied at all).
- An improved understanding of the exchanges (*e.g.*, energy, matter) across and within these riparian transition areas is needed.
- Food web data are limited.
- Study of the potential effects of climate change and sea level rise on marine riparian systems is lacking.<sup>12</sup>

Most cited studies indicating the need for trees and shade to provide micro climate comes from the Midwest, the East Coast and the West Coast in remote forest areas and is based on protecting the temperature from rising in small shallow streams. The concept of micro-climates does not apply to a large tidal body like Puget Sound or the Straits of Juan de Fuca. Shade could never cover or cool baitfish spawning beds. On the hottest summer days in Puget Sound, the sun is high in the sky and strikes all beaches directly except the upper 10 feet of northerly facing beaches with very tall trees on the shoreline or very tall banks – a rare occurrence.

Dr. Michael Dosskey, Research Riparian Ecologist, USDA-Forest Service National Agroforestry Center, University of Nebraska, a recognized expert on the use and limitations of buffers, made an early presentation on the issue of designing protections for resource lands through the use of buffers. He cautioned that studies from one type of situation are rarely transferable directly to another and different physical and geological setting. His program was entitled “...ensure that policies and programs... are based on sound science...”<sup>13</sup>

To the extent there are gaps in knowledge, the “precautionary approach” is unwarranted under the SMA. No such standard is found in the SMA, a law which fosters and allows reasoned development and alteration of the natural shoreline for certain preferred uses combined with project mitigation. More fundamentally, science does not trump the constitutionally protected private property rights. In this regard, the *HEAL* court held that a restriction of the use of property that is insufficiently supported by best available science violates constitutional nexus

---

<sup>12</sup> See Dr. Flora’s review of the PSP technical report, **Exhibit 10**.

<sup>13</sup> Dr. Michael Dosskey presentation at Law Seminars International “Agricultural Lands in Transition” conference March 11, 2002 in Everett, WA.

Gig Harbor City Council  
June 6, 2012  
Page 18

and proportionality standards<sup>14</sup> The State Guidelines for SMP Updates mandate protection of property rights. See WAC 173-26-186(5) (“Guiding Principles”).

It is not enough to generally cite “the science” and act upon guesses or fears. Hypothetical impacts – “[are] not enough to deny private property owners fundamental access to the application review process, or protection and use of their property.”<sup>15</sup> In *Biggers v. Bainbridge Island*, the City of Bainbridge Island’s decision to impose an outright prohibition based on theoretical harm according to the Supreme Court served to exacerbate the “mistaken belief that protecting the environment and private property rights are mutually exclusive interests.”<sup>16</sup>

It is important to recognize that the application of science requires the City Council to ensure that economic and property interests are protected from unsupported and unduly preclusive regulation:

[T]he obvious purpose of the scientific requirement that each agency “use the best scientific and commercial data available” is to ensure that [environmental regulations] not be implemented haphazardly, on the basis of speculation or surmise. While this no doubt serves to advance the ESA’s overall goal of species preservations, we think it readily apparent that another objective (if not indeed the primary one) is to avoid needless economic dislocation produced by agency officials zealously but unintelligently pursuing their environmental objectives. *Bennett v. Spears*, 520 U.S. 154, 176-177 (1977) (reasoning adopted in *HEAL*, 96 Wn. App. at 531). In this regard, the Washington State Supreme Court held that local government must provide a “scientific OSF, evidence of analysis, or a reasoned process to justify [critical area regulations].”<sup>17</sup>

## INAPPROPRIATE REGULATION OF BUILT ENVIRONMENT

### 1. Local Circumstances: Highly Developed Shorelines.

The State Guidelines provide substantial discretion to governments to consider local circumstances. WAC 173-26-090; WAC 173-26-178(3)(1).

---

<sup>14</sup> *Heal*, 96 Wn. App. at 533-34 (emphasis added); see also *Isle Verde Int’l Holdings v. City of Camas*, 146 Wn.2d 740, 763 (2000) (striking down generic open space condition regardless of the specific needs created by a given development).

<sup>15</sup> *Biggers v. City of Bainbridge Island*, 162 Wn.2d 683 at 687 (J.M. Johnson, J., lead opinion).

<sup>16</sup> See *Biggers*, 162 Wn.2d at 702 (Chambers, J., concurring) (“Done right, master plans can serve both needs.”)

<sup>17</sup> *Ferry County v. Concerned Friends of Ferry County*, 155 Wn.2d 824, 835 (2005).

Gig Harbor City Council  
June 6, 2012  
Page 19

The State Guidelines specify that new regulations should apply **only** to undeveloped land: “While the master program is a comprehensive use regulation applicable to all land and water areas within the jurisdiction described in the act, its effect is generally on future development and changes in land use.” WAC 173-26-192(2)(a)(iii)(A).

The Draft SMP, p.3-5 (Figure 3.2), discusses Gig Harbor’s nearshore habitat, providing a schematic of an idealized shoreline environment with no compact development. The existing condition is a highly built environment, however. *See* Draft, p.3-6. *See also* Report.

The Report, p.7, Table 3-1, sets out existing land use in the City’s planning area which is the subject of the Draft SMP.<sup>18</sup> There is a high percentage of residential use, in some areas as high as 83%. *See* Report, p.10, Table 3-2. The Report demonstrates that a significant amount of land located within the City’s Urban Growth Area (“UGA”) is built-out. This is to be expected since under the Growth Management Act, compact urban growth is “infill” within designated UGAs.

The City does not have any meaningful wetlands within its shoreline regulatory area. It does not have significant feeder bluffs on Gig Harbor Bay. Report, pp.23-24. The character of the beaches is “commonly occurring.” Report, p.24. There is a substantial amount of existing shoreline armoring and over water development. The Report, p.28, states that 95% of the City’s shoreline adjacent to Gig Harbor Bay and Puget Sound is armored. There are no known endangered, threatened or sensitive plant species in the City’s shoreline jurisdiction. Report, p.40.

The Report says that the nearshore habitat is an important environment for juvenile salmonids. Report, p.47. This use, however, is short term and seasonal, generally between March 15 and June 15. There are no documented Pacific Herring spawning sites. Report, Table 5.4, p.48. There is one Sand Lance documented spawning site, and two for Surf Smelt. Report, p.48.

---

<sup>18</sup> As set out in GHM’s November 17, 2010 Comment Letter, the City’s Shoreline Inventory and Characterization Report (“the Report”) is incomplete in some respects. The Report does characterize existing conditions. However, it essentially summarizes information from generic sources. (Report, p.22). No economic demand analysis has been prepared. (Report, p.19). WAC 173-26-201(37)(c) requires “actual specification” of the extent of existing structures and shoreline development and an evaluation of the effectiveness of the existing shoreline regulatory system. This information **must** be gathered before a SMP can be updated. However, the revised Report dated April 2011 does not contain such specification or evaluation, in particular, an analysis of how the existing regulatory system is or is not working. The Report takes generalizations from studies looking at the impacts of historic structures and simply presumes that such impacts will be associated with new structures without analysis as to the beneficial aspects of existing regulatory systems. For instance, generalizations are made that shoreline armoring may cover or destroy eelgrass meadows and overwater structures will deprive eelgrass of light. Under the modern systems, however, bulkheads are not allowed below the ordinary high water mark, such to cover or destroy eelgrass meadows, and docks must be grated. In addition, docks are typically not allowed in eelgrass areas. Horror stories from the past are not an appropriate basis for decision-makers to consider whether amendments to the existing SMP are necessary under actual existing circumstances.

Gig Harbor City Council  
June 6, 2012  
Page 20

The Draft SMP, Figure 3-2, discusses the “vital connection between land and water.” However, there is no discussion of how that connection works when most of the nearshore environment is already built out. Nor are specific documented impacts set out. Thus, the Draft SMP does not truly take into account the highly built shoreline environment, which it must.

It is respectfully urged that the City Council stop for a moment and consider how far it wants to go in terms of the approach suggested by Staff and the City consultants. This approach is to describe (1) potential impacts caused by historic shoreline development; (2) mostly occurring prior to institution of modern regulatory standards and project mitigation in the context of a highly built shoreline where new development opportunities are limited. *See Comment, Policy Choices, infra.*

2. No Net Loss.

The “no net loss of ecological functions” concept is stated as one of the “Governing Principles” of the State Guidelines. The idea is that SMP provisions, to the greatest extent feasible, protect existing ecological functions and avoid new impacts to habitat and ecological functions. However, the State Guidelines explicitly allow impacts to ecological functions “necessary to achieve other objectives of RCW 90.58.020,” for example, priority for single-family uses and recreational moorage. WAC 173-26-201(2)(C).

The concept of “no net loss” is not stated in the legislative findings or policies set out in RCW 90.58.020. Under the SMA, “no net loss” applies only to regulation of development within critical areas located within the shorelines. “No net loss” cannot go too far, because under the SMA, the law allows “alterations” to even the natural condition for preferred and exempt uses. RCW 90.58.020. The State Guidelines which employ “no net loss” state that they are “subordinate to the Act.” WAC 173-26-186(1).

According to the SMA, the goal is that new development “minimize, insofar as practical, any resultant damage to the ecology and environment of the shoreline area.” RCW 90.58.020. In fact, the City does an excellent job of understanding that if “required mitigation is imposed, no net loss of shoreline ecological functions and values is met.” Plan, p.1-3, § 1.2, Governing Principles, § 7. The mitigation sequencing in the opinion of my clients is an appropriate way to deal with potential impacts directly related to a proposed development, and to generally comply with the no net loss standard.

The Draft SMP, p.6-4, does an excellent job of establishing policies to protect key habitats, *e.g.*, the Crescent and Donkey Creek estuaries. This is consistent with the State Guidelines. *See* WAC 173-26-221(2)(a)(ii)(F). The approach is a net gain for the aquatic environment and must be factored into an overall generic analysis of “no net loss,” but it does not appear that has yet occurred.

Gig Harbor City Council  
June 6, 2012  
Page 21

The Draft SMP fails to recognize that “no net loss” of FWHCAs must be calculated with respect to the applicable ecosystem, not on an individual parcel basis. *See Tulalip Tribes v. Snohomish County*, CPSGHB, Case No. 96-3-0029. This needs to be clarified.

After wholesale integrating its GMA Critical Areas Ordinance into the Draft SMP, the City turns existing development into a “non-conforming” status. This draconian result is not required. *See* SSB 5451. The City has discretion to label **all** existing development conforming.

The City’s treatment of existing and future development is inconsistent with the SMA and the State Guidelines in some respects.

3. Illegal Forced Restoration.

While restoration is an objective of the Shoreline Management Act, the Shoreline guidelines recognize that restoration (as distinguished from mitigation) is beyond the reach of local regulatory ordinances:

(5) The policy goals of the act, implemented by the planning policies of master programs, may not be achievable by development regulation alone. Planning policies should be pursued through the regulation of development of private property only to an extent that is consistent with all relevant constitutional and other legal limitations (where applicable, statutory limitations such as those contained in chapter 82.02 RCW and RCW 43.21C.060) on the regulation of private property.

WAC 173-26-186(5).

The Draft SMP imposes “forced restoration” in some instances while generally stating that restoration is “voluntary.” For instance, to deny the protection of the nonconforming provisions in connection with bulkheads is to impose a restoration requirement that is patently inconsistent with the law. Neither the GMA nor SMA requires restoration by landowners. *Swinomish Tribal Community v. WWGMHB*, 161 Wn.2d 415 (2007). This is an internal inconsistency that must be corrected.

4. Development and Use Can Occur In or Near Designated Critical Areas.

The State Guidelines do not preclude development near or within critical areas. Subject to mitigation, and a site-specific analysis, docks, piers, bulkheads, bridges, fill, floats, jetties, utility crossings, and “other human made structures” may intrude into or over critical subwater habitats. WAC 173-26-210-221(2)(b)(iii)(C).

The Guidelines emphasis is on a “level of protection.” The goal is to protect “ecological functions” to sustain aquatic life and natural resource populations.” WAC 173-26-221(2)(a)(ii). Ecological functions means the work or role played by “physical, chemical and biological

Gig Harbor City Council  
June 6, 2012  
Page 22

processes” which maintain the aquatic and terrestrial environment. WAC 173-27-020(13). “Sustain” is defined to mean “keep in existence” or “maintain.” Webster’s II, New College Dictionary (1995 Ed.), p.1111.

When the Shoreline Management Act was passed, the Legislature was considering two initiatives – the Shoreline Protection Act, which gave state agencies much more control over environmental protection, and the Shoreline Management Act, which looked to a balanced approach to shoreline use and protection. The Shoreline Management Act prevailed. It is the SMA that controls.

The SMA allows preferred or exempt development on or near critical areas. The SMA unequivocally allows “construction **on shorelands** by an owner ... of a single-family residence ... for his or her own use ....” RCW 90.58.030(3)(e)(vi) (emphasis supplied).. The term “**shorelands**” includes “... **all wetlands** ... associated with tidal waters.” RCW 90.58.030(2)(d) (emphasis supplied).

Nothing in the SMA requires local government to impose outright prohibitions on shoreline development.<sup>19</sup> Instead, the SMA calls for “coordinated planning . . . recognizing and protecting private property rights consistent with the public interest.”<sup>20</sup> Our Courts have repeatedly recognized this policy of balancing property rights and the environment:

The SMA embodies a legislatively-determined and voter-approved balance between protection of state shorelines and development. The state has developed shorelines through improvement of parks and ramps, construction of bulkheads, ferry docks, etc. As part of our careful management of shorelines, property owners are also allowed to construct water-dependent facilities such as single-family residences, bulkheads, and docks.<sup>21</sup>

Wholesale preclusion is inconsistent with the SMA. The State Guidelines provide that:

(2) The policy goals for the management of shorelines harbor potential for conflict .... The prohibition of all use of shorelines also could eliminate their human utility and value. ... The act calls for the accommodation of "all reasonable and appropriate uses"

<sup>19</sup> See *Nisqually Delta Ass’n v. City of DuPont*, 103 Wn.2d 720, 726 (1984) (RCW 90.58.020 does not prohibit shoreline uses).

<sup>20</sup> RCW 90.58.020.

<sup>21</sup> *Biggers*, 162 Wn.2d at 697 (J.M. Johnson, J., lead opinion); *Biggers*, 162 Wn.2d at 702 (Chambers, J., concurring); *accord Futurewise v. W. Wash. Growth Mgmt. Hearings Bd.*, 164 Wn.2d 242, 243 (2008) (J.M. Johnson, J., lead opinion) (“The SMA meant to strike a balance among private ownership, public access, and public protection of the State’s shorelines.”); *Overlake Fund v. Shoreline Hearings Board*, 90 Wn. App. 746, 761 (1998) (The purpose of the SMA “is to allow careful development of shorelines by balancing public access, preservation of shoreline habitat and private property rights through coordinated planning . . .”).

Gig Harbor City Council  
June 6, 2012  
Page 23

consistent with "protecting against adverse effects to the public health, the land and its vegetation and wildlife, and the waters of the state and their aquatic life" and consistent with "public rights of navigation."

WAC 173-26-176(2). The SMP has many preclusions which need to be reconsidered under consistency and statutory and constitutional requirements. *See Detailed Comments, pp.23-38, infra.*

5. Buffers Do Not Apply to Built Environment.<sup>22</sup>

The State Guidelines make it clear that SMPs "shall contain requirements for buffer area zones around wetlands within shoreline jurisdiction," (WAC 173-26-221(2)(a)(ii)(D)), but they contain no such mandatory requirement for "critical freshwater habitats" including larger lakes or streams, or the nearshore marine area. Compare WAC 173-26-221(2)(c)(i)(B) with - 221(2)(c)(iv).

In terms of the vegetation conservation strip, the State Guidelines specifically recognize that provisions for vegetation conservation **cannot** be applied to existing development: "Like other master program provisions, vegetation conservation standards do not apply retroactively to existing uses and structures." WAC 173-26-221(5)(A). Yet, the Draft SMP ignores this limitation.<sup>23</sup>

The Planning Commission suggests that the Draft SMP impose large vegetated buffers with materially reduced utilization without any effort to establish that the shoreline actually requires such protection to maintain shoreline habitat functions and values for critical areas. *See* Flora cause and effect exhibits, attached. While protecting shoreline critical areas against habitat loss of the critical functions in any location is a reasonable objective of local governments, the approach used must be reasonably related to the lawful purpose, with a specific finding of reasonable necessity at a given location for the condition and the burden of proof on the local government based on a site-specific determination (a boiler plate approach to creating environmental open space is never considered "reasonably" related to a specific circumstance).<sup>24</sup> *See* Draft SMP, § 6.2.3.2, p.6-8.

---

<sup>22</sup> *See* GHM Comment Letter dated November 17, 2010, pp.21-23, discussing applicable statutory and constitutional limits on imposition of generic buffers.

<sup>23</sup> The Department of Commerce states: "The standard buffer widths presume the existence of a relatively intact native vegetation community in the buffer zone adequate to protect the wetland functions and values at the time of the proposed activity." Department of Commerce, Critical Areas Assistance Handbook, Appendix A.

<sup>24</sup> The ordinance purports to import commercial forest stream-related protective measures with no analysis whatsoever to demonstrate the continuity of geologic, hydraulic and habitat conditions to warrant "borrowing" such science. Instead, the ordinance should be based on best available science for the unique marine conditions in Gig Harbor Bay and Colvos Passage.

Gig Harbor City Council  
June 6, 2012  
Page 24

define the entire nearshore area as critical), the more restrictive buffer applies. In a critical fish and wildlife habitat area, there is a buffer of 25 to 150 feet. *See* Draft, p.6-68.

The Draft SMP essentially makes all structures and uses nonconforming. A non-legal definition of “nonconforming” is “illegal but tolerated for now.” The Department of Ecology is on record as seeking to phase out nonconforming uses and structures on the shorelines. *See Exhibit 11* hereto.

To the extent that new buffers or vegetation set asides are to be applied, they should be limited to areas that are not yet built up or have any development on them. Redevelopment should be allowed with no strings attached, particularly for water-dependent and exempt uses. To do so recognizes that existing science does not support the proposed regulation of existing conditions, plus the need to tie-in SMA and constitutional standards.

### SPECIFIC COMMENTS

Gig Harbor Marina, Mr. and Mrs. Stearns, have the following comments on language found in the Draft SMP.

Section 1.1 (Purpose and Intent) (p.1-1). The reference to no net loss (p.1-2) should be generic. Suggest the word “overall” be inserted between “no” and “loss.”

Section 1.2 (Governing Principles) (p.1-2).

The State Guidelines provide that new set asides apply only to the undeveloped shoreline but the Draft SMP contains no such limitation, leaving the matter of application of new buffers and set asides to the built environment to be worked out through “nonconforming” regulations. This is both an internal and external inconsistency. Applying buffers and set asides to the built environment also violates Article 11, Section 11 of the Washington State Constitution, and federal and state constitutional provisions for protection of private property rights.<sup>25</sup>

GHM believes that the section of the Draft SMP describing protection of shoreline ecology is excellent (p.1-3, paragraph 7). The mitigation sequencing set out therein will achieve no net loss. There is no need to take the “no net loss” standard further, however, and apply it to specific projects. In other words, compliance with mitigation sequencing “*ipso facto*” achieves no net loss.

---

<sup>25</sup> The City must assess the impact of the Draft SMP on property rights. The right to own and use private property is protected by state constitution. *See* U.S. Const. amend. V; Wash. Const. art. I, § 16; *Mfr'd Housing Cmty. of Wash. v. State*, 142 Wn.2d 347, 368 (2000) (Property rights consist of the fundamental rights of possession, use, and disposition). While property rights, like other fundamental rights, are subject to regulation, that regulation must follow reasonable standards. *State v. Vander Houwen*, 163 Wn.2d 25, 36 (2008); *Mfr'd. Housing*, 142 Wn.2d at 354-55.



Gig Harbor City Council  
June 6, 2012  
Page 25

The policies and regulations established by the Draft SMP are not properly integrated and coordinated with the policies of the Gig Harbor Comprehensive Plan. *See* GHM Comment Letter, November 17, 2010, pp.23-26. *See also* State Guidelines, WAC 173-26-191(1)(e). Such prohibitions effectuate a regulatory takings. *See* Office of Attorney General Guidelines for Regulatory Taking, which state:

In general, zoning laws and related regulation of land use activities are lawful exercises of police powers that serve the general public good. However, the state and federal constitutions have been interpreted by courts to recognize that regulations purporting to be a valid exercise of police power still must be examined to determine whether they unlawfully take private property for public use without providing just compensation. This relationship between takings laws and regulation is sometimes explained as looking at whether a regulation has the effect of forcing certain landowners to provide an affirmative benefit for the public, when the burden of providing that benefit is one that should actually be carried by society as a whole.

(p.7).

Section 1.5 (Relationship to Other Plans and Regulations) (p.1-4). GHM believes that the City Council should relook at incorporation of Title 17. It is respectfully submitted that there are some parking standards applicable to the Waterfront Millville Zone (but not to other downtown zones) that make the Draft SMP internally inconsistent, particularly those provisions encouraging mixed use and infill of all waterfront shoreline zones. Mr. Carl Halsan will provide additional comment on this point.

Chapter 2 (Definitions) (p.2-1). GHM suggests that the definition of “water related use” be clarified to explicitly include waterfront restaurant. In the alternative, this use can be explicitly allowed as part of a mixed-use development allowed in the Waterfront Millville Zone. *See* Permitted Use Table, p. 7-2. *See also* Halsan comments.

Section 3.1.2 (Physical and Ecological Processes) (p.3-4). The cause-and-effect of the contribution of “feeder bluffs” is not well documented in relationship to bulkheads constructed under modern regulatory standards. *See* Comments, *infra.*, pp.4-5, p.15, and Exhibits 2 through 8.

Section 3.1.4 (Land Use and Public Access) (p.3-6).

This section of the Draft SMP accurately states that a substantial amount of the use along Gig Harbor’s shorelines is residential, approximately 50% of the land adjacent to Gig Harbor Bay and 83% of the land used south of Gig Harbor Bay Inlet. The Draft SMP should recognize that habitat and species utilize the shorelines in conjunction with a highly developed existing condition.

Gig Harbor City Council  
June 6, 2012  
Page 26

Section 3.1.5 (Shoreline Alterations) (p.3-7).

It is respectfully submitted that the summary of shoreline alterations as to impacts is overstated. For example, shoreline armoring does not typically impede sediment supply to down drift beaches or nearshore habitats, if the bulkheads and alterations are properly located above the ordinary high water mark, and important feeder bluffs are not extensively developed with bulkheads. Properly designed bulkheads and piers with shade attenuation do not divert juvenile salmonids into deeper water, increasing the potential for predation.

The statement as to “potential water quality hazards” which exist in marinas and boat moorage facilities is just that – potential. Under best management practices and modern regulatory systems, significant adverse impacts associated with these uses will not occur unless there is operational error. GHM does not understand the “horror story” references as to potential impacts set out in this subsection. This subsection should simply be deleted.

Section 3.2.1 (Protection and Restoration of Shoreline Ecological Functions) (p.3-8).

The language that “areas of shoreline where processes and functions are intact should be protected through development standards and regulations” is good. However, the additional language relating to restoring shoreline ecological functions “at the time of development or redevelopment” is too broad. As set out above, the SMA does not mandate restoration. *See also* Mackie paper, **Exhibit 12** hereto. The language at p.3-9, Recommendation 2, Standards for Overwater Structures and the Need to Increase Light Penetration of the Water Below, is supported by GHM.

If the City wants to encourage “alternative” bank stabilization and/or soft shore armoring techniques, it is respectfully suggested that the City allow a “hybrid” technique with elements of both “soft” and “hard” armoring. The public would benefit in commenting if Staff was to provide such suggested designs for comment. The Shoreline Hearings Board has allowed hybrid structures. *See Stollar, et al. v. Ecology and Bainbridge Island*, SHB Nos. 06-024 and 06-027 (consolidated) (2006).

Section 3.2.2 (Shoreline Use and Public Access) (p.3-10). GHM supports the concept of maintaining an open water navigable channel where individual mooring buoys would not be allowed. My clients do not support the potential for increased “side yard” setbacks from proposed docks or marinas. Standard setbacks only should be allowed and required. The DNR typically reserves access for adjoining properties in aquatic land leases.

Section 5.2.6 (City Waterfront Environment) (p.5-21).

GHM supports the purpose statement for the City Waterfront environment. My clients in particular support use of the words “accommodate and foster” the unique mix of uses and activities that characterize the Gig Harbor Bay waterfront, including restaurants. Draft, p.5-22.

Gig Harbor City Council  
June 6, 2012  
Page 27

Turning to the management policies, subsection D, at p.5-27, GHM has concerns with the language. First, for paragraph 2, "Redevelopment," GHM does not agree that redevelopment should occur in a manner which "avoids" impacts to critical areas and natural shoreline processes. That is a laudatory goal, but it is impossible to avoid all impacts associated with shoreline development. A better approach is to use the word "protect" tied into mitigation sequencing. GHM suggests insertion of the word "significant" between the words "avoid" and "impacts to critical areas," or better yet, insertion of the word "alteration," which by definition has a "materially affects" meaning. *See* Definitions, p.2-3. Regarding subparagraph 5 of the same section, p.5-25, if the City wants restoration (for example, removal of derelict structures or vessels), it should help defray the cost. In subparagraph 8 of the same section, the minimization standard is generally acceptable, but this section should be rewritten to read "minimize significant interference ...."

Section 5.2.7 (Marine Deep Water Environment) (p.5-30). Under subsection D, Management Policies, in terms of the "minimize interference" standard, the section could be rewritten to read "minimize significant interference with ...." The same language should be inserted for subparagraph 2 under Section D, Management Policies, to insert the word "significantly" between "uses that ...." and "adversely impact." This prevents an internal inconsistency with the definition of "alteration."

Chapter 6 (General Goals Policies and Regulations) (p.6-1). GHM strongly supports Section 6.1, Shoreline Use, and the preference given to water-dependent and other water oriented uses of the shorelines and mixed uses. Under subsection 6.1.1, Policies, subsection A, however, my clients have concerns with the language. The standard should be to minimize "significant" adverse impacts. They also have a concern with subsection B of the Policies, entitled "Open Space, Recreation and View Corridors in Gig Harbor Shorelines." For reasons set out below, GHM believes that generic view preservation standards of the SMP go too far and if not corrected will effectuate a regulatory taking. My clients commend subsection E, p.6-2, entitled "Protection of Rights." Once again, however, a qualifier is necessary, *e.g.*, assurance that uses do not create "undue risk or harm to others ...." There are internal inconsistencies with the language relating to protection of property rights, especially as to view corridors, bulkhead replacement, nonconforming structures and imposition of buffers and set asides to the built environment. Mere lip service to property rights is not compliance with internal consistency requirements.

Section 6.2.1 (General Policies) (p.6-3).

GHM has concerns with several of the general policies under this section. My clients concur with a level of protection to assure no net loss of shoreline ecological functions and the emphasis on mitigation measures. However, some qualifiers are necessary. They urge inclusion of the term "measurable" for assuring no net loss of shoreline ecological functions and processes. Inclusion of the qualifier "significant impacts to" should be included in terms of protection against erosion and accretion, sediment delivery, transport and storage, and large woody debris

Gig Harbor City Council  
June 6, 2012  
Page 28

recruitment. In addition, a paragraph should be inserted to the effect that “no net loss” will take into account the results of voluntary restoration, and publicly funded shoreline restoration programs. The City seems to do this in subparagraph G (Cumulative Impacts) under the section found at p.6-4. This could be made clearer, however.

There appears to be an inconsistency between subsections F and H. Each is well worded. However, subsection F seems to state that developments in critical areas should not be allowed but subsection H allows use or development if a project is properly mitigated. If this language means a ban, it is respectfully suggested that the language is inconsistent with the SMA which allows for alterations of the natural condition of the shoreline for preferred uses combined with mitigation, and constitutional protections. At a minimum, reference should be made to a reasonable use exception.

Page 6.5, Fish and Wildlife Conservation Areas (paragraph P, p.6-5) is inconsistent with the State Guidelines. The Guidelines require that populations be “sustained,” but the language is broader to include “maintain and enhance ....” Maintenance is a broader term than sustain. Enhancement may be an appropriate goal, so long as it is not a regulatory standard.

Section 6.2.2 (Regulations – No Net Loss in Mitigation) (p.6-6).

Under this section, again, “no net loss of ecological functions and processes” should be qualified by use of the word “measurable” or insertion of the word “alteration.” The language should be tied into a generic goal, not a project specific development standard. GHM objects to the sentence which reads: “Any use or development that causes a future ecological condition to become worse than current conditions shall be prohibited.” This sentence is too broad because it reads mitigation concepts out of the Draft SMP. In addition, certain preferred or priority uses are allowed under the SMA even if they have some impacts. *See* SMA standards, set out above, pp.7-8, pp.21-22. It is impossible to mitigate each and every conceivable impact, no matter how infinitesimal, but the language as currently drafted would prohibit any use or development because unmeasurable impacts will always occur. This obviously is not the intent of the drafters. The language is also inconsistent with the definition of “alteration.”

The mitigation measures, including their priority, may be skewed, depending on how the language is interpreted. Specifying that the highest and most favored order of priority is avoiding the impact all together by not taking a certain action or parts of an action, or altering the action to avoid impacts, is inconsistent with SMA standards which allow alteration of shorelines for certain preferred, water dependent uses. Avoidance is particularly not appropriate for the highly built shoreline environment within the City Waterfront shoreline designation.

Section 6.2.3 (Regulations – Marine Shorelines) (p.6-8).

GHM has significant concerns with subsection 6.2.3.2 (Marine-Vegetation Conservation Strip). According to the Draft SMP, p.6-9, “vegetation conservation strips shall consist of an

Gig Harbor City Council  
June 6, 2012  
Page 29

undisturbed area of native vegetation established to protect the integrity, functions and processes of the shoreline.” Under this definition, the vegetation conservation strip is off-base to development and use. New structures are only permitted within the minimum structure setback if existing structural shoreline armoring is removed.

On Table 6-2 (Draft, p.6-11), for the City Waterfront shoreline designation, there is a 25-foot minimum structure setback plus a 10-foot building setback, for a total of 35 feet. Note inclusion of the “critical area” buffer and the language “whichever is greater.”

It is not clear from the Draft if water dependent uses must maintain a vegetation conservation strip. This needs to be clarified. It is true that the vegetation conservation strip can be modified for “reconstructions and additions to existing legally nonconforming principle structures,” (Draft, p.6-13), but the reduced setback cannot “conflict with a required critical area buffer ....” (Draft, p.6-9). So this accommodation is a paper one only.

The problem is that, as imposed, almost all existing structures are going to be made nonconforming. No increase in the footprint square footage can occur within the minimum structure setback, the 10 foot area. For the highly built environment, such as the City Waterfront shoreline designation, GHM urges that there be no vegetation conservation strip and that a site-specific analysis be employed to determine required mitigation, including vegetation requirements and any required buffer. On a case-by-case basis, it may be possible to enhance native vegetation in sections of the shoreline in conjunction with project mitigation which meets nexus and proportionality standards which overall would provide more gains to functions and values than a generic buffer or vegetation set aside. If not corrected, the Draft SMP requires an 85% retention of existing vegetation and makes much of built environments nonconforming in light of imposition of “critical areas” buffers. The Draft, p.6-23, requires revegetation of “extensively disturbed” areas, an internal inconsistency with sections of the Draft SMP which state that restoration is to be “voluntary.” The SMA does not mandate restoration.

#### Section 6.2.4 (Regulations – Critical Areas) (p.6-14).

GHM strongly opposes incorporation by reference of what are essentially substantial portions of the City’s CAO enacted under the GMA. My clients’ major concern relates to Fish and Wildlife Conservation Areas (“FWCAs”). The Draft SMP addresses FWCAs commencing at p.6-65. This section has a broad definition for critical areas, because it includes “areas” for species listed under the Federal or State Endangered, Threatened and Sensitive Criteria which have “a primary association with the shoreline.” This is broad enough to include all of the shoreline within Gig Harbor, if the intent is to place within a regulated FWCA all areas utilized by juvenile salmonids for rearing and feeding during the period of out-migration which is roughly between March 15 and June 15 of each year.

Turning to regulations for FWCAs, which begin at p.6-66, GHM does not believe the City has the authority to require a habitat assessment “for all regulated activity proposed on the

Gig Harbor City Council  
June 6, 2012  
Page 30

site which contains or is within 300 feet of critical fish and wildlife habitat ....” Effectively, this expands SMA jurisdiction in a way that is outside of the City’s authority. An evaluation is expensive.

In addition to the Habitat Assessment, if any “critical fish and wildlife habitat is found within 300 feet of a site, a Habitat Management Plan (“HMP”) must be prepared.” (Draft, p.6-67). It is inappropriate to require that the HMPs be prepared in “coordination” with WDFW. This public agency is not set up to review HMPs for a local entity and has no jurisdiction over upland areas. If the HMP is prepared by a qualified wildlife biologist, that should be enough. The City can always request technical assistance from WDFW.

It is noted that the regulations for FWCAs, at p.6-68 of the Draft, state there is an obligation that there be at least a “25 foot buffer,” and a “maximum” 150-foot buffer may be required. The buffer must remain “undisturbed.”

A “maximum buffer” of 150 feet, if imposed upon the built environment, would make all of Downtown Gig Harbor within the shoreline area nonconforming. This is extreme regulation. No buffers to the built environment need be imposed at all. The only way this requirement makes sense is to phase out existing development over time. Is this what the City Council truly desires? This section of the Draft SMP requires a substantial rewrite, in the opinion of GHM, to be legal under SMA and Constitutional law standards which require reasonable regulation and compensation for exaction of a public benefit.

Section 6.2.5.2, p.6-30, seems to need a re-write. Critical areas can come and go depending upon natural conditions. Thus, it is inappropriate to require property owners to prepare a “conservation easement” to protect “critical area functions and values in perpetuity.”

It is noted that Section 6.2.5.3 (Draft, p.6-30) allows a variance for critical area regulations. However, a variance does not go very far since “extraordinary circumstances” must be demonstrated. A better approach consistent with the protection of private property rights and balanced regulation is to tailor regulations to not over-designate all the shoreline environment as a “critical area.” With due respect, it is submitted that a variance will not save the City from challenge related to over-designation or inconsistency with the State Guidelines and SMA standards for balanced development.

Section 6.2.5.6 (Wetlands) conflicts with the SMA. Again, the SMA actually allows development of a single-home on “wetlands.” See p.21, *infra*.

#### Section 6.5 (Public Access) (p.6-81).

GHM has provided public access in a number of ways to its properties as mandated by the City. This includes a “view platform” for the Bayview Building, and trails for the public to walk along the shoreline. However, GHM has a growing concern which involves the interplay

Gig Harbor City Council  
June 6, 2012  
Page 31

of a number of regulatory proposals. First, the City has sought to limit the size of structures within Waterfront Millville, in response to certain upland owners' concerns that their "views are blocked." Second, the City has mandated access to the shoreline. Third, public access has been mandated without any study that existing view opportunities are not sufficient to mitigate impacts. Fourth, as Mr. Halsan will set out, there are excessive parking requirements applied only to Waterfront Millville which result in parking that is not utilized even on the busiest days of the year.

The City correctly states in the Draft SMP that it wants a vibrant, robust waterfront. With due respect, the City Council needs to take a holistic view of the impacts of these development regulations, particularly to preserve views and access, on the one hand, and to provide "adequate" parking, on the other, to determine if the regulations are having an unintended consequence of chilling needed development and redevelopment in Waterfront Millville. GHM looks forward to having a constructive discussion with the City Council on this point.

Under 6.5.1 (Policies), subparagraph B (p.6-81), there is an affirmative obligation that each development, including "private, commercial and industrial development," must provide public access unless this is incompatible "due to reasons of safety, security or impact on the shoreline environment." With due respect, this generic standard is not easily supportable under applicable standards for project mitigation (Nexus and Proportionality) and impermissibly compels a private property owner to provide a public benefit. A tailored approach is needed, such that public access or preservation of views is required only upon demonstration of a substantial harm to the public. This analysis must factor in many provisions already made for public access to the waters of the state within the City of Gig Harbor.

The SMP Draft does discuss "proportionality," but leaves out "nexus." *See* Draft, p.6-3, subparagraph 2(c), Regulations for Public Access.

Overall, this section provides a mandatory obligation to provide views and access for the public unrelated to the actual impact of a proposed development. *See, e.g.*, Section 6.5.2, p.6-82 (... shall provide public access ...). With due respect to Gig Harbor, under the law, the City is not empowered to mandate such entitlements in favor of the public at the expense of private property owners. *See* Mackie CLE, **Exhibit 13** hereto. In addition, there is really no way to "preserve views and vistas to and from the water" for the public if any new development or redevelopment is going to be allowed in the City Waterfront shoreline designation.

The language at p.6-82 of the Draft (Paragraph I), entitled "Views and Visual Accesses," needs to be rewritten with a qualifier "commensurate with obligations for urban infilling under the Growth Management Act, and the rights of private property owners."

Turning to the specific regulations for type and design of public access (Section 6.5.3) found at p.6-84 of the Draft, GHM objects to a mandatory imposition of a public view corridor of 20 frontage feet along the street or 20% of the total waterfront frontage of the parcel,

Gig Harbor City Council  
June 6, 2012  
Page 32

“whichever is greater.” This is a regulatory taking of up to 20% of valuable shoreline property. In addition, common uses such as parking are not allowed in the view corridor. The City does not avoid this effect by the alternative to provide a five-foot wide public pathway along the property perimeter down one side of the property to the waterfront. This “public pathway” must go across the entire water-side face of the property and then back to the street along the other property line.

Under this scenario, every waterfront property in the downtown area would have a trail going along the perimeter of a lot, then along the water, then back up to the street. A citizen would then walk a few feet to the next property line where this arrangement would be repeated on the next piece of property. A much better system would be to allow for property owners to coordinate any public access, working cooperatively with the City. The City should be prepared in this regard to provide some funding assistance for construction of the public pedestrian pathways it desires, instead of mandating such access on the backs of property owners who are attempting to create development within the downtown areas for promotion of family wage incomes, tourism, and other goals that the City Council would like to see accomplished.

Section 6.8 (Restoration and Remediation) (p.6-98). GHM believes that the general policies as to restoration are well stated, particularly the City’s desire to employ incentives to encourage voluntary action. The references for regional coordination, City-lead projects, integration with public projects, and integration with mitigation requirements are likewise well stated. GHM includes a CLE presentation which discusses the limits and pitfalls of forced restoration. *See* Mackie CLE, Exhibit 13 hereto. The matrix is excellent as to fostering commercial uses in the City waterfront (p.7-10). As noted, the problem is to tailor other development regulations to encourage what the matrix allows.

Chapter 7 (Shoreline Use and Modification – Policies and Regulations) (p.7-1). GHM has some specific comments as to the Permitted Use tables found in the Draft SMP, commencing at p.7-5. Their comments are specific to the City Waterfront shoreline designation. One, they do not believe that shoreline stabilization should be permitted only for “soft shore” stabilization. Shoreline armoring should be allowed as a permitted use, not a conditional use. Two, some fill below the ordinary high water mark may be needed for redevelopment of marinas, to align ramps or other accesses to make them safe for the public to meet the Building Code. Restriction on fill to activities associated with shoreline restoration only is unduly onerous for the City Waterfront designation.

Section 7.5 (Fill and Excavation) (p.7-26). Fill associated with a permitted use should not be a conditional use.

Section 7.9 (Shoreline Stabilization) (p.7-33).

GHM believes that Section 7.9.1 policy for shoreline stabilization and “preference order” is inconsistent with the SMA. The SMA explicitly allows protection of single-family residential



Gig Harbor City Council  
June 6, 2012  
Page 33

homes as an exempt activity, including the repair of structures and the outright replacement of these structures. The demonstrated prejudice of the Draft SMP towards shoreline stabilization is totally inconsistent with the SMA, which supersedes local preferences and even the language of the State Guidelines.

GHM believes that these regulations are overly broad. So is the prohibition on removal of “significant vegetation” that adversely impacts ecological functions. The SMA allows residential protective bulkheads under its exemptions. In this regard, the SMA provides that the construction of a “normal protective bulkhead common to single family residences” is not considered a substantial development but exempt. RCW 90.58.030(3)(e)(ii). *See also*, RCW 90.58.030(e)(i) (maintenance). The City’s restrictions on residential bulkheads are inconsistent with the SMA.

It is impossible to construct a bulkhead without some impact or change to the environment. The law allows this. If the law was to the contrary, “no change in land use would ever be possible.” *Maranatha Mining v. Pierce County, supra*, at 804. *See also, Cougar Mountain Associates v. King County*, 111 Wn.2d 742, 753, 756 P.2d 264 (1988) (“SEPA seeks to achieve balance, restraint and control rather than preclude all development whatsoever.”). But the SMA allows protective bulkheads.

The SMA requires each local master program to protect “single family residences and appurtenant structures against damage or loss due to shoreline erosion.” The provisions of any SMP “. . . shall provide for methods which achieve *effective and timely* protection against loss or damage to single family residences and appurtenant structures due to shoreline erosion.” RCW 90.58.100 (6) (emphasis added), especially structures built before 1991. Where are such provisions in the proposed draft?

Maintenance is an allowed exempt use under the SMA. This section qualifies maintenance construction activity such that it “shall not prove harmful to adjacent properties.” There is no basis to impose this requirement, nor to have it so vague. Anything, no matter how unmeasurable, could be “harmful” to adjacent properties, in the opinion of property owners who are not good neighbors. For most over water structures, total replacement is the common practice. The language that says just the opposite should be stricken from the Draft SMP. Since repair and maintenance must “comply” with Section 6.2.4 of the Draft SMP (Critical Areas), read literally, no repair and construction would be allowed within critical areas buffers for existing structures and developments. Hopefully this is not the intent of Staff.

There are also inconsistencies with the policies and the regulations. Subsection C, p.7-34, relating to new or expanded structural stabilizations allows stabilization such to protect an existing primary structure that is in danger of loss or substantial damage, but later regulations impose an “imminent” standard for repair. This is an internal inconsistency.

Gig Harbor City Council  
June 6, 2012  
Page 34

The requirement, at p.7-35, that replacing 100% of the lineal feet of an existing bulkhead is somehow “new development” is inconsistent with the SMP. While it is always true that a repair or replacement is new, it is still exempt.

GHM continues to have concerns as to the prohibition on new or expanded structural stabilization set out in the Draft SMP at p.7-55, p.7-66. The requirement found in the regulations that there be “conclusive evidence” that such structures are necessary to protect existing single-family residences, and the requirement of a showing that there is a “significant possibility that a structure will be damaged within three years as a result of shoreline erosion” are overly broad. For one, the SMA allows single-family protective bulkheads, and a priority is given to those homes built before 1991. The section is in conflict with the SMA. Second, “significant possibility” is interpreted by regulators as “imminent.” The regulatory standard in the SMA does not have such preclusive language, allowing “normal protective bulkheads” common to single-family residences. It is not common to wait to protect a home or property until the risk is “imminent.” The State Guidelines use the terms “significant possibility of damage.” WAC 173-26-23(3)(a)(iii)(D), and defer to a geotechnical engineer to make the call.

The definition of “imminent danger” or “significant possibility” is very subjective. Must the bank recede to the point of only five or ten feet from the primary structure before the subjective “imminent danger of loss” standard is considered met? If so, the problem with this approach, as geotechnical engineers will support, is that loss of a bank or slope is episodic. The correct approach is to use the language in the SMA for exemptions, the “protective” language, documented by a geotechnical report.

Section 7.11 (Boating and Marinas: Piers, Docks and Moorage) (p.7-46).

GHM has several comments on this section. Turning first to General Policies (Section 7.11.1), subsection C “Navigation and Recreational Opportunities,” this section is generally well stated. GHM would suggest that the word “unduly” be inserted before the words “obstruct navigable waters.” For subsection D, “Provision of Public Access,” GHM does not believe it appropriate to require that marina and other boating facilities be located in a manner “compatible with the primary use and shore features.” Marinas are highly dependent upon the shoreline area and are preferred uses. They need to be placed at the best location, both for purposes of utility and to avoid critical saltwater habitat. By imposing a standard of “compatibility” with adjacent uses, the City is simply inviting neighborhood opposition to projects and unduly constraining site choices. This is not appropriate, in the opinion of GHM.

The specific policies for marinas are found in Section 7.11.2 of the Draft at p.7-50. GHM believes that Policy B “Upland Marina Uses” is too restrictive for the City Waterfront designation, since the Use Table allows non-water related and non-water enjoyment uses in upland areas above the ordinary high water mark. This section needs to be rewritten or qualified via use of an explanatory note.

Gig Harbor City Council  
June 6, 2012  
Page 35

Turning to the general regulations for “boating facilities” which commence at p.7-51, to the extent these apply to marinas, GHM believes that the 12-foot setback from property lines is too restrictive.

Section 7.11.9 (Regulations – Marinas) (p.7-56).

GHM also has comments on the specific use regulations for marinas found in this section. The emphasis on shoreline armoring to “soft shore stabilization” is not practical for a marina, and the requirement that hard “stabilization” must be demonstrated by a geotechnical analysis is over-regulation. The requirement that the project include “ecological restoration measures to improve baseline conditions over time” is beyond the authority of the City to require. This in effect illegally forces restoration of the shoreline area at the expense of a private property owner.

Public access should not be mandated and required only after assessing actual impacts and existing available public access. *See* Section 7.12.1 (Policies, subsection B) (p.7-61) which incorporates nexus and proportionality. As written, the Draft SMP has inconsistent language for public access.

Turning to p.7-57 of the Regulations, at paragraph 7, my clients believe that restaurants and cafes should be allowed on the shoreline, and not just the upland areas. They believe that the accessory use restrictions in this section are too restrictive. Experience in the marketplace defines accessories which marina operators provide to their customers. As to pump out facilities, these should allow public use. Overall, there should be a qualifier that the regulations be imposed to the extent not inconsistent with Department of Natural Resource lease agreement requirements.

The requirement for marina development to provide public access amenities consistent with Section 6.5 of the Draft SMP is illegal, for the reasons set out above.

Section 7.12 (Commercial Uses) (p.7-61).

GHM believes that the provision for commercial uses to support tourism, provide enjoyment of the waterfront by patrons, provide adequate and unobtrusive supporting services and improvements are well written. Likewise, the policies (Section 7.6.1) are well written. GHM supports allowance of non-water oriented commercial uses in the City Waterfront shoreline designation. GHM notes the requirement to provide public access in subsection B (Public Access), but do not repeat their comments. It continues to have concerns that these policies will be used to illegally force property owners to provide public access without compensation from government.

GHM believes that subsection C (Adjacent Uses and Views) under the policies section for commercial uses is too broad. The standard “ensure that the design of commercial development is visually compatible with adjacent and upland properties ....” is a vague standard.

Gig Harbor City Council  
June 6, 2012  
Page 36

The Draft SMP should not be a design review code. It believes that this language should be taken out of the Draft SMP.

Section 7.20.2 (Parking Policies) (p.7-81).

The SMP correctly states that the City intends to “allow parking when necessary to support an approved shoreline use.” It also encourages “shared parking areas between multiple uses and underground parking.” Unfortunately, as Mr. Halsan will set out, these policies are not applied equally to all the downtown commercial zones. It is respectfully submitted that Waterfront Millville has been left out of the City’s parking regulations in ways that are not supportable. The regulations should apply equally to all downtown commercial zones. If not, there is an external inconsistency with the City’s parking regulations, inconsistency with the Comprehensive Plan which encourages development and redevelopment of a robust shoreline downtown commercial area, and internal inconsistencies. Mr. Halsan will provide more comment on this point, with suggestions to the City Council.

Chapter 8 (Administrative Procedures) (p.8-1).

GHM has significant concerns with several sections of this chapter, including the City’s treatment of exemptions under the SMA and nonconforming uses and structures. Commencing with Section 8.2.2 of the Draft (Exemptions for Substantial Development Permit) found at p.8-6, GHM notes some internal inconsistencies between this section and other sections of the Draft. These include the overly restrictive treatment of exempt single-family residences and normal protective bulkheads.<sup>26</sup> GHM refers the Council to its comments above on these two common shoreline developments. For a normal protective bulkhead, the requirement to declare the “actual” ordinary high water mark as that mark after the facility has been breached is inappropriate. This effectively reads out of the law the repair and maintenance sections of the SMA and creates an inconsistency with this general Law of the State.

Section 8.11 (Nonconforming Uses and Structures) (8-32).

GHM disagrees with much of the language set out for nonconforming uses and structures. The Draft SMP provides that nonconformities should be significantly restricted. Specifically, they are “intended ... to continue until they are removed but not to encourage their perpetuation.” Draft, p.8-32. Truly, this is a situation of “illegal but tolerated for now.” This standard is over-restrictive, and in the opinion of GHM, inconsistent with the SMA, the State Guidelines, and statutory and constitutional principles. It is particularly inappropriate to set such

---

<sup>26</sup> The conflict between the proposed SMP Amendment and the SMA is most obvious as to bulkheads. As an exempt development, a protective bulkhead must be approved if it complies with provisions in the County’s Shoreline Master Program (“SMP”). RCW 98.58.140(1); *see also, Biggers v. City of Bainbridge Island*, 162 Wn.2d 683, 697-98, 169 P.3d 14 (2007). This is a mandatory provision. *Id. See also Advocates For Responsible Dev. v. Johannessen and Mason County*, SHB No. 05-014 at \*9 (2005), citing RCW 90.58.030(3)(e)(ii) and WAC 173-27-040(2)(c).

Gig Harbor City Council  
June 6, 2012  
Page 37

onerous regulations for nonconforming uses for a highly built environment such as the City of Gig Harbor downtown shoreline area.

It is respectfully submitted that the City Council solicit guidance from bankers and realtors as to the consequences of imposing buffers and vegetation set asides, on the one hand, and mandating on the other that established nonconforming uses and structures must be phased out over time with no compensation to property owners. This approach will essentially make future development and redevelopment of the City Waterfront shoreline designation, and other shoreline designations, off limits. It also conflicts with the Comprehensive Plan as set out above. Of all sections of the Draft SMP, this language is most in need of a total rewrite, in combination with thinking through the need for any buffers or vegetation set asides in the highly built environment and the vision for the downtown waterfront.

GHM wants to be clear as to what the regulations actually say. For nonconforming uses of land, enlargement of the use is totally prohibited. Draft, p.8-34, Section 8.11.4. Discontinuance of use for a period of more than one year results in the loss of the nonconforming use. This appears so even if the nonconforming use is damaged by fire, act of nature, or other causes beyond the control of the property owners. If discontinued, the nonconforming use cannot be resumed. Draft, Section 8.11.6 (p.8-35).

The regulations for nonconforming structures are found at p.8-36 of the Draft, Section 8.11.8. These are just as onerous as those for nonconforming uses, mandating that if a nonconforming structure is damaged by fire, act of nature, or other causes beyond the control of the owner, it must be reconstructed within 12 consecutive months or the use is deemed "discontinued." Draft, p.8-37. It is true that the Shoreline Administrator may grant two (2) one-year extensions "based upon good cause," but what constitutes good cause is wholly at the discretion of the Administrator and the Draft SMP states that nonconforming uses and structures must be phased out.

If a property owner wants to alter an existing building to bring it up to Code and modern standards, and the alteration is more than 50% of the replacement value of the structure, it is deemed abandoned and the structure must be taken down. This section of the Draft is internally inconsistent and inconsistent with the Comprehensive Plan. "Repairs and maintenance of nonconforming structures are limited just to fixtures, wiring and plumbing so as to protect occupants and public safety." Draft, Section 8.22.9 (p.8-35). Some structural elements such as repainting, residing a structure, or reroofing apparently are prohibited. Again, this approach is inconsistent with other goals set out in the SMP to foster a vibrant, pleasant downtown environment along the shoreline.

Nothing dictates that when updating an SMP a local government or Ecology must declare historic uses or structures "nonconforming," in particular, since the State Guidelines only apply to new development. Further, for residences, the City can apply SSB 5451 to label all existing

Gig Harbor City Council  
June 6, 2012  
Page 38

homes “nonconforming” if the Council decides in its wisdom to apply new buffers and set asides to the built environment.


The best approach, however, is to avoid use of large buffers or vegetation set-asides which are the main regulatory tools that create nonconforming uses and structures in the first place. These regulatory devices are onerous and extreme. The true consequence is to make existing development nonconforming and over time force illegal restoration. If buffers are used, flexibility should be allowed via use of incentives or performance standards which allow property owners to prepare a site-specific analysis with project mitigation to demonstrate how the “no net loss” standard is met without imposition of generic buffers.

### CONCLUSION

Thank you for your kind attention to these comments and the attachments.

Very truly yours,

DENNIS D. REYNOLDS LAW OFFICE



Dennis D. Reynolds

### Attachments

cc: Peter Katich, Gig Harbor Department of Planning (by email)  
Gig Harbor Marina, Stanley and Judith Stearns (by email)  
Carl Halsan (by email)

DDR/cr



Gig Harbor City Council  
June 6, 2012  
Page 39

**Exhibits:**

1. Resume, Donald F. Flora, Ph.D.
2. "A Perspective on SHORELINE POLICY, TECHNICAL ISSUES, SOME STUDIES AT HAND, AND THE RESEARCH VOID," Donald F. Flora, Ph.D., July 2009 / April 2010.
3. "SHORE PROTECTION AND NEARSHORE HABITATS, RECENT PUGET SOUND RESEARCH," Donald F. Flora, Ph.D., August 2010.
4. "EVIDENCE OF NEAR-ZERO HABITAT HARM FROM NEARSHORE DEVELOPMENT," Donald F. Flora, Ph.D., November 2009.
5. "EVIDENCE ON IMPACT-NEUTRAL BULKHEADS, FLOATS, AND OTHER SHORELINE MODIFICATIONS," Donald F. Flora, Ph.D., December 2009.
6. "EVIDENCE ON HABITAT-NEUTRAL BULKHEADS, FLOATS, AND OTHER INSTALLED 'STRESSORS' – A RESPONSE TO A CLUTCH OF DETRACTORS," Donald F. Flora, Ph.D., February 2010.
7. Abstract and presentation: "Impacts of Shoreline Armoring on Sediment Dynamics," Peter Ruggiero, Department of Geosciences, Oregon State University (for Puget Sound Shorelines and the Impacts of Armoring: State of the Science Workshop, May 12-14, 2009).
8. "Does Science Justify Bulkhead Rules?," published August 14, 2009, Best Available Science, Regional Planning 16 Comments, *from an email to Puget Sound Shoreline Planners by Hugh Shipman, Coastal Geologist, WA Department of Ecology.*
9. Abstracts, 2009 Symposium "Puget Sound Shorelines and the Impacts of Armoring: State of the Science," May 12-14, 2009.
10. "A Review of PROTECTION OF MARINE RIPARIAN FUNCTIONS IN PUGET SOUND, WASHINGTON, a Washington Sea Grant Paper, Authored by Jim Brennan, Hilary Culverwell, Rachel Gregg, and Pete Granger," Reviewed by Donald F. Flora, Ph.D., February 2011.
11. "Nonconforming Uses and Structures," Washington Department of Ecology, Betty Renkor, October 25, 2007.
12. "THE SHORELINE MANAGEMENT ACT AND PUBLIC ACCESS, a Critique of Common Practices and Limitations on 'Furthering Substantial Governmental Purpose' When Considering Public Access Requirements for Washington State Shorelines under the Shoreline Management Act," Alexander Mackie, Perkins Coie LLP, March 25, 2011.
13. CLE: "MITIGATION vs. RESTORATION, Testing the legal limits," Perkins Coie LLP (Alexander Mackie), 2011.

# **EXHIBIT 1**



June 2008

**Donald F. Flora**

Formerly head of research on watershed studies, stream biology, riparian ecology, and related subjects, covering several Forest Service laboratories in Oregon, Washington, Alaska.

Formerly responsible for federal forest inventories and their analyses in five western states.

Was program manager for national project on fire danger rating (in forests)

Was program manager for national Timber Harvest Issues Studies, a federal venture

Past technical editor for *Journal of Forestry*

Author of various technical-journal papers related to forests and natural resources

Formerly affiliate professor, University of Washington

Formerly board member, Forest History Society

Early on, director of Keep Washington Green Association (forest fire prevention)

Since retirement has:

Developed an alternative method of assuring sustainability in calculations of geoduck harvest levels (led to small revisions in State's procedure)

Calculated that most of the variance in sediment drift along beaches is attributable to fetch and drift-cell length, leaving relatively little to be explained by sediment-reservoir factors like volume of bluff colluvium, beach geometry, gravel size, and bulkhead presence

Estimated nutrient flows into lower Hood Canal from ocean upwelling, relative to maximum septic-nutrient discharges (the ocean trumps septics 68 to 1)

Estimated the dependence of juvenile salmon on tree-obligate insects (negligible)

Assessed the role of shoreline shade trees in the welfare of (upper-beach) spawning surf smelt (apparently none in the central Sound)

Assessed the risk of using trees in shoreline buffers (considerable)

Examined whether oyster 'gardens' can significantly reduce nitrogen levels in a central Puget Sound bay (cannot)

Reviewed, for the state's Department of Ecology, their science compendium and guidelines relative to wetland buffering

Served on advisory panels for Kitsap County's critical areas ordinance and Bainbridge Island's shoreline master program

Challenged the doctrine that mandating 'native' vegetation is preferable to encouraging diversity in shoreline buffers

Identified elements of stream riparian science that have been misused, or might well be used, in formulating buffer policies for wetlands and saltwater shores

Advised several jurisdictions, including Puget Sound Partnership, on the (generally low) utility of vegetated wetland and tidewater buffers. This included review of some 3500 research abstracts and journal papers. Recommended various alternatives

In several venues, has drawn attention to special features of Puget Sound stratigraphy and climate that counter buffer effectiveness

Identified specific vegetative arrays that preclude buffer efficacy against chemical pollutants

Demonstrated, with statistical analysis, that the gain from widening buffers for nutrient capture is not significantly different from zero

Demonstrated that, in a study of beach transects, those in front of bulkheads were not significantly different from non-bulkhead beaches

In the *Bainbridge Review*, warned Islanders about firestorm possibilities, based on his fire-danger studies

Based on the wood-treatment and marine science literature, assured the City that old creosoted piling, rather than a threat, is a distinct and productive marine ecosystem

Assessed, for the City's staff, the vegetation and stability of

Island ravines

Has written on impacts of buffering: Constriction of children's spaces, wildlife inhabitants, area encumbered, grass in buffers, pre-settlement restoration, diminishing returns, and social and private costs.

Tidewater stump ranch youth in Mason County  
BS forestry and geology, University of Washington  
MS Yale University  
PhD Yale University

## **EXHIBIT 2**

July 2009  
April 2010

**A Perspective on  
SHORELINE POLICY, TECHNICAL ISSUES,  
SOME STUDIES AT HAND, AND THE RESEARCH VOID**

Existing and proposed Shoreline Master Programs carry broad policy implications. Yet, in none of the policy areas reviewed here is there a body of research-based measurements showing harm from existing residential shoreline uses, nor quantified estimates of beneficial change from required practices.

Sweeping statements of harm and alarm are floating about like wind-blown wrack. This because much of the "science" being offered in various syntheses and literature citations is conjecture-, not data-based.

Discussed here are some policy areas whose resolution obviously warrants the indicated research on benefits, harm, and options. The subjects are **shore protection, dock policies, and buffering**. Some existing studies are mentioned, as are some clearly needed investigations. I have probably overlooked a number of both kinds.

It is interesting that so little research links upshores, backshores, beaches, nearshores, and their marine-related life. In 2004 a group of marine shoreline experts concurred that "It was felt that no good science currently exists to recommend vegetation buffer widths in the [marine riparian zone] at this time." And, "Scientifically defensible recommendations for vegetated buffers were felt to be limited to the recommendation of vegetation presence over absence when a choice implicated."<sup>1</sup> In that year the Battelle team "assessing" Bainbridge shoreline "threats" said, "...little guidance currently exists for biotic indicators of habitat quality in Puget Sound nearshore marine systems.

So measures, even indicators, of bayside biologic badness and benefit tied to inshore and upland activity are largely absent.

## SHORE PROTECTION POLICY

Almost 40 percent of easterly Kitsap County shores support bulkheads, presumably to preclude wave-driven erosion leading to bank and bluff collapse.<sup>2</sup> The figure is about 58 percent on Bainbridge Island.<sup>3</sup>

Shore defense is frequently assumed to be harmful to beaches and their inhabitants. For some impacts, a two-stage mechanism is implied in the literature: First, physical effects on beaches, then the consequences of those effects on biota.

Distinction should be made between beach-intruding bulkheads and those meeting current placement (snug-against-the-bank) rules.

Recent work in Thurston County suggests a no-harm hypothesis is appropriate. A county-wide comparison of shores with and without protection found no significant beach changes from bulkheads.<sup>4</sup>

Hugh Shipman, a well-known coastal geologist who chaired a 2009 workshop on shoreline armoring, has remarked:

One wonders why the workshop was focused on managing shoreline armoring given the limited scientific research that has been done on the impacts of armoring on either geologic or ecologic processes, and the difficulty of applying the science that has been done elsewhere to Puget Sound given the unique aspects of our system.

One can wonder, but that's exactly what local planners and the state ... are doing throughout the Puget Sound region. They are focused on eliminating bulkheads that protect people's homes without scientifically valid proof of harm.<sup>5</sup>

Pertinent research areas would include:

**Bulkhead success.** A systematic tally of protection experience under various conditions of exposure and upshore geometry, including durability and cost-effectiveness. The flip side is bulkhead failure experience. This would include expansion of Shipman's published experience with 'soft' bulkheads. 'Protection' includes toe erosion, (presumably subsequent) bluff failures and shoreward beach progression.

**Sediment 'starvation'.** That shore protection reduces sediment additions to beaches is generally agreed. The reduction may or may not be small. There is no research-based evidence that bulkhead restraint of bluff colluvium has stripped beaches to their (rock or hardpan) substrate. In fact the Thurston County study (above) shows quite otherwise. Elsewhere studies are needed that quantify the

sediment dynamics from bluff to beach plop to migration rates waterward and along beaches, with and without bulkheads. Obvious predictive variables are frequency and volume of colluvium arrival at the beach, fetch, beach length and steepness, storm parameters, a seasonality indicator, sediment size, et al. The work would expand on a 1989 Puget Sound shore-drift study by Schwartz et al<sup>6</sup> and one-site modeling by Finlayson<sup>7</sup>.

**Beach profile effects below and laterally from bulkheads, including shrinkage and expansion of spits.** This is extension of the 'starvation' with-and-without-bulkheads studies to cumulative effects and net gain or loss along whole drift cells. Given the long time frames involved in longshore change, these studies may require similarly long-duration studies and/or retrospective work.

**Beach 'coarsening'.** The concern here is that bulkheads hasten the departure of fine sediments, leaving (fist-sized) cobbles, and this is bad. Battelle's East Kitsap shoreline assessment found that half the beaches are 'mixed coarse' or cobble. This is consistent with early Sound-wide assessments that found, for instance, "... much of Puget Sound's shoreline is a narrow beach fronting steep shore bluffs...The high tide beach has a steep face and is composed of coarse sediment."<sup>8</sup> Cobbled upper beaches can readily be found in front of bulkheads, and in front of unprotected shores as well.

As with beach erosion generally, cobble exposure can be increased by wave energy diverted downward at a bulkhead's face, if the bulkhead is reflective and below the high-tide line. Cobble can be seen as a distinct ecosystem (as is riprap, by the way), replacing some other ecotype. The research issues include "How much?" and "So what?" I know of no studies measuring cobble volumes relative to the many factors involved, nor gauging the positive and negative environmental effects.

**Pollution impairment.** If shore protection reduces bluff failure and consequent sediment movement beach-ward, it presumably restrains pollutants that attach themselves to sediment. Phosphorus from septic and fertilizer sources are examples. This matter has not been examined, at least for Puget Sound.

**Upper-beach habitat occupation.** The recent reconnaissance of easterly Kitsap County beaches concluded that 84 percent of bulkheads there encroach onto beaches. How far is not indicated; however numbers this large attract conjecture (often expressed as fact) that bulkheads overtop habitat, notably forage-fish spawning areas. The survey of Bainbridge beaches has shown that about half of the habitat suitable for sandlance spawning is in front of bulkheads. The figure for surf smelt is almost three-fourths. This does not mean that bulkheads are good for spawning. However given that many bulkheads

have been in place for decades, and some beaches heavily protected for more than a century, it suggests an hypothesis that shore protection has no impact on forage-fish spawning.

Two studies purport to show the effects of bulkheads on surf smelt egg survival.<sup>9</sup> In fact they compare treeless (and bulkheaded) unshaded shores with treed (non-bulkhead) shaded places. And yes, shade matters, though only for summer spawning. Which pertains only to surf smelt, and only in two places in the Central Sound.

An obvious line of inquiry is whether overtopping by bulkheads is more troublesome than smothering by beach plops from unprotected bluffs, given that about 60 percent of the Sound's shore is bluffs.<sup>10</sup> Another query is the extent to which bulkheads actually intrude into habitat.

**Lower-beach habitat degradation.** This issue starts with the presumption that a bulkhead will effectively forestall beach plops to a wave-active beach, and that this will cause a decline in the beach profile, perhaps to a hardpan layer. First, this is unlikely at the accretion end of the drift zone and of course isn't relevant to non-drift reaches. Second, there is no documented reason to believe that, even on unprotected beaches, sediment contributions from banks and bluffs keep up with their sweeping away by storms and currents. Third, even hardpan has its biota, suggesting that this is an issue of habitat change rather than obliteration.

Clay substrates were mapped in a recent shoreline assessment of easterly Kitsap County. Assuming 'clay' includes hardpan (till), there is almost none along the beaches, with and without bulkheads. The Thurston County study found no beach degradation from shore protection. In any case, the research issue is the actual extent of such exposure, its causes, and its implications, if any, for biologic diversity and density.

Two studies<sup>11</sup> have shown no difference in subsurface fauna in front of bulkheaded versus unprotected shores, so this part of the habitat issue also seems moot.

A claim has been made that shoreline protection may increase sediment flows onto the beach by removing vegetation, thereby submerging eelgrass in silt.<sup>12</sup> Yet the Bainbridge survey showed that the mileage of eelgrass exceeds by half the extent of herring spawning, a key function of eelgrass. Half the Island's eelgrass and 83 percent of herring spawning is in front of bulkheads. There is no evidence that these linkages are either causal or adversarial.

**Wrack is another biota issue.** The wayward, aimless debris along the high-tide swash line provides transient shelter to some amphipods (beachhoppers) and insects. Far-projecting bulkheads displace shoreline wrack collection to more open beaches. Because wrack is



a mix of (mostly) dead seaweeds and shore-contributed leaves and twigs, there are three factors to examine: The importance of wrack-embraced biota in the plankton-to-fish food chain, the (seasonal) quantitative relations with upland vegetation and offshore algae, and the amounts by which bulkheads in various postures affect those sources.

**Upshore vegetation.** Trees overhanging upper beaches have been considered a habitat asset. Their mention here reflects several analysts' incorrect assumptions that bulkheads are somehow hostile to trees and their shade. Relative to exposed banks, bulkheads may be the salvation of trees. Inspection of shorelines reveals many instances of trees leaning out from behind bulkheads. The Easterly Kitsap shore inventory found vegetation overhanging at least 25 percent of the shore's length within 31 percent of the shore segments, out to at least the ordinary high water mark. On Bainbridge 27 percent of the shoreline was found to have overhanging veg. Curiously neither survey reports the proportion of bulkheads that support overhanging trees or shrubs, nor is that fraction compared with unprotected shores.

The merits of overhanging trees are often advanced, with mention of shade for passing fish, shade for surf smelt eggs on the upper beach, and insects falling from trees to feed juvenile salmon. All appear to be false premises, and as a minimum should be considered hypotheses to test. Migrating fish are observed to traverse long expanses of open water in areas where nearshore approaches are feasible. Shade, important to those smelt that spawn in summer, is largely irrelevant in easterly Kitsap, where most spawning is non-summer, and the small amount of active summer spawning occurs on an unshaded beach despite an abundance of apparently available habitat.<sup>13</sup> Tree-obligate insects provide an average of only 1 to 2 percent of biomass consumed by migrating juvenile salmon, while adults and forage fish eat virtually none.<sup>14</sup> Expanded work on these subjects is certainly warranted; meanwhile these appear to be the best numeric findings to date.

*A conclusion about shore-protection research: Conjecture is rampant, research is scant, harm is neither demonstrated nor quantified.*

## **POLICIES ON RESIDENTIAL DOCKS**

Dock policies, current and/or proposed, include structural requirements, size parameters, numbers of craft allowed, and even numbers of docks and floats allowed in certain shoreline areas.

There is a considerable history of dock emplacements on the Sound, and much less history of research on their impacts on marine life.

**Docks as ecosystems.** The under surfaces of docks and floats are cited as important biomes in shoreline texts.<sup>15</sup> Their productivity in terms of diversity of species and numbers of individuals is well known to be immense.

Creosoted piling has returned as an issue because of a curious and expensive program of removing old piles. Dr. Kenneth Brooks is clearly the grand master of treated-piling research. He has said, "Because of [its color, odor, and irritation to skin], there is a perception that creosote must be harmful to aquatic life. But empirical evidence shows that those perceptions are not the reality." Brooks<sup>9</sup> notes a study that found, on creosoted piling, 124 species of invertebrates with over 31,000 animals per square meter.

**Squashing marine life.** Floating docks that rest on the beach at low tide can, twice daily, impair immobile organisms. If significant, this should create a low-tide stench of decaying tissue. It appears more likely that the dead biota are consumed by grazing predators (fish, sea stars, and many others). Whether there is a net loss of productivity is not clear.

**Attenuating light.** A number of studies of industrial and ferry docks have raised concerns about eelgrass beds lost to shade and turbulence. Such docks are typically 100-200 feet wide supporting buildings and tight decks. Light matters.

A mid-'90s study examined the negative effects of small docks, with and without central gratings, on performance of eelgrass beds.<sup>10</sup> Eelgrass impact was found. (This was not a fish-behavior study.)

**Interrupting fish migration.**<sup>11</sup> Ferry-dock studies have shown that shore-hugging migrating juvenile salmon pause at such docks because of the contrast with sunlight. Dark matters. Those studies are increasingly sophisticated. With the ability to track individual fish it has been found tentatively that fish pause at the edge of darkness, then about half go on under the dock while the rest go

around. What they do at night and on cloudy days was not studied. Clearly this is a high-tide issue whose magnitude is still unknown.

Informal field observations suggest that residential docks less than eight feet wide are hospitable to transiting fish, including salmon. "...docks less than 8 feet wide allow substantial light penetration underneath them, especially during periods of low sun angles."<sup>12</sup>

I have seen schools of fingerlings take refuge in shade under floats and docks. Marine biologist Jon Houghton says, "If [floats or floating docks] are relatively narrow, e.g., 6 feet wide or less, fish would ultimately pass under or around them with little delay....juvenile salmonids have been observed to move freely along floating structures, ultimately passing under them in response to uncertain stimuli, or through gaps between floating sections, e.g., spaces between segments of a log boom."<sup>13</sup>

**Refuge for juvenile fish.** Such hesitation at (narrow) residential docks has not been quantified nor even studied. Casual observations show that small fish, singly and in schools, retreat beneath floats. Even children fishing observe this, to their dismay.

**Hideouts for piscine predators.** Houghton has pointed out that while frequent claims are made and searches are done for concentrations of fishes' predators beneath docks, they have not been found.<sup>14</sup>

**The barnacle threat.** There is a claim that "...barnacles and other organisms that colonize the piling result in formation of a different beach substrate than normal, changing the character of the habitat."<sup>15</sup> Implying that the change is bad, but is it?

*A conclusion about dock-related research: Speculation has been embraced; there has been virtually no research on residential docks in Puget Sound; and harm is undiscovered.*

## BUFFER POLICIES

For vaporous reasons no-touch belts of vegetation, in some cases over a hundred feet wide, are imposed or proposed along upshore residential edges.

A first analytical question is, what shoreline attributes are impaired or lie in harm's way? Next, what are the drivers? Then, what are the rectifying or preventive options?

Research has not played a proud role in answering these questions for Puget Sound. Conjecture underlies most of these claims:

**Bank slippage and the beneficial role of upland trees.** There are two contradictory arguments here. One is that tree roots grasp the bank's edge, keeping it in place. The other is that tree roots don't grasp but rather fail, abandoning trees to the beach where marine life will be helped.

If roots are tenacious they work against the argument that bluff failures benefit beach conditions.

DOE publications warn about the risks of trees at the brinks of banks: They fall.<sup>16</sup> No data is presented one way or the other. Given that all trees ultimately fall, a considerable literature has developed about the importance of large woody debris to streams. The primary benefit is creation of pools and riffles. Environmental engineers have even written prescriptions for log sizes, spacing, orientation, and anchoring. And horror stories are abundant about resultant log jams and deaths of kayakers.

This is one of several issues for which stream science cannot be extrapolated to tidewater. Others will be mentioned directly.

Often claimed but yet to be shown with data is the role of tidewater driftwood in supporting invertebrates which then support fish or other parts of the food chain. A diet study has found ants and termites in the guts of juvenile salmon, though their importance biomass-wise has been questioned.<sup>17</sup> Carbon dating has shown drift logs over 200 years old in the north Sound, implying that any internal biota has been slow to digest the woody tissues.<sup>18</sup>

**Buffer trees and shade.** This issue was covered with bulkheads. Briefly, shade can be important along streams, and studies have shown it can help surf smelt eggs survive in some places. No research has shown the dependence of inshore saltwater fauna on shade, which can

only happen at low tide (benthic fauna) or high tide (mobile critters), in daylight on hot days sans clouds.<sup>19</sup>

That overhanging trees dribble insects onto tidewater for fish consumption has been shown by me to be trivial, based on Puget Sound salmon diet studies. There is no other research directed to this subject.

**Buffers, rainwater, and stormwater-borne pollutants.** First, buffers offer no defense against pipe-borne pollutants. No buffer research needed for that.

Second, surface-water aspects of buffering have been studied much, relative to erosion, watershed protection, streamflow moderation, and nutrient dynamics. For reasons unknown to me, most of the buffer studies cited in research syntheses here are from croplands, pastures and feedlots in the Midwest and East.<sup>20</sup> Another body of studies, less cited here, is from forests where the issue is leaving buffers rather than creating them.<sup>21</sup> Not cited at all is any study of residential buffering, nor of buffering along residential vs undeveloped waterfront.

Third, the farm studies yield disparate conclusions, mainly because some of the explanatory variables are not measured, or aren't reported. Kenneth Brooks has done much to untangle the cause-effect webs of buffer behavior relative to stormwater.<sup>22</sup> He amplified and corrected a number of buffer judgements made by the state Department of Ecology.<sup>23</sup>

Fourth, much of Puget Sound's stormwater is unique ecologically. This because of hardpan (glacial till) soils, hard or prolonged winter rains, absence of summer precipitation, and winter-dormant vegetation. These conditions warrant lines of buffer research here that, for reasons unclear, are not done. For example, the role of till in restricting infiltration from within buffers is surely a factor in buffer effectiveness regardless of width. Seasonal dormancy means buffer vegetation undoubtedly plays a trivial role in removing stormwater and its pollution baggage via ingestion and transpiration. How trivial hasn't been gauged.

Fifth, stormwater buffering is typically justified by removal of (arguably unimportant) pollutants: sediment, nitrogen, and phosphorus. Brooks has summarized a number of pasture studies showing that these stormwater-tainting ingredients "were effectively filtered in the first 2 to 15 feet of vegetated filter strip", though some pesticides needed more decomposition time or restraint.<sup>24</sup> Sediment is virtually a non-issue around the Sound because of our irrepressible vegetation.<sup>25</sup> Nitrogen from septic systems and alder trees are an issue in some places, although a recent study of septic

discharge into Hood Canal has produced results that range from startling to ho-hum.<sup>26</sup> Research on streams entering Lakes Washington and Sammamish shows urban streams carrying no more sediment and P than forest streams.<sup>27</sup> Meanwhile alder trees, native and unstoppable along shores, are famous nitrogen fixers and dischargers. And of course the ocean trumps all in nutrient contributions to the Sound. Overall, it is interesting that site-specific studies of drainfield-sourced nutrients, with and without buffering, are largely absent here.<sup>28</sup> Concerning biologic wastes, a Scripps Institution professor has remarked,

"...a major part of the adaptation and activity of the creatures of the sea is directed to the conversion of waste particulates into new organisms; ...most of the sea is starving and particularly deficient in just those sorts of materials that are introduced by domestic waste, ...seawater is a toxic material to most land organisms and highly inimical to their survival (apparently including wastewater pathogens)..."<sup>29</sup>

Sixth, buffering of yard and other chemicals is another area lacking research, everywhere. What applications of herbicides and insecticides, on what slopes, above what kinds of buffers, make a difference at the shore? Road-related chemicals are a current concern. To what extent do they occur in overland stormwater flows moving toward buffers? And in what seasons, to what extent, do buffers work? There are at least two lines of research beckoning here, one involving sediment-bound chemicals and the other dealing with pollutants that remain in solution. There is almost no site-specific buffer-efficacy information in either case.

**Buffers and habitat.** Wide buffers have been indicated for 'wildlife' around wetlands and along shorelines. A number of monitoring and research questions curiously remain unanswered.

There are four broad interactions to consider. One is downhill effects of upland (buffer and non-buffer) habitat on marine habitat. A second, of particular reference to sea birds, is the link between upland habitat and marine wildlife. A third may be uphill effects of marine habitats on upland wildlife. And a fourth may be links between upland shore-fringe (buffer and non-buffer) habitat and dependent terrestrial wildlife. And along the way, what are the site-specific, quantitative effects? The cumulative effects and diminishing returns? And when wildlife are considered, are analysts keying to the important difference between 'obligate' and 'primary association'? Discussions of important species and their principal habitats tend to obscure that difference.

Okay, the first domain of inquiry, the effects of buffering versus non-buffering on inshore habitats down below. This seems to embrace bank failures, stormwater, and toxic substances, all discussed earlier. The absence of Puget Sound site-specific research on these subjects is unfortunate.

The second area is upland habitats' direct effects on marine wildlife. Sea creatures are vastly different from those on land. "It is not in the terrestrial experience continuously to inhale the young, eggs, sperm, food, and excreta of all of our fellow creatures, as do essentially all marine organisms."<sup>30</sup>

In stream riparian zones water, insects and animals move readily between land and water. Whether shoreline wildlife is affected by a shorn environment along streams has been studied in western Washington. Aquatic creatures are remarkably insensitive to vegetation above the backshore. A study of 62 Olympic Peninsula streams and associated riparian zones concluded that the characteristics and even the presence of the riparian forest had no influence on the persistence of fishes and stream-related birds and mammals.<sup>31</sup> Research on 18 Washington Cascades streams found that total abundance and species richness of birds and small mammals using areas close to streams before any timber harvest were comparable to the number and kinds after harvest.<sup>32</sup> This research has direct application to Puget Sound streams and wetlands, and implications for tidal shores. Corresponding results have been found in research in Oregon and British Columbia.<sup>33</sup>

The role of shoreland in supporting tidewater wildlife could be different, especially for tidewater birds. Washington's Department of Fish and Wildlife has listed "priority species" across the state.

Among the 51 priority marine birds, herons, waterfowl, shorebirds, hawks and falcons are 17 that visit Puget Sound. Most are passers-through, nesting in prairie country, Alaska and Canada, where they typically don't use trees. Four are nesters here on the Island; of those one is a 'maybe' and two are oriented to fresh water.<sup>34</sup>

Is habitat really a limiting factor for these birds? The Island (and probably the County) arguably has more trees now than at any time in the last 150 years. Many are small, but many are "late successional", around a hundred years old. Elsewhere, cavity-nesting birds seek out old trees whose branch stubs have decayed on into the trees. Here too, but apparently only non-marine wood ducks and (maybe) hooded mergansers.<sup>35</sup>

So perhaps the only two marine-related priority birds that nest on the Island are bald eagles and great blue herons. Do these birds need nesting sites? Certainly, and in significant trees. Within 200 feet of tidewater shores (the inland reach of the Shoreline Management

Act)? No. On densely (70%) forested Bainbridge Island, heron rookeries are found far from the beach, as are eagle nests. Eagles appreciate high perches, along the shore and elsewhere as well. An interesting issue here is, How many? Well, eagles are said to nest about 3 miles apart. That doesn't seem to demand many perch trees.

Rapid human population growth has coincided with rapid expansion of eagle populations. This spring we had 11 eagles within 60 feet of our house. One was eviscerating a dead cat; the other ten were standing around watching. Does this signal a deficiency of cats?

I am told that herons are in decline, not for reasons of habitat nor food, but rather predation. Eagles are stealing eggs and chicks from heron nests, causing rookeries to be abandoned. Is this because cats are scarce? This is a big, serious problem of the sort that wildlifers don't discuss much: Competition, tradeoffs, and cumulative effects of wildlife and habitat expansion efforts.

Downhill linkage from upland to beach habitats is largely the erosive one, discussed with shore protection. There are two interesting aspects. One is the sudden descent of dirt and debris in landslides. The other is the cumulative effect, over centuries, of bank failures and weathering that lead to a landward regression of beaches.

False premises concerning overhanging upland trees have been discussed. They concern shade and a drizzle of insects. The role of upland vegetation in wrack production has not been studied.

The third area, effects of marine habitats on upland wildlife, might be important if upshore critters depend on beaches. Raptors and herons have been discussed. Crows and raccoons visit beaches but are hardly dependent on intertidal matters. In Alaska bears sometimes depend on tidal shores, though streams give easier access to fish carcasses. Beachly bears are not seen here. Nor are upland invertebrates dependent on tidewater, so this area may be irrelevant.

The literature does not seem to reveal a causal habitat chain from tidewater up into shorelands: Saltwater's upland effects are generally negative, including undercutting, erosion, and caustic effects on vegetation.

The fourth area, buffering for upland wildlife, may be moot. A marine biologist has said, "...the legal intent of [nearshore] buffers is to protect functions in adjacent shorelines or critical areas, not to provide upland habitat for terrestrial species."<sup>36</sup> Too, it is not established that upland buffers are better habitat, in terms of creature diversity and numbers, than residential uses of the land. This point is certainly researchable, as are tradeoffs among, say, eagles, herons, cats and coyotes.



Bainbridge research biologist Conrad Mahnken has remarked lately on the absence of an overall habitat restoration plan for Eagle Harbor.<sup>37</sup> One might reasonably expect a folio of such plans, considering the diversity and abundance of landscapes, wetlands, and shorelines on the Island and around the Sound. There is none, partly because the intricate network of predator-prey relations hasn't been quantified. Somewhere among the food chains are critical links that might be enlarged; others may be more than adequate. Or nutrition may not be an issue; limiting factors may be dispersion (bears) or crowding (crows). In the end there need to be justified targets for wildlife numbers, thence habitat, thence cover, thence vegetative structure and area estimates. This is far different from dartboard decisions about buffers snaking along shorelines.

In his critique of DOE's wetland buffer guidance, mentioned earlier, Brooks<sup>38</sup> found that DOE had provided no information useful to determining minimum wildlife habitat buffer widths necessary for sustaining viability of non-listed species. Brooks pointed out research showing that wildlife welfare depends on the total amount of habitat, not habitat fragmentation nor connective corridors. He asked:

What degree of wildlife protection is required?

On what scale is protection required?

Which habitats require protection?

What restrictions on private property are necessary to sustain wildlife?

Do different species require different restrictions?

These questions seem relevant to tidewater margins as well as wetlands. In any case DOE did not answer them.

Brooks also challenged DOE to produce response curves, reflecting diminishing returns from widened buffers, and associated performance standards.

**So where is the research on the performance of Puget Sound buffers in achieving any of these presumably worthy goals?** Formal tidewater shore buffering has been in place since at least 1989 when Jefferson County's mandatory buffering began, and perhaps even earlier (the Shoreline Management Act occurred in 1971). If opportunities have been sought and used to gauge the effectiveness of buffering here their results are not apparent. So we seemingly have no Puget Sound performance record for buffers nor their alternatives.

**No research supports making the Sound's shore buffers wider.** Lacking baseline information on the efficacy of narrow buffers we can hardly quantify the gains from broadening them. However I assembled a

mostly-obvious 24-item list of functions that wider buffers will **not** perform.<sup>39</sup> Documentation of them is in another paper.<sup>40</sup>

**Considering the dubious usefulness of buffers, are there alternative ways to relieve whatever stresses and strains impinge on nearshore ecosystems?** Yes. Water-borne pollutants can be stopped at their sources. Erratic, ravaging slope failures can be reduced by corralling and infiltrating upland stormwater.

*Several conclusions about tidewater-buffer research: Some buffer basics are well-known; their application to Puget Sound shores is virtually unstudied; for most protection goals here vegetative buffering is likely ineffective; the goals themselves are not quantified; biologic harm in the absence of buffers is vaguely stated and unmeasured; widening buffers will not improve matters; buffers are more conscriptive than other routes to the same ends; these policy implications are widely ignored.*

Don Flora

## NOTES

---

1. Lemieux, J. P., et al, eds. 2004. *Proceedings of the DFO/PSAT Sponsored Marine Riparian Experts Workshop, Tsawwassen, BC, February 17-18, 2004*. Canadian Manuscript Report of Fisheries and Aquatic Sciences 2680. Vancouver BC: Fisheries and Oceans Canada.

2. Borde, Amy B., et al. 2009. East Kitsap County nearshore habitat assessment and restoration prioritization framework. Sequim: Battelle Memorial Institute.

3. Williams, Gregory D., et al. 2004. Bainbridge Island nearshore habitat characterization & assessment, management strategy prioritization, and monitoring recommendations. Sequim: Battelle Memorial Institute.

4. Herrera Environmental Consultants. 2005. Marine shoreline sediment survey and assessment, Thurston County, Washington. Seattle.

5. Shipman, Hugh. 2009. August 14 e-mail to Puget Sound Shoreline Planners.

6. Schwartz, M. L., et al. 1989. Net shore-drift in Puget Sound. Technical Res. Bull. 78. Olympia: Washington Department of Natural Resources.

---

7. Finlayson, David. 2006. *The geomorphology of Puget Sound beaches*. Puget Sound Nearshore Partnership Report 2006-02. Seattle: Washington Sea Grant.

8. Macdonald, Keith, et al. 1994. *Shoreline armoring effects on physical coastal processes in Puget Sound, Washington*. Seattle: CH2M Hill. Distributed by Washington Dept of Ecology, Olympia, as Report 94-78, Coastal Erosion Management Studies Volume 5, p. 2-20.

9. Rice, Casimir A. 2006. Effects of shoreline modification on a northern Puget Sound beach: Microclimate and embryo mortality in surf smelt. *Estuaries and Coasts* 29(1):63-71; The same single-site 5-day comparison appears as a chapter in his University of Washington PhD thesis.

Tonnes, Daniel M. 2008. Ecological functions of marine riparian areas and driftwood along north Puget Sound shorelines. Master's thesis, School of Marine Affairs, University of Washington.

10. Johannessen, Jim and Andrea MacLennan. 2007. *Beaches and bluffs of Puget Sound*. Puget Sound Nearshore Partnership Technical Report 2007-04. Seattle: US Army Corps of Engineers. The authors draw this figure from two citations.

11. Sobocinski, Kathryn L. 2003. The impact of shoreline armoring on supratidal beach fauna of central Puget Sound. Master's thesis, School of Aquatic and Fishery Sciences, University of Washington.

Tonnes, 2008, above.

12. Envirovision, Herrera Environmental, and Aquatic Habitat Guidelines Working Group. 2007. *Protecting nearshore habitat and functions in Puget Sound, an interim guide*. Publisher unk; probably Washington Department of Fish and Wildlife.

13. Penttila, Daniel E. 2001. Effects of shading upland vegetation on egg survival for summer-spawning surf smelt on upper intertidal beaches in Puget Sound. 2001 Puget Sound Research. Olympia: Puget Sound Water Quality Action Team.

14. Flora, D. F. 2007. A perspective on insects eaten by juvenile Puget Sound salmon. Available from the author.

15. For instance, Kozloff, Eugene. 1993. *Seashore Life of the Northern Pacific Coast*. Seattle: University of Washington Press. Also, Ricketts, Edward, et al. 1985. *Between Pacific Tides*. Stanford University Press.

9.. Brooks, Kenneth M. [n.d.] Creosote treated piling - perceptions versus reality. Creosote Council. [www.creosotecouncil.com/PugetSoundCreosoteReport.pdf](http://www.creosotecouncil.com/PugetSoundCreosoteReport.pdf)

10. Fresh, K. L., et al. 1995. Overwater structures and impacts on eelgrass in Puget Sound, Washington. *Proceedings, Puget Sound Research 1995*. Vol 2 p. 537-43.

11. A larger discussion is in Flora, D. F. 2008. *Pressing on: Do residential docks really impede passing salmon?* Available from the author.

12. Houghton, Jon, 2006. Best available science review of proposed overwater structure restrictions in Blakely Harbor, Bainbridge Island, Washington. Edmonds, Washington: Pentec Environmental.

---

13. Houghton, Jon, 2006, above.

14. Houghton, Jon, 2006, above.

15. EnviroVision et al. 2007. Protecting nearshore habitat and functions in Puget Sound - An interim guide. Olympia (?) Washington Dept of Fish and Wildlife p. II-11.

16. Myers Biodynamics, Inc. 1993. Slope stabilization and erosion control using vegetation, a manual of practice for coastal property owners. Publication 93-20. Olympia: Washington Department of Ecology.

Menashe, Elliott. 1993. Vegetation management: A guide for Puget Sound bluff property owners. Publication 93-31. Olympia: Washington Department of Ecology.

17. "The importance of wood-eating aquatic invertebrates is limited...The three most important wood-processing invertebrates in Oregon streams consume about 2 percent of the available woody debris per year..." Sedell, J. R., et al. Chap. 3 in Maser, C., et al. 1988. From the forest to the sea. Gen. Tech. Rpt. 229. Portland, OR: US Forest Service, Pacific Northwest Research Sta.

18. Tonnes, 2008, above.

19. At the summer solstice a 40-foot tree 10 feet from the bank casts a shadow only 10 feet onto the beach. Montgomery, D. R., et al, eds. Restoration of Puget Sound Rivers. University of Washington Press, p. 256.

20. For example, Sheldon, D. T., et al. 2005. Wetlands in Washington State, Volume 1: A synthesis of the science - final. Washington State Department of Ecology Publication 05-06-006.

May, Christopher W. 2001 and 2003. Protection of stream-riparian ecosystems: a review of best available science. Prepared for Kitsap County Department of Natural Resources.

Desbonnet, Alan, et al. 1994. Vegetated buffers in the coastal zone, a summary review and bibliography. Coastal Resources Center Technical Report 2064. Narragansett, RI: Rhode Island Sea Grant and University of Rhode Island Graduate School of Oceanography.

21. See, for example, notes 31 through 33, below.

22. Brooks, Kenneth M. 2006. Supplemental best available science supporting recommendations for buffer widths in Jefferson County, Washington. Port Townsend: Aquatic Environmental Sciences.

Brooks, Kenneth M. 2007. Response to the Department of Ecology Critique of Brooks (2006) Dated March 9, 2007.

23. Sheldon, 2005, above.

Granger, T., et al. 2005. Wetlands in Washington State, Volume 2: Guidance for protecting and managing wetlands - final. Washington State Department of Ecology Publication 05-06-008.

24. Brooks, 2007, above.

---

25. Provided that a significant share of the veg is ground cover, notably grass, about which Kenneth Brooks and I have, separately, had a lot to say. See his 2007 "Supplemental Best Available Science..."

26. Atieh, Bryan G., et al. 2008. Hood Canal onsite sewage system nitrogen loading project: Year 2 final report. Seattle: University of Washington Dept of Civil Engineering.

27. Brett, Michael T., et al. 2005. Non-point-source impacts on stream nutrient concentrations along a forest to urban gradient. *Environmental Management* 35(3):330-342.

28. An exception is the Atieh et al study of drainfields adjacent to Hood Canal beaches, which yielded very mixed results.

29. Isaacs, John D. 1978. Testimony on modification of secondary treatment requirements for discharges into marine water. In: Hearings before the Subcommittee on Water Resources of the Committee on Public Works and Transportation, House of Representatives, 95<sup>th</sup> Congress, May 24-5, 1978. Washington DC: GPO.

30. Isaacs, above.

31. Research by Peter Bisson and Martin Raphael, summarized in: Duncan, Sally. 2003. *Science Findings* 53 (May). Portland: US Forest Service, Pacific Northwest Research Station.

32. O'Connell, M. A., et al. 2000. Effectiveness of riparian management zones in providing habitat for wildlife. Final Report. Timber Fish & Wildlife Report 129. Olympia: Washington Department of Natural Resources.

33. Meehan, William R. 1996. Influence of riparian canopy on macroinvertebrate composition and food habits of juvenile salmonids in several Oregon streams. Research Paper 496. Portland: US Forest Service, Pacific Northwest Research Station.

Hall, James D. And Richard L. Lantz. 1969. Effects of logging on the habitat of coho salmon and cutthroat trout in coastal streams. In: Northcote, T. G., ed. *Symposium on Salmon and Trout in Streams*. H. R. MacMillan Lectures in Fisheries. Vancouver, BC: University of British Columbia, Institute of Fisheries.

Ward, Bruce R., Donald J. F. McCubbing, and Patrick A. Slaney. 2003. Evaluation of the addition of inorganic nutrients and stream habitat structures in the Keogh River watershed for steelhead trout and coho salmon. In: Stocker, John G., ed. *Nutrients in Salmonid Ecosystems: Sustaining Production and Biodiversity. Proceedings of the 2001 Nutrient Conference, Eugene*. Bethesda, MD: American Fisheries Society.

Beschta, R. L. Et al. 1987. Stream temperature and aquatic habitat: Fisheries and forestry interactions. In: Salo, E. O. And T. W. Cundy, eds. *Streamside Management: Forestry and Fisheries Interactions*. Contribution No. 57. Seattle: University of Washington, College of Forest Resources, Institute of Forestry Research.

34. Paulson, Ian and George Gerdts. 1996. "Checklist of Bainbridge Island Birds." Bainbridge Island Park and Recreation District. This is out of print; I can supply it.

---

35. Paulson and Gerdtts again.

36. Houghton, Jonathan. 2003. Review of incorporation of best available science in proposed City of Bainbridge Island shoreline rules. Edmonds, WA: PENTEC Environmental.

37. Mahnken, Conrad. June 25, 2009. Testimony before the City of Bainbridge Island Hearing Examiner, concerning the City's proposed Strawberry Cannery Park Project.

38. Brooks, 2006 and 2007, above.

39. Better protect the Sound against stormwater-borne pollutants  
Improve shade for surf smelt spawning  
Provide more insects for salmon diets  
Improve nutrient flows to tidewater prey organisms  
Speed the dynamics of intertidal drift zones  
Slow the loss of backshore to the sea  
Provide more sediment to drift zones  
Regulate tidewater temperatures to reduce plankton blooms or increase benthic invertebrate production  
Improve the nutrition of passing salmon  
Increase eelgrass production  
Increase the abundance of juvenile nor adult salmon  
Protect ocean-bound fish from predators  
Increase marine habitat diversity  
Restore marine conditions to beckon lost cod and herring  
Increase diversity of upland landscapes  
Enhance the attributes of native plant species  
Discourage invasive animal species  
Provide a better home for small mammals  
Enlarge depleted habitat for cavity-nesting birds  
Provide more shoreside perches for eagles, kingfishers  
Conserve water for infiltration to aquifers  
Protect aquifers from water-borne pollutants  
Preserve play space for children  
Nor perform better than a number of alternatives

40. Flora, D. F. 2008. Bigger beach buffers for fun and profit. 16 p. Available from the author; also on line at several sites.

## **EXHIBIT 3**

August 2010

## SHORE PROTECTION AND NEARSHORE HABITATS

### RECENT PUGET SOUND RESEARCH

Speculation has it that bulkheads are hostile to forage fish and herring habitats, including upper-beach and eelgrass spawning places. Several recent studies address this issue, which is important to protection planning for both shorelines and fishery welfare. A key hostility indicator is negative association between bulkheads and habitats.

**The North Sound** -- The San Juan Initiative, working with a consultant, selected case study areas on the four largest San Juan islands, totaling 651 parcels along 34 miles of shore.<sup>1</sup> With that data a staffer at the Friday Harbor lab has determined<sup>2</sup> that there is a slight positive association between bulkheads and eelgrass and between bulkheads and forage-fish habitat.<sup>3</sup>

**The Central Sound** -- In their recent shoreline inventory Bainbridge Island's staff divided Island shorelines into 201 'reaches', with data collected for each reach on installed structures and other indicators of human occupation, and on measures of habitat presence and density.<sup>4</sup>

An analyst used this data and in four kinds of analyses<sup>5</sup> found near-zero relationships between bulkhead intensity, eelgrass and forage-fish habitats.<sup>6</sup> The calculations have had four peer reviews.

**The South Sound** -- That the sedimentary environment was *not affected* by shore protection was shown in a study of Thurston County beaches, where 29 profiles of bulkheaded sections were compared with nearby non-bulkheaded profiles.<sup>7</sup> No statistically significant beach "coarsening" was found.<sup>8</sup> Following adjustment of an analytical glitch, no statistically significant profile changes were shown. Both of these factors have implications for forage-fish habitat. Eelgrass differences were not examined.

**The Issue of "Encroaching" Bulkheads** -- Current law requires that new bulkheads be built snug against the bank. There remain a number of bulkheads out on the beach. Some of this was by intent; some is the product of natural shore movement inland, with its accompanying lowering of beach profiles, leaving bulkheaded reaches stranded (albeit functional). Do these bulkheads inhibit habitat?

In the North Sound study "Only 21% of the shore modifications ... were above the forage fish spawning band."<sup>9</sup> Yet analysis showed a positive relationship with documented forage fish spawning.

In the Central Sound (Bainbridge Island) analysis "encroaching armoring" was found to have no negative relationship whatever with sandlance spawning



habitat, surf smelt spawning habitat, nor eelgrass.

In the South Sound assessment all but six of the 29 bulkheads were offset from the bank, an average distance of 10 feet. Yet no significant habitat effects were found.

The peril attributed to encroaching bulkheads appears nonexistent in these studies.

**Some On-the-Ground Relations** -- Maps and data lists from study areas reveal that:

In the North Sound (San Juans),

Eelgrass occupies half the shoreline

Herring spawning occupies 1/5 of the shoreline, suggesting that, from herring's viewpoint, eelgrass is in surplus

Half of forage fish habitat is in front of bulkheads.

In the Central Sound (Banbridge Island),

Eelgrass occupies 1/5 of the shoreline

Half of all eelgrass is in front of bulkheads

Despite herring's affinity for eelgrass, half of herring spawning occurs in areas without eelgrass

72 percent of surf smelt spawning beach lies in front of bulkheads

Half of the 72 percent is in front of encroaching bulkheads

Half of sand lance spawning beach is in front of bulkheads.

D. F. Flora

NOTES

- 
1. Coastal Geologic Services Inc. 2008. San Juan Initiative protection assessment - Nearshore case study area characterization. Bellingham.
  2. Using nonparametric analysis, including multidimensional scale analysis.
  3. Dethier, Megan. 2008. Multivariate analyses of shoreline parcel data from the San Juan Islands. P. 4 of Appendix 3 in Coastal Geologic Services 2008, above.
  4. The data was used and published by a contract-research firm as they identified priorities for shoreline 'restoration': Williams, G. D., et al. 2004. *Bainbridge Island Nearshore Habitat Characterization & Assessment, Management Strategy Prioritization, and Monitoring Recommendations*. Sequim: Battelle Marine Sciences Laboratory.
  5. Graphic, simple regression, nonlinear regression, multiple regression.
  6. Flora, D. F. 2009. *Evidence of Near-Zero Habitat Harm from Nearshore Development*. Bainbridge Island. Processed and on the internet.
  7. Herrera Environmental Consultants. 2005. Marine shoreline sediment survey and assessment, Thurston County, Washington. Seattle.
  8. Defined by the analysts as "the result of relatively small sediment being winnowed away from the surface of a beach". Herrera 2005, above, p. A-1.
  9. Coastal Geologic 2008, above, p. iv, 13.

## **EXHIBIT 4**

November 2009

**EVIDENCE OF NEAR-ZERO HABITAT HARM  
FROM NEARSHORE DEVELOPMENT**

**D. F. FLORA, PhD**

*A well-known Northwest contract-research firm has shown that a broad array of man-caused features along tidewater shores have no meaningful impact on "ecosystem functions".*

*Despite an obviously vigorous and fairly complex effort, a relationship between human-installed "stressors" and habitat factors was not found. Statistical analyses of the studies' data show that little of the variation in ecosystem (habitat) functions can be explained by a large basket of stressors. The correlation of multiple stressors with the welfare of nearshore habitats is not significantly different from zero (Bainbridge Island) or extremely low (East Kitsap County).*

*The link beyond habitats to nearshore-dependent creatures was not explored because, the analysts explained, science is not available to do so. Overall, then, no significant correlation was found between human-caused nearshore features and marine life on Puget Sound.*

*These results are consistent with other research that is summarized here.*

*The results are quite damaging for notions of the need for nearshore restoration and its prioritization.*

*These are results of nearshore assessments of Bainbridge Island<sup>1</sup> and easterly Kitsap County<sup>2</sup>. Some 700 shore segments were analyzed. More than 20 human-imposed "stressors" were rated, from buoys to bulkheads, from paths to piling, for each shore segment. Also rated were estimates of habitat extent and welfare, based on 3 to 16 factors.*

### **Bainbridge Island**

Each of 201 beach segments ("reaches") was scored for both human-installed stressors' presence and their presumed effects. This was done by repackaging stressors as "Controlling Factors", wherein wave energy, sediment supply, hydrology, and six other nearshore phenomena were weighted by the extent and intensity of the stressors impacting each reach, as well as the natural character of the reach. An example is a Controlling Factor called physical disturbance, whose score was derived from stressor data on number of buoys (their dragging chains), floats, and boats upon the beach. Controlling Factor scores were then summed to yield a total Controlling Factor score for the reach.

A habitat rating ("Ecological Functions score") was also assigned to each reach based on its estimated utility for ten organisms including forage fish, seaweeds, eelgrass, and overhanging vegetation.

I calculated the "coefficient of determination" ( $r^2$ ) between the Controlling Factors and Ecological Functions as a group, using data provided in the study for the 201 reaches.  $r^2$  is the proportion of variability in Ecological Functions that is explained by Controlling Factors. **It is 0.016, virtually at the bottom of possible values between 0 and 1.**<sup>3</sup>

The authors displayed plots of the 201 values and also a subset of that data for 31 'low-bank' reaches. They are Figures B-72 and B-74, attached. Because the low-bank plot suggests some correlation, I calculated  $r^2$  for those reaches. **It is still extremely low.**

These figures do not demonstrate significant relationships. In general a coefficient of determination less than 0.66 is considered insignificant.

The Bainbridge report alludes repeatedly to causality between Controlling Factors and habitats, and correlation between Controlling Factors and Ecological Functions.<sup>4</sup> To examine further the correlations, which the analysts regarded as corresponding to causation, I calculated a number of regression equations using the report's data.<sup>5</sup>

The factors assumed to stress habitats explained only 0.06 percent of variation in Ecological Functions across the 201 reaches. That percentage is not significantly different from zero.<sup>6</sup>

What about the low-bank reaches by themselves? Controlling Factors explain only 0.14 percent of variation in Ecological Functions.

### **Easterly Kitsap County**

In this shoreline assessment each of East Kitsap's 518 beach reaches ("sites") was scored for stressors. The rest of the analytical process was similar to the Island's, except that "Controlling Factors" were joined by a companion set of "Dominant Physical Processes", the latter having in common the results of water movement. For instance, wave energy and depth/slope [profile change] are Controlling Factors, as with Bainbridge. Sediment transport and wave erosion are Dominant Physical Processes.

Habitat impacts were scored for reaches for which data was available. Impacts were based on the extent of eelgrass, wrack, driftwood, lower-beach flats, and the character of backshore vegetation including its overhang. Other factors were added for pocket estuaries.

I calculated, for those reaches, the correlation of stressor levels with habitats along East Kitsap beaches, as done above for Bainbridge. It appeared logical to merge the scores for Factors and Processes as the authors did in their graphics (Figure 15, attached). There is a very low level of correlation, with only 12 percent of variability explained by Controlling Factors and Physical Processes combined.

**In short, none of these supposed stressors has demonstrated a significant effect on habitats. The low correlation measures can only be construed as excusing the inventoried human-built stressors from the list of factors actually affecting habitats.**

### **Harm May Be Wrongly Attributed to Bulkheads**

As with many index-number systems, the use of Controlling Factor and Dominant Physical Process scores in policy-making requires decomposing them to determine specific effects of their many components.

The most pervasive input into these composite ratings was the presence and extent of bulkheads. Bulkheads appear as causal stressors in five of the nine factors affecting Bainbridge Island Controlling Factor scores; in two of five Controlling Factors and

all of the six Physical Process factors applied to East Kitsap.

Not only did bulkheads enter frequently, the scores were "primarily affected" by 'armoring' in East Kitsap<sup>7</sup>; around Bainbridge "high rates of shoreline armoring..., armoring encroachment..., and point modifications...have significantly changed the historic composition of substrate and depth-slope contours along Bainbridge Island shorelines."<sup>8</sup> Perhaps. At any rate, bulkheads stand large among the presumptive sources of nearshore harm, with no substantiating research demonstrating the tie.

What does ground truth tell us?

It is possible to separate out bulkhead scoring from the Bainbridge Island basket of stressors included in Controlling Factors. Likewise for components of the Ecological Function index.<sup>9</sup> In four regression equations bulkhead intensity was the explanatory variable of special interest. The dependent variables were eelgrass density, extent of overhanging vegetation, presence of sand lance spawning, and presence of surf smelt spawning<sup>10</sup>, with these conclusions: **There is no evidence of a statistically valid relationship between reaches' bulkhead lengths and eelgrass welfare, overhanging vegetation's extent, nor forage-fish (surf smelt and candlefish) spawning-ground expanse.**<sup>11</sup>

The Bainbridge report deals as well with 'encroaching' bulkheads - those that are somewhere out on the beach. Their distances from the bank are not indicated, just the percentage of shoreline in each reach that has that condition. Briefly, encroaching bulkheads are no harder on eelgrass than bulkheads generally: statistically insignificant, with only 0.2 percent of variation explained. Results for sand lance and surf smelt spawning and for overhanging vegetation are similar.

The East Kitsap report also has an eelgrass component and a "vegetation" index in its Ecosystem Functions (habitat) basket, though for only 12 reaches. The vegetation index includes measures of the above-beach vegetation for 225 feet inland as well as overhanging veg.

Readers are reminded that the East Kitsap sites were selected by the analysts, not chosen randomly nor in some systematic fashion. Of the 14 validation sites, 6 do not have bulkheads at all and 2 of the others have no eelgrass, leaving only 6 sites out of 518 as thin gruel for estimating the incremental effects of bulkheads on eelgrass. In any case, **Bulkheads had a demonstrated**

**significant effect on neither of these purported habitat factors.**<sup>12</sup>

Another set of numbers on bulkheads as stressors: All 201 Bainbridge reaches' bulkhead data were regressed against the aggregate index for the Ecological Functions (habitat) group. The adjusted R-squared was abysmal, 0.0008. For East Kitsap a similar regression was run: Ecosystem Functions (habitat) against bulkhead length, for the 14 follow-up reaches. The adjusted R-squared was very low, 0.06. **Bulkheads clearly play a statistically trivial role in nearshore habitat welfare.**

The authors clearly regard bulkheads as hostile to eelgrass. Yet Bainbridge Island shoreline maps reveal the considerable coexistence of eelgrass with bulkheads. About half the Island's eelgrass is in front of bulkheads; about two-fifths of bulkheads are fronted by eelgrass.

At a 2009 conference on bulkheads, a well-known researcher said, "it has not been confirmed in the field or the laboratory whether currents and sediment transport rates will increase or decrease in front of a hardened shoreline, as compared to a non-armored section of beach, and whether the sedimentary environment will be significantly modified."<sup>13</sup>

That the sedimentary environment was not affected was shown in a study of Thurston County beaches, where profiles of bulkheaded sections were compared with nearby non-bulkheaded profiles. Following adjustment of an analytical glitch, no statistically significant beach changes were shown.<sup>14</sup>

Two studies purport to show effects of bulkheads on surf smelt egg survival.<sup>15</sup> In fact they compare treeless (and bulkheaded) unshaded shores with treed (non-bulkhead) shaded places.

Two studies<sup>16</sup> have shown no difference in subsurface fauna in front of bulkheaded versus unprotected shores, so this part of the habitat issue also seems moot.

Not one of the 40-odd references cited in the Bainbridge analysis nor the score of fish-habitat citations in the East Kitsap report contain research showing ecosystem decline (much less 'destruction') caused by residential bulkheads in Puget Sound.

Other conjectural inclusions in the stressor indexes, such as the roles of piling, residential docks, stormwater outfalls, upshore impervious area, and upshore woodland coverage are seemingly dubious.



### **Three Conclusions**

**Singly and together these reports suggest no effect of the nearshore built environment on habitats.**

The authors analyzed a broad array of *human-built* nearshore 'stressors' in their search for relevant nearshore habitat stressors. Investigators must now presumably look to *natural* factors not embraced in these two assessments. Natural drivers are known to include water temperatures, invertebrate dynamics, beach profiles' shoreward migration, upland ecology, and the perennial conflicts and interplay of nearshore organisms among themselves and their environment.

**Meanwhile the argument that habitats and their occupants require "restoration", implying conversion of nearshore areas to some seemingly natural state, is not supported by these analyses.** More discussion of restoration is below.

### **About Harm**

The low correlations also press forward the issue of *harm*. In these studies harm was presented in terms of effects on habitats, not their inhabitants, despite sidebar references to salmon and forage fish. Stopping short of trying to guess effects of various levels of habitat quality on classes of marine life was, I think, a good idea, given the authors' perception that "Biotic variables, such as fish abundance or benthic community composition, are not used as metrics...because scale-appropriate information of this type is currently lacking for the study region".<sup>17</sup>

So harm was gauged at the habitat level. And only harm, not benefits, despite the welfare gains to animals, plants, and people from some of the "stressors". Many of the "stressors" are themselves habitats; bulkheads may ease the rate of burial of upper-beach habitat, and, by slowing landward bank erosion, retard the downward-and-landward displacement of beach profiles. The recreational and economic benefits of docks and floats have been known and appreciated for thousands of years. Floats are shaded refuges for small fish. Culverts and outfalls will be indispensable unless stormwater routes to aquifers can somehow be devised. Meanwhile stairs to the beach seem unlikely stressors; beach access predated arrival of Europeans by more than a little.

The kinds of harm imputed by the analysts are not a strong basis for alarm, partly because of their dubious nature. Forage fish spawning beaches are listed, for instance, yet there are unused spawning beaches. Eelgrass is affected by a number of things, but their sensitivity to bulkheads has never been demonstrated for any of the 700+ reaches in these reports, nor at other Puget Sound residential places. Intertidal seaweed's importance and sensitivity to "stressors" have not been quantified. Certain reasons for encouraging overhanging vegetation are vacuous, as I have shown elsewhere. And so on. There is no scientific evidence that bulkheads, stairs, and other 'stressors' measurably harm nearshore habitats. Puget Sound's alleged peril surely does not reside in these matters.

### **About Conjecture**

Most technical discussions of nearshore stressors and their impacts carefully include hedges such as "may", "might", or "in some places". These two reports treat linkage as near-absolute despite the widely deplored absence of research findings. Causality is generously presumed.<sup>18</sup> The analysts' models are "scientifically defensible"<sup>19</sup> (though they differ). Their normative estimates of degrees of impact are said to be based on best available science and best professional judgment.<sup>20</sup> The maps, inventories, and analytical process are intricate and interesting. But given the general paucity of relevant science (which the reports acknowledge), the burden on conjecture and hence credibility is considerable.

### **Implications for a Restoration Program**

The reports are said to be driven partly by a need for "a method for prioritizing restoration projects".<sup>21</sup> The authors cite an earlier paper, co-authored by the Bainbridge report's senior writer, concluding that

"...the strategies of restoration, enhancement, and creation should be applied depending on the degree of disturbance of the site and the landscape. This theory assumes that historical conditions represent the optimal habitat conditions for a particular site."<sup>22</sup>

A similar doctrine comes with the Bainbridge report:

"...restoration of controlling factors [is] the key to successful and long-term sustainability." [Underlining by

the authors]<sup>23</sup>

"Demolition" is nowhere mentioned, but it looms beyond. As when bulkhead removal is proposed as a "most obvious opportunity".<sup>24</sup> However there is presented no case for restoration, no estimates of costs, and no array of alternatives toward the same ends.

The authors' arguments for restoration are predicated on strong causal relations between stressors and habitats. Causation almost always generates high correlations. Correlations in these nearshore assessments are remarkably low. *QED.*

I have commented elsewhere on the formidable problems of knowing where we want to go in restoration and then getting there. **The point here is that without a correlation between supposed stressors and presumed problems, any rationale for removing the human-installed stressors disappears.**

#### NOTES

1. Williams, G. D., et al. 2004. *Bainbridge Island Nearshore Habitat Characterization & Assessment, Management Strategy Prioritization, and Monitoring Recommendations*. Sequim: Battelle Marine Sciences Laboratory.

2. Borde, A. B., et al. 2009. *East Kitsap County Nearshore Habitat Assessment and Restoration Prioritization Framework*. Sequim: Battelle Marine Sciences Laboratory.

3. Known to biostatisticians as  $r^2$ , the coefficient of determination is the percentage of variance of  $y$  explained by  $x$ , where  $y$  is drawn from a cluster of habitat factors and  $x$  is an amalgam of human-installed stressors.

4. For example, *Bainbridge Island Nearshore...* p. 30.

5. If we want an equation showing how well Controlling Factors (X) explain Ecological Functions (Y), Controlling Factors is the explanatory variable. In an equation  $Y = 2 + 3X$ , X is the explanatory variable.

Reported here are "adjusted R-squareds" ( values range between 0 and 1) and "F" values for the equations.  $R^2$  (the "adjusted coefficient of determination" for the equation) is based on the ratio of X-explained variation (technically "variance") to total variation in Y.

F is based on the ratio of X-explained variation to as-yet-unexplained variation in Y. F relates to a "null" hypothesis that Controlling Factors have no incremental effect on Ecological Functions; the equation's slope coefficient is not significantly different from zero. That is, as Controlling Factors intensify, there is no significant change in Ecological Functions.

For large data sets an F value over about 4 indicates less than a 5 percent probability that the null hypothesis should be accepted. Five percent is a customary level of acceptable probability.

6. This because F is only 0.88.

7. *East Kitsap County Nearshore...* p. 27, 28.

8. *Bainbridge Island Nearshore...* p. 32.

9. Readers should understand that all the indexes involve heavy doses of conjecture and hence normative (arbitrary) structures and values.

10. The report's text is unclear as to whether spawning has happened in these places, or they only appear suitable for spawning. Sound-wide there is more seemingly suitable beach than is actually used.

11. On Bainbridge Island  
an increase in bulkhead length is  
associated with no statistically  
significant reduction in:

	Adjusted R <sup>2</sup>	F
Eelgrass welfare	0.5 percent	0.009
Overhanging vegetation	0.6 percent	2.17
Sand lance spawning	0.5 percent	0.0001
Surf smelt spawning	0.4 percent	1.82

12. On East Kitsap reaches an  
increase in bulkhead length  
is associated with no  
statistically significant  
reduction in:

Eelgrass welfare	27 percent	5.07
Vegetation	17 percent	3.73

(The F significance threshold is 5 because of the small sample.)

13. Ruggiero, Peter. 2009. Impacts of shoreline armoring on sediment dynamics. In: [Abstracts of] Puget Sound shorelines and the impacts of armoring: State of the science. Alderbrook Inn, 13 May 2009. US Geological Survey <http://wa.water.usgs.gov/SAW/>

14. Herrera Environmental Consultants. 2005. Marine shoreline sediment survey and assessment, Thurston County, Washington. Seattle.

15. Rice, Casimir A. 2006. Effects of shoreline modification on a northern Puget Sound beach: Microclimate and embryo mortality in surf smelt. *Estuaries and Coasts* 29(1):63-71; The same single-site 5-day comparison appears as a chapter in his University of Washington PhD thesis. Although this study

was said to cover 'shoreline modification', the 2-site design recognized only a bulkhead and shade trees, and it was not possible to separate bulkhead effects, if any, from those of trees.

Tonnes, Daniel M., 2008. Ecological functions of marine riparian areas and driftwood along north Puget Sound shorelines. Master's thesis, School of Marine Affairs, University of Washington.

16. Sobocinski, Kathryn L. 2003. The impact of shoreline armoring on supratidal beach fauna of central Puget Sound. Master's thesis, School of Aquatic and Fishery Sciences, University of Washington.

Tonnes, Daniel M. 2008, above.

17. *Bainbridge Island Nearshore...* p. 20.

18. As at page 99 in the *Bainbridge report*.

19. *East Kitsap County Nearshore...* p. i; *Bainbridge Island Nearshore...* p. 17.

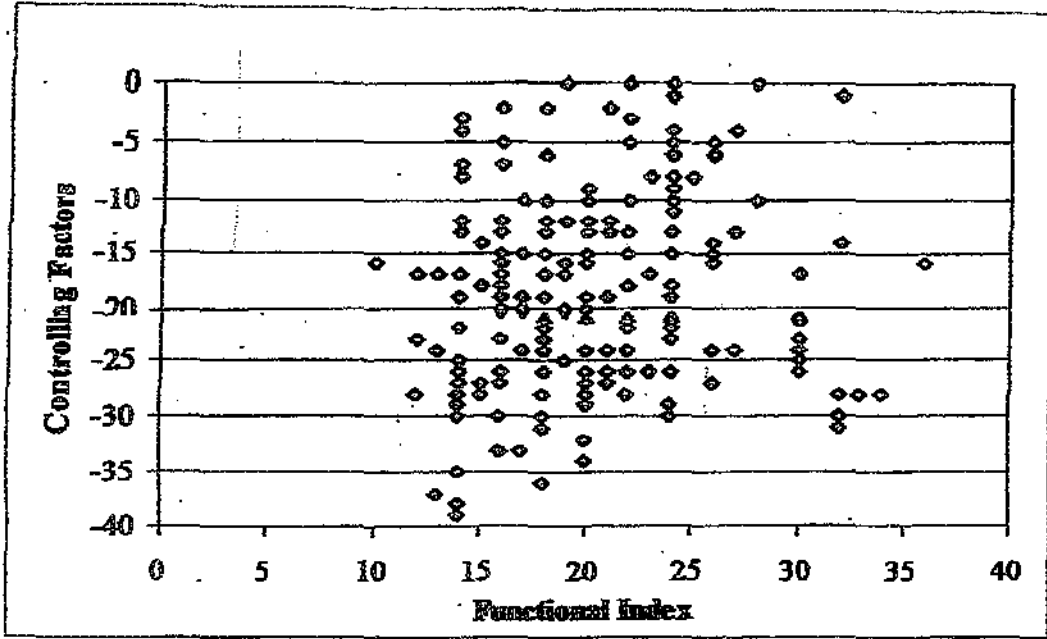
20. *Bainbridge Island Nearshore...* p. 20, 22.

21. *East Kitsap County Nearshore...* pp. I, ii, 2, 30. Also "*Bainbridge Island Nearshore...*" p. iii, 15

22. *East Kitsap County Nearshore...* p. 29.

23. *Bainbridge Nearshore...* p. E-6.

24. *Bainbridge Nearshore...* p. 34



**Figure B-72. Controlling Factors versus Functional Index Scores, All Geomorphic Types.**

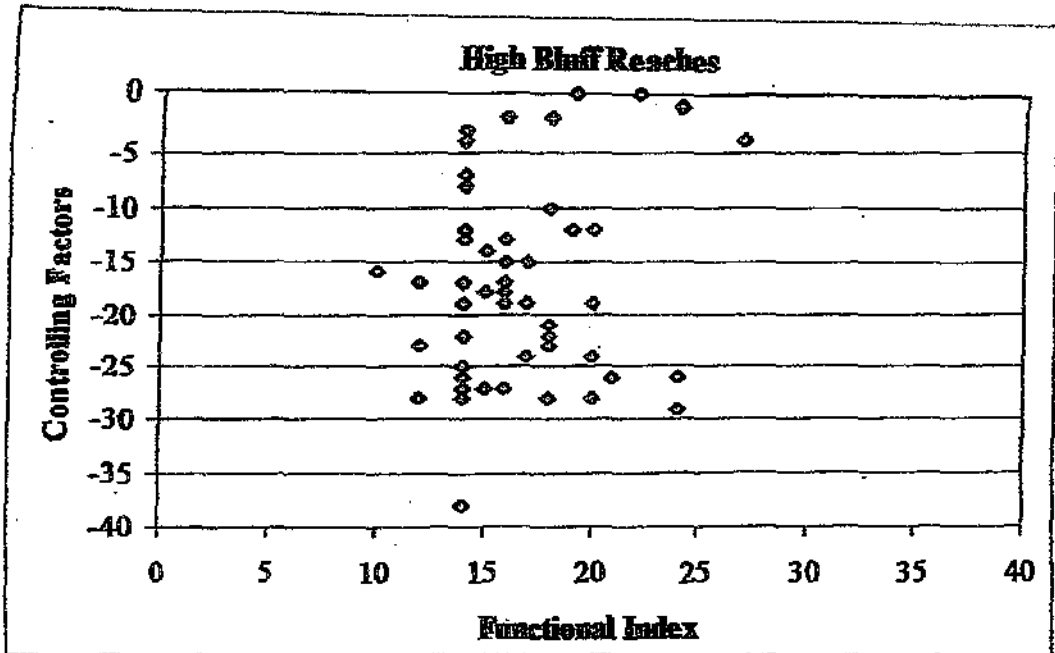


Figure B-73. Controlling Factors versus Functional Index Scores, High Bluff.

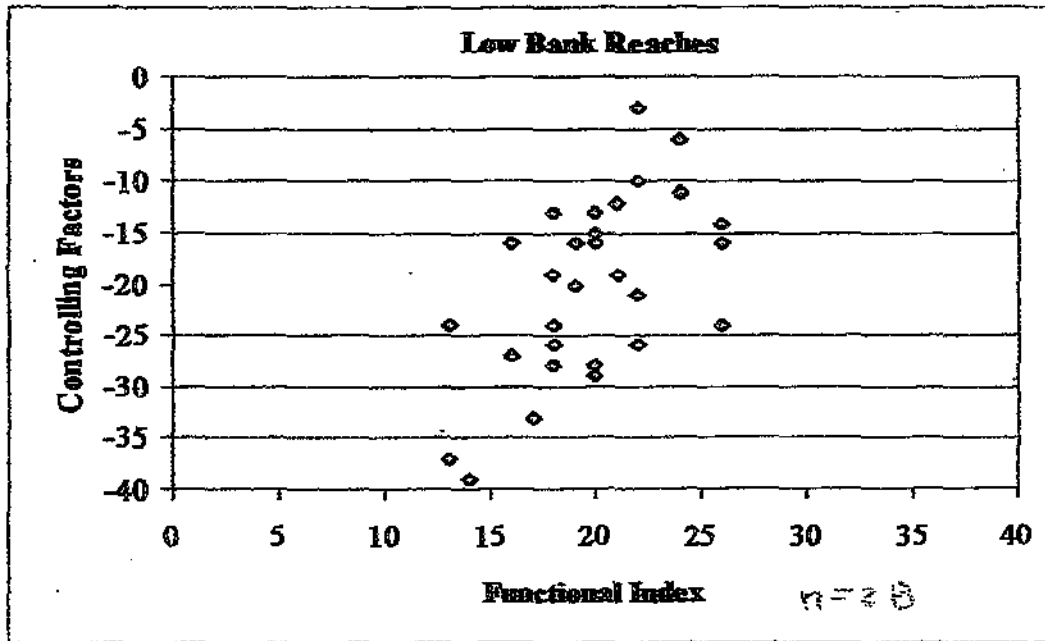


Figure B-74. Controlling Factors versus Functional Index Scores, Low Bank.

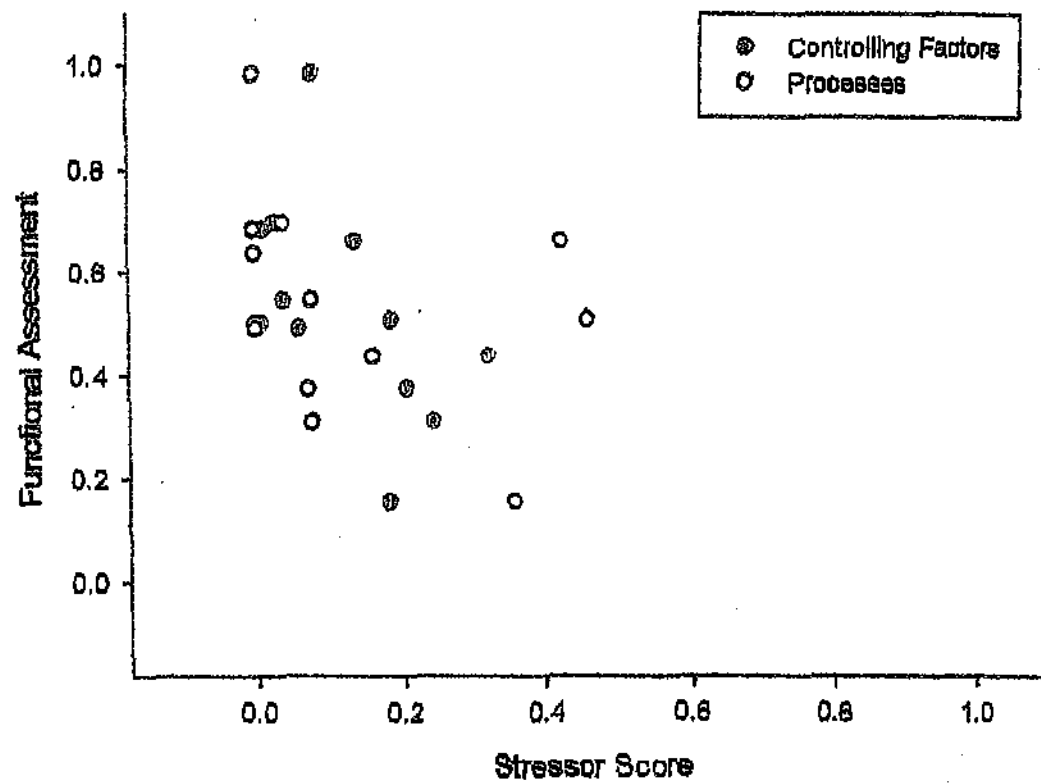


Figure 15. Functional assessment scores vs. GIS-based stressor scores for 14 NAUs.



## **EXHIBIT 5**

December 2009

**EVIDENCE ON IMPACT-NEUTRAL BULKHEADS,  
FLOATS, AND OTHER SHORELINE MODIFICATIONS**

D. F. Flora

With the help of a shoreline inventory and modeling by a major consultancy<sup>1</sup>, I've shown that bulkheads have little relationship to the welfare of eelgrass, forage fish spawning areas, and other nearshore habitats. This is important because of the tremendous amount of energy that has gone into berating bulkheads. It's important to you because shoreline reach-oriented inventories are about the best data sets we have concerning nearshore stress.

In support of its coming Shoreline Master Program update, Bainbridge Island did a shoreline inventory of human-installed 'stressors' and habitats. Fifty miles of shoreline were divided into 201 'reaches', with data collected and reported from each reach.

The structure scores included measures of  
bulkhead extent  
encroaching bulkhead extent  
floating structures, ramps  
outfall density  
marina/fish farm presence  
upshore vegetation extent  
artificial shade  
sediment sources  
upshore impervious area

The habitat scores included measures of  
eelgrass welfare  
overhanging vegetation  
surf smelt spawning beaches  
candlefish spawning beaches  
herring spawning sites  
geoduck beds  
salt marsh presence  
seaweed and kelp beds

Analysts for the city combined the structure scores into a composite stressor score for each reach. A composite habitat score was also compiled for each reach.

imposed "stressors", whatever their bulk and intensity, are not associated, singly nor collectively, with variations in nearshore habitats.

This for Bainbridge Island. What about elsewhere? Virtually the same results emerged from easterly Kitsap County, where "stressor" data was collected on 500-plus reaches.<sup>2</sup> However fewer than a score were assessed for habitat welfare, so this conclusion is not firm.

The results are consistent with a similar cross-sectional study of bulkhead effects in Thurston County.<sup>3</sup> It remains to be seen whether multi-year monitoring with repeated measurements at same sites will alter the conclusions.

1. Williams, G. D., et al. 2004. *Bainbridge Island Nearshore Habitat Characterization & Assessment, Management Strategy Prioritization, and Monitoring Recommendations*. Sequim: Battelle Marine Sciences Laboratory.
2. Borde, A. B., et al. 2009. *East Kitsap County Nearshore Habitat Assessment and Restoration Prioritization Framework*. Sequim: Battelle Marine Sciences Laboratory.
3. Herrera Environmental Consultants. 2005. *Marine shoreline sediment survey and assessment, Thurston County, Washington*. Seattle.

FIGURE 2

Habitat Relationship to Bulkheads in 201 Bainbridge Island Reaches

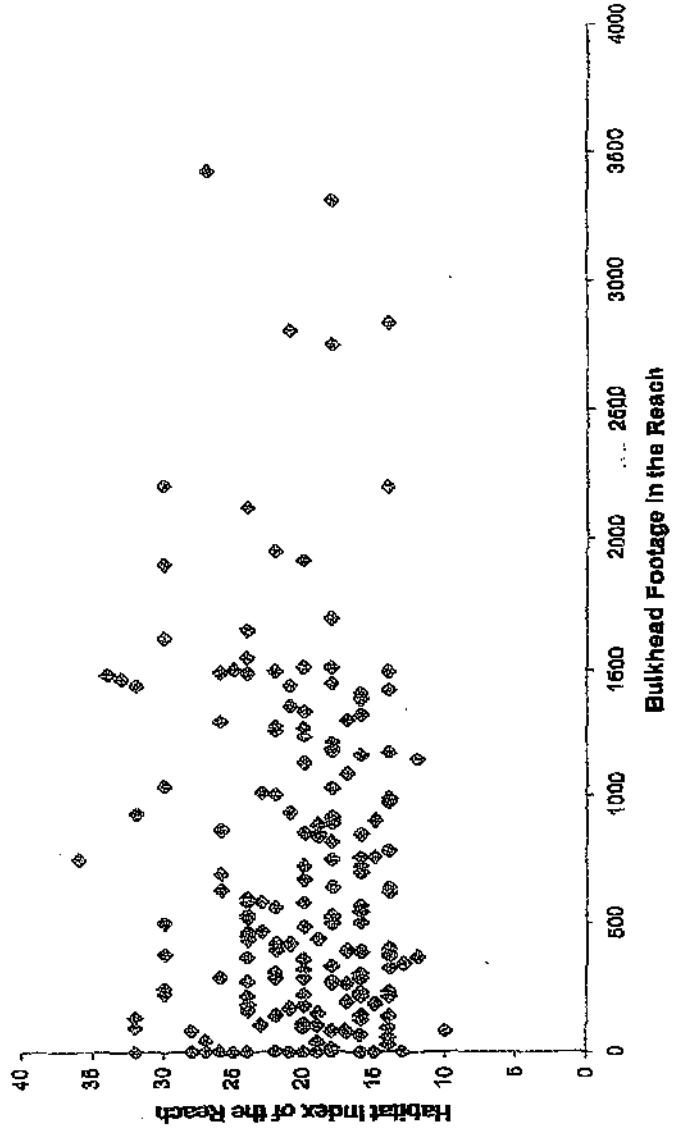
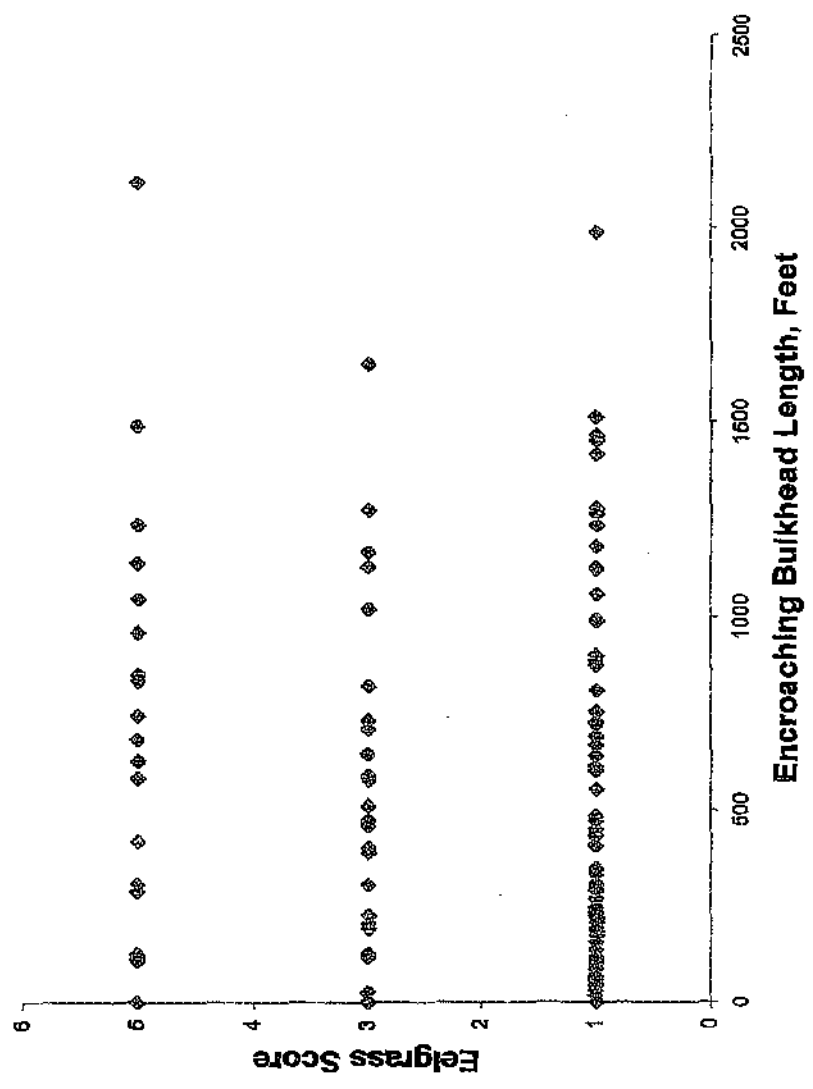


FIGURE 9

### Bainbridge Island



## **EXHIBIT 6**

February 2010

**EVIDENCE ON HABITAT-NEUTRAL BULKHEADS,  
FLOATS, AND OTHER INSTALLED "STRESSORS"**

**A RESPONSE TO A CLUTCH OF DETRACTORS**

D. F. Flora, PhD<sup>1</sup>

**Overview**

With the help of two shoreline inventories and modeling by a major research consultancy, I've written a paper showing that bulkheads and other human-installed nearshore structures have little relationship to the welfare of eelgrass, forage fish spawning areas, and other nearshore habitats.<sup>2</sup>

Although results are specific to Bainbridge Island and eastern Kitsap County, they have triggered immediate alarm in a portion of the Puget Sound technical community because the findings run counter to common suppositions. A critical letter signed by a troupe of 14 technical people has been circulated widely. This is a response to that letter and other comments made by members of the troupe.

In general, the criticism is unfounded. I start with a summary of what I actually did and the results. Next I address our points of agreement; then the conjectured faults and incorrect statements presented by the troupe.

**Background**

As Washington shoreline jurisdictions update their shoreline plans they are prodded by the Department of Ecology to inventory their nearshores. Inventories are taking various forms. Bainbridge Island and Kitsap County divided their shorelines into 'reaches', with data collected for each reach on installed structures and other indicators of human occupation, and on measures of habitat presence and density.

The data was used and published by a well-known Northwest contract-research firm as they identified priorities for shoreline 'restoration'.<sup>3</sup>

The analysts also compiled composite indexes of what I will call

'stressors' (the human-installed things) and, separately, conditions I will call 'habitat welfare'. These for each reach.

At the time of my analysis habitat data for Kitsap County was limited to less than a score of reaches, so the rest of this discussion relates to Bainbridge Island, although I got similar results for the small Kitsap data set.

#### **What I Did**

The consultants plotted the composite habitat scores against stressor scores, and I followed their lead. In Figure 1, attached, each dot reflects a single reach. Notice (1) the wide scatter of the dots, indicating little if any correlation between the basket of stressors and basket of habitats. And (2) the absence of a trend downward from left to right. If present that trend would have indicated that an increase in stressor levels is associated with a decrease in habitat abundance. It wasn't there, as you can see in the figure.

It is possible that composite scores obscure the effects of individual stressors. Bulkhead intensity is of special interest because the analysts clearly assumed the badness of shore protection. Figure 2 plots reaches' habitat indexes on reaches' bulkhead footage. Again there is no correlation and no trend.

I plotted many combinations of individual habitats on individual stressors, as well as the composite habitat index on single stressors, with the same general result: no correlation and no trend.

Next, to add analytical rigor (the troupe's term, see below) I did a series of statistical analyses, addressing the hypothesis that there is no correlation between habitats and human-created supposed stressors, individually nor collectively. Almost invariably the conclusion was that the relationships are not significantly different from zero.<sup>4</sup>

This is not scientific opinion nor professional judgement. It is concrete analytical findings using impeccably sourced data and standard, basic statistical computations. The results have been peer reviewed and can be replicated readily by anybody with a basic technical degree.



### **On Natural Stressors**

An obvious question is, What other factors out there control the welfare of nearshore habitats? Presumably they are natural, not human-installed.

The troupe of fourteen who reviewed the study provided the answer: We don't know. The relevant Puget Sound science, they say, is limited. "All acknowledge that more careful, well thought-out local research...is necessary."<sup>5</sup> Their view was echoed at the recent Puget Sound conference on shore protection, mentioned by the troupe. A lead speaker said, "The workshop confirmed...the limited scientific research that has been done on the impacts of armoring on either geologic or ecologic processes, and ...the difficulty of applying the science that has been done elsewhere to Puget Sound given the unique aspects of our system."<sup>6</sup>

The relevance of "elsewhere" science from ocean nearshores has been questioned by a well-known shoreline geologist,<sup>7</sup> and I have explained that extrapolation from stream science is folly in a number of instances<sup>8</sup>.

So the troupe of 14 plus a number of researchers and I agree completely that marine science is scant for the Sound, and that the Sound has unique features not likely represented by studies of the ocean, streams, and the "other parts of the world" that are mentioned vaguely by the troupe.<sup>9</sup>

By extension, we appear to agree that marine science relevant to Puget Sound is inadequate for intelligent nearshore policy making.

### **The Troupe's Derogation**

Much of the troupe's criticism comes from their incorrect perception that I wrote for a technical audience. The paper was intended for an audience of nontechnical people including planners who may not have a marine science background.

The troupe says the work lacks "rigor". That word is straight from The Graduate Student's First Book of Phrases. The statement may be offensive to the 20-some people, including scientists, who conducted the overall enterprise with detailed study plans, data

accession, modeling, calculations, and analyses of the results. My (subsequent) role was merely to expand the consultants' graphic analysis, form hypotheses, and examine correlations.

The troupe wrongly claims that I pursued a case for "conclusive evidence of 'no harm'". They read what was not there. In fact I only made a case for a null hypothesis based on no correlation, which was not refuted.

The troupe noticed that I made no mention of cumulative effects. It is hard to conceive effects accumulating, within or among shoreline reaches, if there are no effects to put into the pile in the first place. And near-zero association of habitat welfare with stressors suggests that increasing, say, bulkheads won't increase their effects. I made similar points relative to restoration and no net loss.

The troupe claims wrongly that the linear regression part of my statistical analyses was inappropriate because the "...variables are unlikely to have followed a normal probability distribution". In fact that problem is of minor concern.<sup>10</sup> Indeed, no alternative analytical approach was suggested by the troupe.

It is significant that the troupe mentions little of their own research, nor puts forward any "more-correct" analysis of the data I used; nor did they provide data from some other source that would refute (or support) what I did.

I invite readers to replicate my analysis; the data is in the public domain<sup>11</sup> and the methods are standard and well-known to those with even first-year knowledge of statistical analysis.<sup>12</sup> Even better would be analysis of data from a different part of Puget Sound. Meanwhile the Bainbridge 201-reach data set may be the best nearshore stressor-habitat array we have for Puget Sound.

### **Incidentally**

Support for my no-harm hypothesis comes from the neighborhood of one of my analysis' sharpest critics. Eelgrass has declined abruptly in formerly prolific Westcott Bay, 7 miles from the Friday Harbor university laboratory. An early hypothesis there, based apparently on doctrine and soon refuted, blamed installed fixtures, including bulkheads. No significant correlation was found between structures and eelgrass welfare. So the causation premise was replaced by a new hypothesis involving low-tide summer-time tidewater temperature, a wholly natural phenomenon.

**Elsewhere,**

The Thurston County (Herrera) study<sup>13</sup>, about bulkhead effects on beach profiles, could well be repeated elsewhere. However a glitch developed in the indoor phase that resulted in greatly overstating the effects on profiles. I offer a flagon of Ivar's clam nectar, perhaps even lunch, to the first troupe member who can find the glitch.

The Rice study purported to estimate the effects of a bulkhead and tree shade on dessication of beach-laid surf smelt eggs. Guess which of these two factors actually caused the dessication.<sup>14</sup>

Tonnes did an excellent analysis of driftwood in the North Sound, that might lead to a book. I can suggest ten chapter titles. Contrary to the troupe's wrong assertion, Tonnes did conclude that surf-smelt egg mortality rose where beach temperatures were high, and that was where shade was reduced. His is one of the two sources I mentioned that show equality of subsurface fauna in front of bulkheaded versus unprotected shores.<sup>15</sup>

Unfortunately certain of the local studies mentioned by the troupe encountered confounding factors that I concluded, after visiting study sites, had compromised the studies' conclusions.

**The Grand Siam**

A troupe member has said that my report "would not be considered publishable by any journal". She may be surprised. She derided my peer reviews, which in fact were helpful. She warned that my paper must be "fought off". She said my report does not contain "facts". Perhaps graphics and statistical correlations are not "facts". The director of programs for People for Puget Sound has said that while my paper "is being cited at some local government meetings" it is too large [13 pages] for him to pass around. The troupe says it's too short. One blogger applauded my objectivity; another questioned it.

All because correlation is absent from 201 data sets.

## NOTES

1. 12877 Manzanita Road, Bainbridge Island, WA 98110. 206-842-0709.
2. Flora, D. F. 2009. *Evidence of Near-Zero Habitat Harm from Nearshore Development*. Bainbridge Island.
3. Williams, G. D., et al. 2004. *Bainbridge Island Nearshore Habitat Characterization & Assessment, Management Strategy Prioritization, and Monitoring Recommendations*. Sequim: Battelle Marine Sciences Laboratory.
- Borde, A. B., et al. 2009. *East Kitsap County Nearshore Habitat Assessment and Restoration Prioritization Framework*. Sequim: Battelle Marine Sciences Laboratory.
4. Contrary to the critique's claim, I examined the matters of normality and heteroscedasticity. However, again contrary to the troupe's complaint, normality is of little concern in correlation and regression analyses like these.
5. An undated "Comment on Evidence of near-zero habitat harm from nearshore development". This heading echoes the title of my November, 2009, analysis.
6. Shipman, Hugh. 2009. From an email to Puget Sound Shoreline Planners, published 14 August, 2009 on Bainbridge Shoreline Homeowners web site.
7. Finlayson, David. 2006. *The Geomorphology of Puget Sound Beaches*. Puget Sound Nearshore Partnership Report 2006-02. Seattle: Washington Sea Grant.
8. Flora, Don. 2009. *A Perspective on Shoreline Policy, Technical Issues, Some Studies at Hand, and the Research Void*. Bainbridge Island. Available from the author.
9. One wonders how many of the troupe are doing personal, quantified research on reaction of habitats or creatures to natural or imposed stressors in accord with peer-reviewed study plans.
10. See, for example, Zar, Jerrold H. 2003. *Biostatistical Analysis*. A more common concern is heteroscedasticity, which is not present in these data sets.
11. The total data set that I used corresponds to a score of columns with just over 700 rows. The data are on the Web. In cover letters I have offered to help with data and their analysis.
12. Some alternatives, if preferred by the reviewers, could be nonlinear or nonparametric analyses. However the relevant conclusions are apparent from the scatter plots: Habitat welfare varies widely for any stressor level, and increasing stressor levels does not increase impacts.
13. Herrera Environmental Consultants. 2005. Marine shoreline sediment survey and assessment, Thurston County, Washington. Seattle.

14. Rice, Casimir A. 2006. Effects of shoreline modification on a northern Puget Sound beach: Microclimate and embryo mortality in surf smelt. *Estuaries and Coasts* 29(1):63-71; The same single-site 5-day comparison appears as a chapter in his University of Washington thesis.

15. Tonnes, Daniel M., 2008. Ecological functions of marine riparian areas and driftwood along north Puget Sound shorelines. Master's thesis, School of Marine Affairs, University of Washington.

FIGURE 1

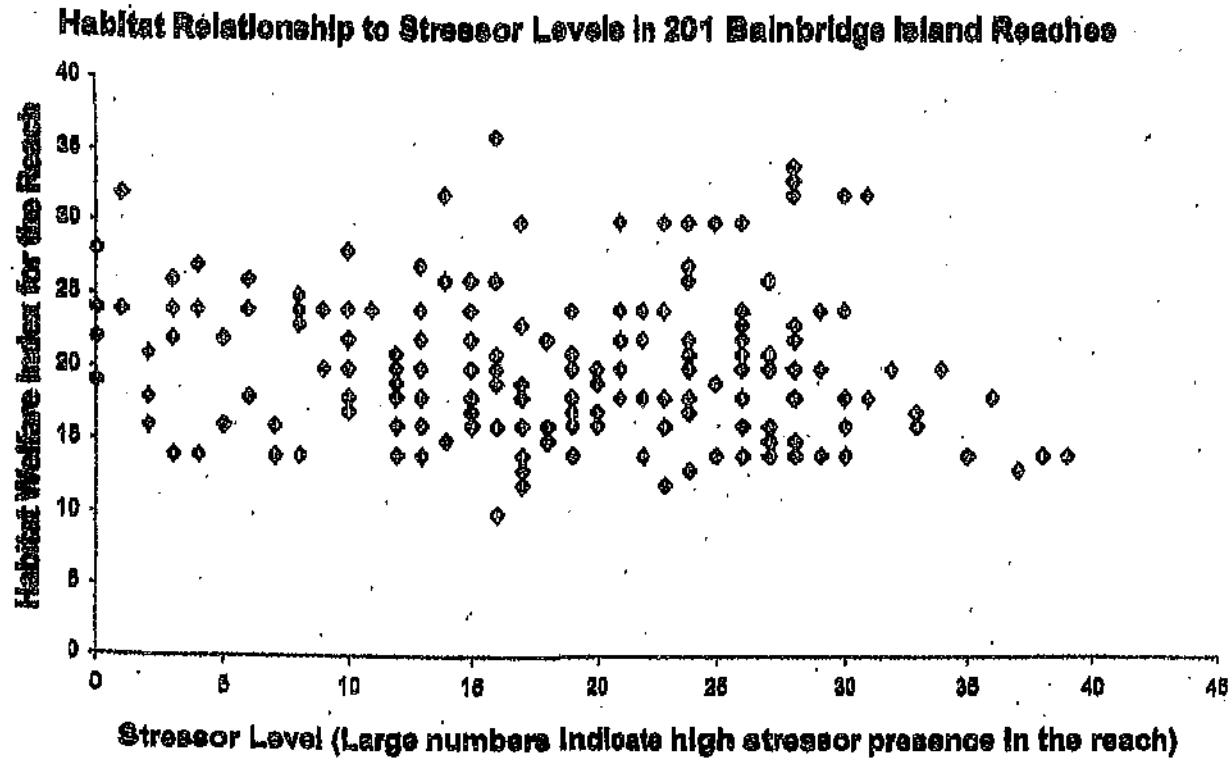
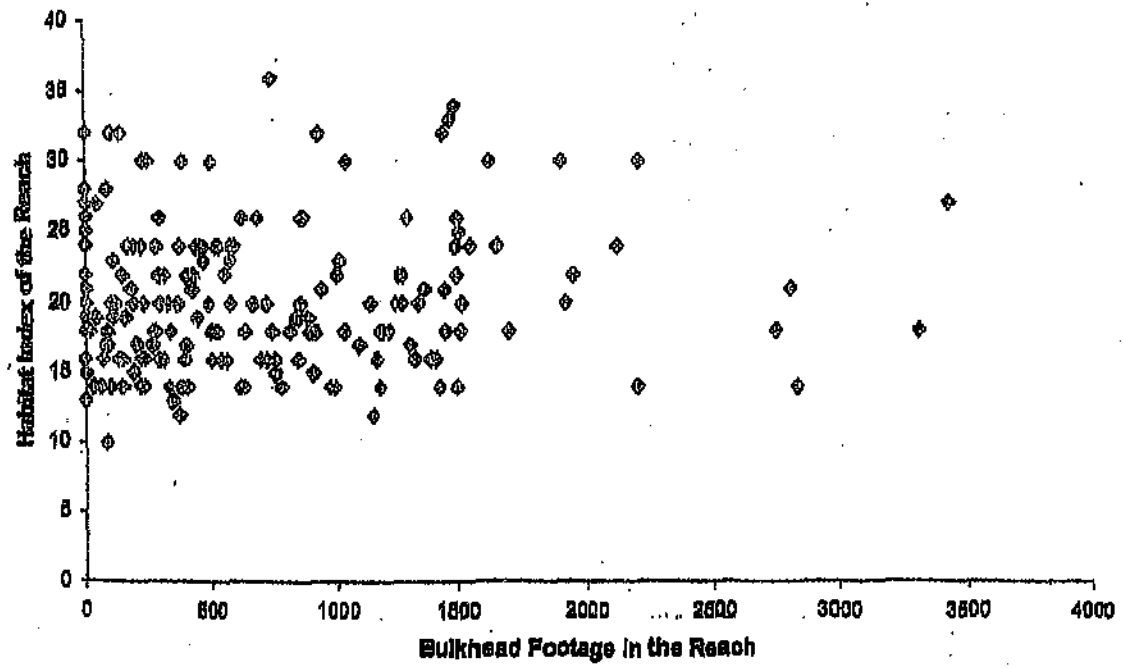


FIGURE 2

**Habitat Relationship to Bulkheads in 201 Bainbridge Island Reaches**



# **EXHIBIT 7**





# Puget Sound Shorelines and the Impacts of Armoring:

State of the Science

## Abstracts and Conference Proceedings

Shoreline Armoring on Puget Sound Workshop  
May 12-14th, 2009

Puget Sound Shorelines and the Impacts of Armoring

Page 1 of 1

[Impacts of shoreline armoring on sediment dynamics \(PDF, 2.12 MB\)](#)

Peter Ruggiero  
Department of Geosciences  
Oregon State University

The shores of Puget Sound are rapidly being hardened and covered with artificial structures. While shoreline armoring often succeeds in protecting upland investments, shoreline armoring activities are hypothesized to represent a significant source of nearshore morphodynamic and marine habitat modification in Puget Sound.

Shoreline armoring is believed to affect physical processes in many ways, primarily by causing beach narrowing, sediment coarsening, and a decrease in the natural sediment supply from eroding bluffs. Shoreline armoring is also thought to affect biological processes through loss of upper intertidal habitat, changes in sediment composition, and decreased organic input. However, it has not been confirmed in the field or the laboratory whether currents and sediment transport rates will increase or decrease in front of a hardened shoreline, as compared to a non-armored section of beach, and whether the sedimentary environment will be significantly modified. The effect of seawalls on beaches has been found to be most sensitive to the position of the seawall within the surf zone, the beach slope, and the reflection coefficient. This talk will describe a conceptual model of seawall impacts on sediment dynamics and suggest pilot investigations specific to the Puget Sound consisting of beach monitoring, field experiments, and modeling efforts.

### **Peter Ruggiero**

Peter Ruggiero is an Assistant Professor in the Department of Geosciences at Oregon State University. Peter's current research interests include applied coastal geomorphology and developing methodologies for assessing vulnerability to coastal hazards particularly in light of a changing and variable climate. Peter Ruggiero earned a bachelors degree in Civil Engineering from Lehigh University in 1991 and a Ph.D. in Coastal Engineering from Oregon State University in 1997. Following his graduate work, Peter worked for the state of Washington as a principal investigator of the Southwest Washington Coastal Erosion Study. This multi-year effort developed a quantitative understanding of the regional sediment dynamics of the Columbia River littoral cell. Peter then worked for the US Geological Survey in Menlo Park, CA between 2001 and 2005 getting involved in coastal studies in Alaska, North Carolina, and Sumatra. Since 2006 Peter has been at Oregon State University focusing on a variety of projects quantifying and assessing the vulnerability of communities to coastal hazards.

# Impacts of Shoreline Armoring on Sediment Dynamics: State of (my) knowledge



Peter Ruggiero

*Dept. of Geosciences  
Oregon State University*

*Puget Sound Shoreline and Impacts of Armoring Workshop*

*13 May 2009*

# Hypothesis

**Shoreline armoring activities represent one of the most dramatic sources of nearshore morphodynamic and marine habitat modification in Puget Sound.**



Photo: Hugh Shipman

# However

**It has not yet been (conclusively) confirmed in the field or the laboratory whether currents and sediment transport rates will increase or decrease in front of a hardened shoreline, as compared to a non-armored section of beach!!**



Photo: Gary Grigg

# Seawalls have been implicated in the following:

- Formation of scour troughs
- Beach lowering
- End scour
- Up-coast accretion
- Down-coast erosion
- Far down-coast shoals
- Reflection bars
- Delayed post-storm recovery
- Grain size modification
- Etc...

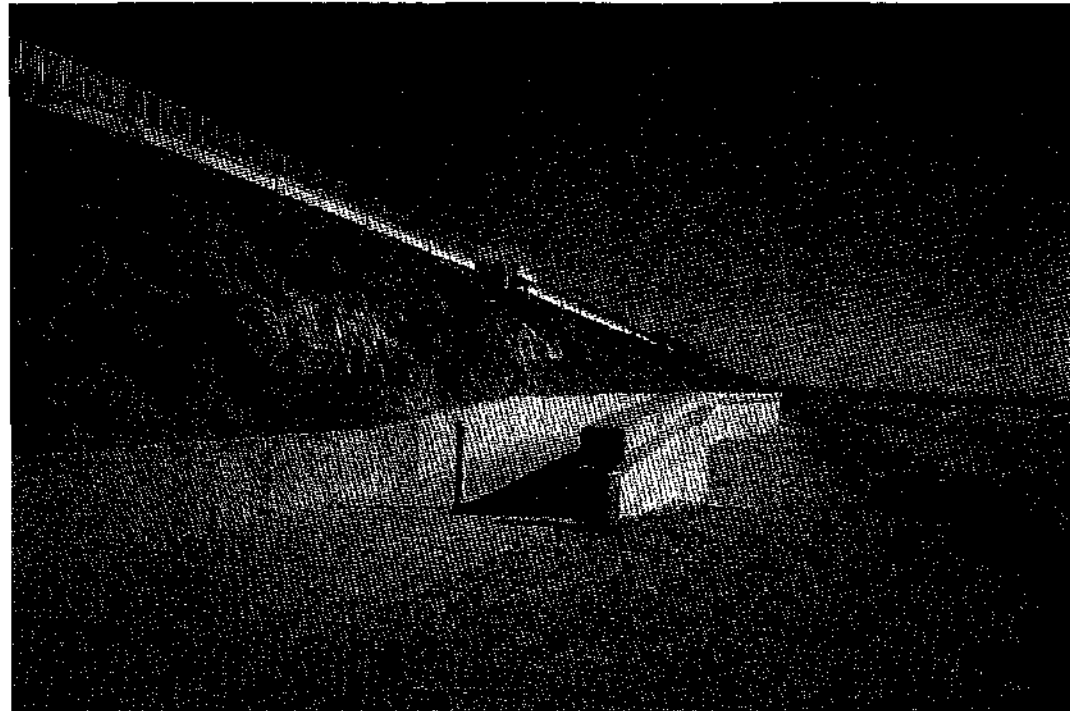
POSSIBLE EFFECTS OF SEAWALLS ON ADJACENT SHORELINES AND BEACHES

No.	Possible Effect	Sketch
1	Causes local scour (a) Toe of seawall (b) Endwall effects	(a) section: seawall, WSL, toe scour (b) plan: seawall, shoreline, endwall scour, waves
2	Causes beach fronting seawall to diminish in width	(a) Barrier Island Retreat: year 1, year 2, retreat rate, moves (b) Seawall: year 1, year 2, retreat rate, plan
3	Causes acceleration of beach erosion rate	(a) natural: year 1, year 2, MLW, erosion rate, fixed dune (b) seawall: year 1, year 2, MLW, increase erosion rate, plan
4	Causes downdrift erosion	updrift accretion, downdrift erosion, normal shoreline position, protruding seawall, plan, waves
5	Causes delay in post-storm beach recovery	normal land recovered profile, storm profile, WSL, section
6	Causes beach profile to steepen	WSL, normal beach profile, sleeper, section
7	Serves no purpose if located well back on stable beach	berm, beach face, WSL, section
8	Causes increase in longshore sediment transport rate	natural dune, seawall, natural dune, $Q_2 > Q_1$ , plan
9	Causes sand transport substantial distance offshore	WSL, storm profile, normal profile, section
10	Other	

Dean, 1986

# Affected processes include:

- **Sediment impoundment (groin effect)**
- **Removal of upland sand from the sediment budget**
- **Wave reflection**
- **Acceleration of longshore currents**
- **Increased sediment mobilization**
- **So on...**



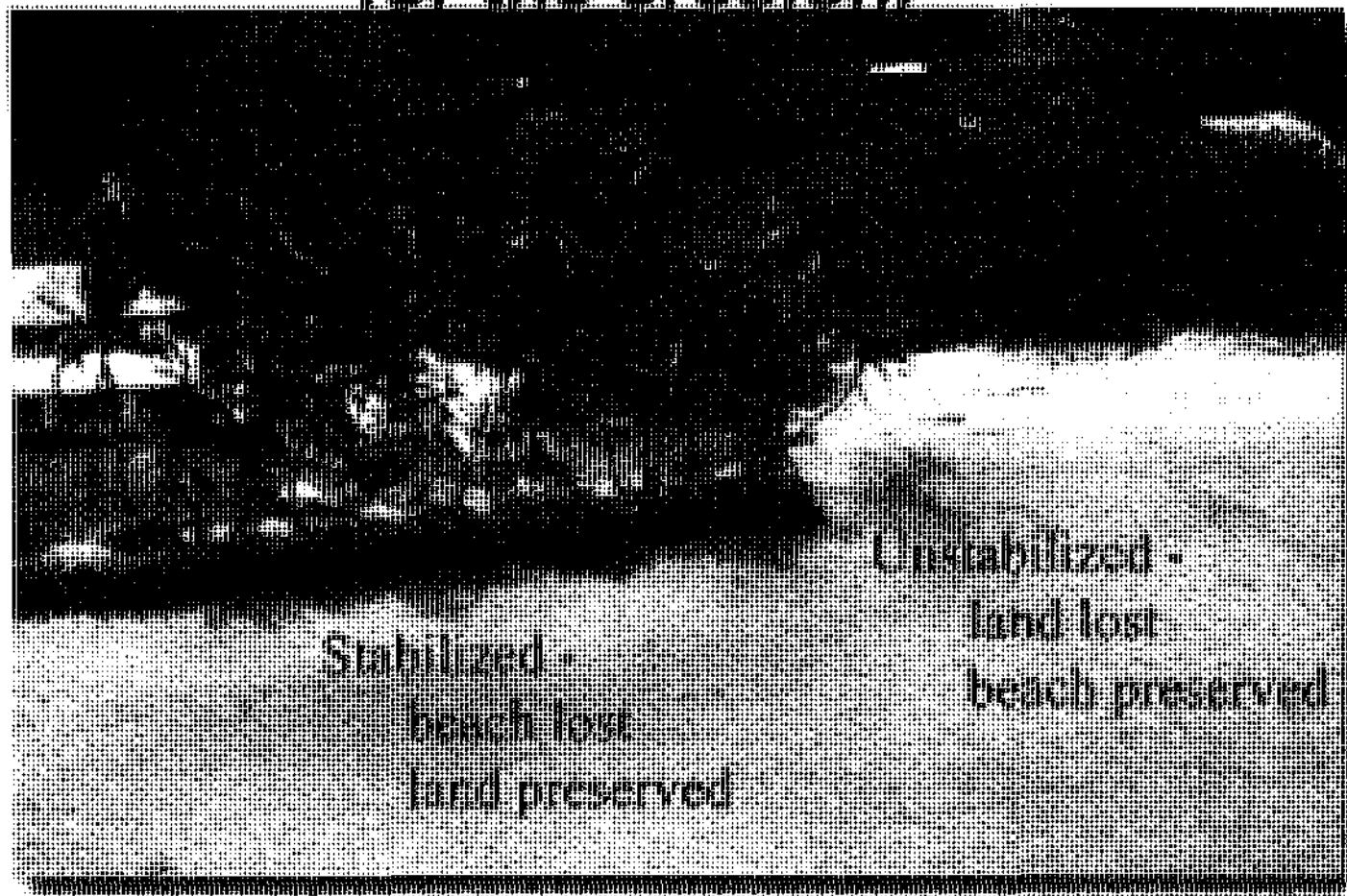
# Suggested controls on how these processes affect beach

- **Long-term coastal change (passive erosion)**
- **Storm events (active erosion)**
  - **Position of seawall relative to surf zone**
  - **Width of surf zone**
  - **Sediment supply**
  - **Wave characteristics**
  - **Seawall design characteristics**



Photo: Gary Griggs

# Passive erosion: Loss of beach due to fixed barrier but the seawall is not necessarily culpable for the erosion.



Fletcher et al., 1997. Seawalls have 'caused the narrowing of 17.3+- 1.5 km and loss of 10.4 +- 0.9 km of sandy beach' over a 50 -70 yr period. ~24% of the original sandy shoreline of Oahu.



**Kraus, N., 1987, 1988. The effects of seawalls on the beach: A literature review, Proceedings of Coastal Sediments, Journal of Coastal Research**

**Critical review of laboratory, field, and theoretical studies (over 100 citations):**

**Little quantitative information is available on the effects of seawall on the beach!!!**



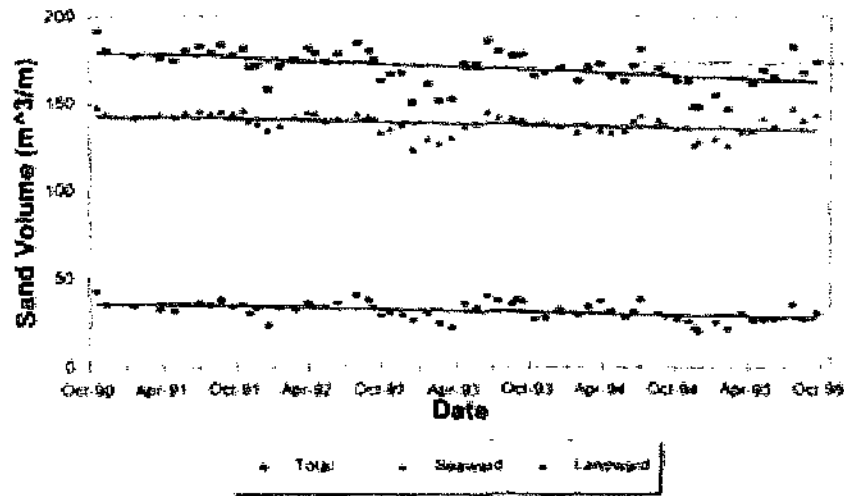
## **Recommendation: Initiate comprehensive monitoring programs**

**California (1986-1994) :** ‘A comparison of summer and winter beach profiles on beaches with seawalls and on adjacent control beaches show no significant long term effects or impacts of seawalls during this seven year period.’ (Griggs and co-workers early 90’s)

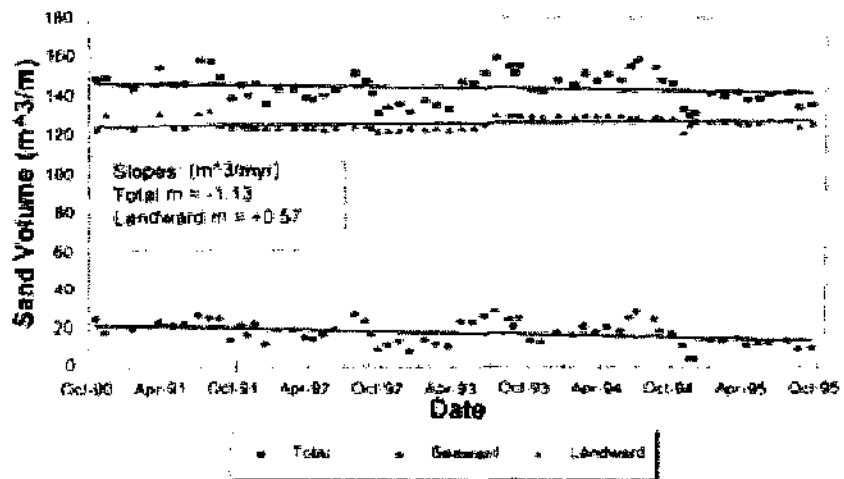
**Virginia (1980-1992):** ‘The results at three time scales (storm seasonal and interannual) and from the three analysis methods all supported the same conclusion, namely: the volume erosion rates are *not higher* in front of seawalls.’ (Basco and co-workers mid 90’s)

**Oregon (1986-1998):** ‘Ten years of monitoring has revealed that the structures at these seven sites are having no adverse impacts on the surrounding beach or adjacent properties.’ (Hearon and McDougal, 1996)

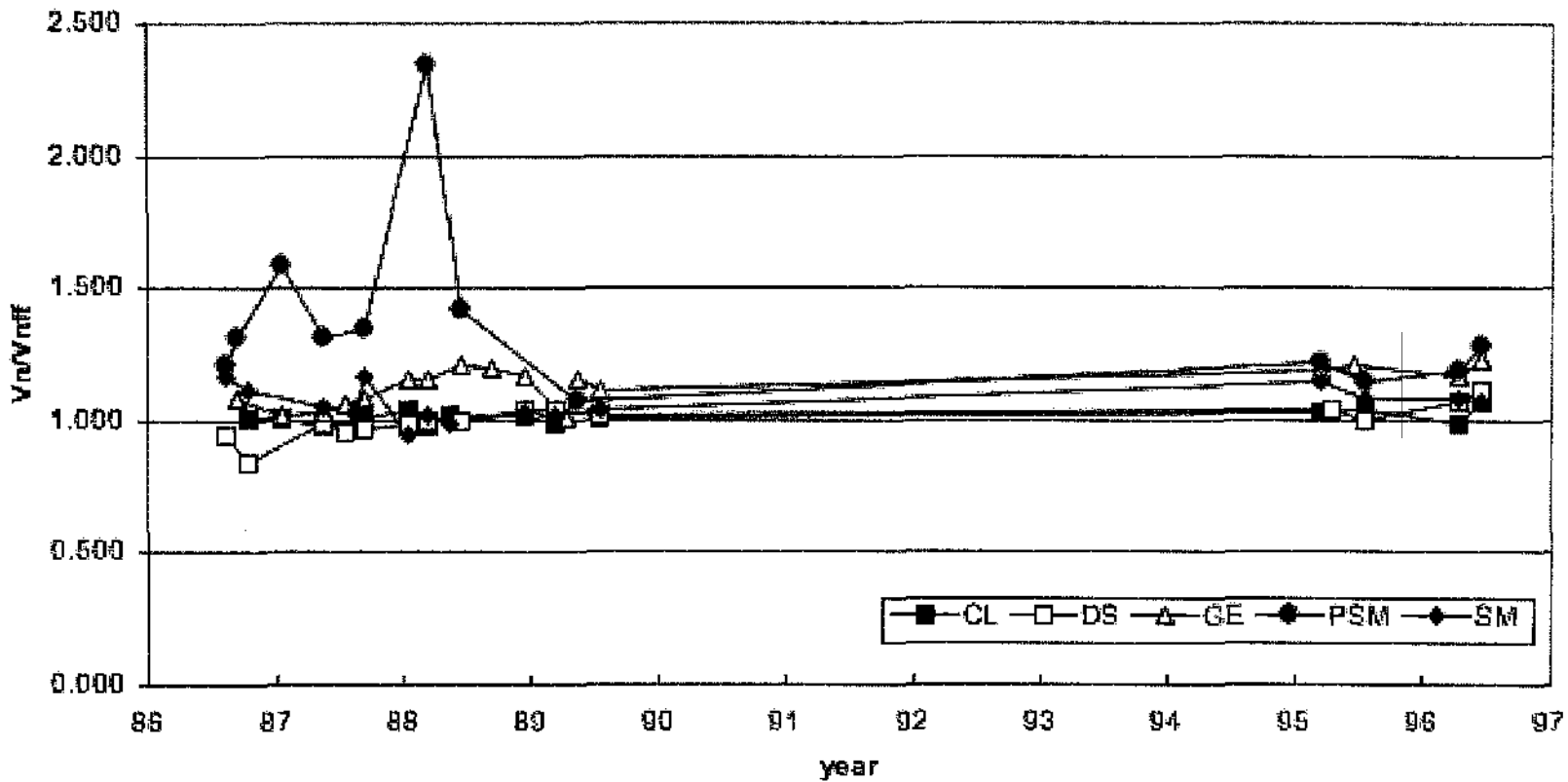
(a) WAM Dune Profile Sand Volumes



(b) WAM Wall Profile Sand Volumes



Basco et al., 1997. Walled and unwalled sections are not Statistically different along Sandbrige, VA



Hearon and McDougal, 1996. Near field volume/far field Volume for 5 Oregon sites.

## Weggel's (1988) Seawall Classifications

Type	Location of Seawall
I	Landward of maximum storm runup
II	Above SWL of max storm surge and below the level of the max runup
III	Above MHW and below SWL of storm surge
IV	Within the normal tide range; base is submerged at high water
V	Seaward of MLLW; base is always submerged; subjected to breaking or broken waves
VI	So far seaward that incident waves do not break on or seaward

**Kraus, N. and McDougal, W.G. 1996, The effects of seawalls on the beach: An updated literature review, Journal of Coastal Research.**

**Reflection is not a significant contributor to (2D) beach profile change and scour during a storm event.**

**Recommendation: Investigate alongshore processes**



Video Carl Schoch

**Rakha and Kampuis, 1997. A morphology model for an eroding beach backed by a seawall, Coastal Engineering, 30, 53-75.**

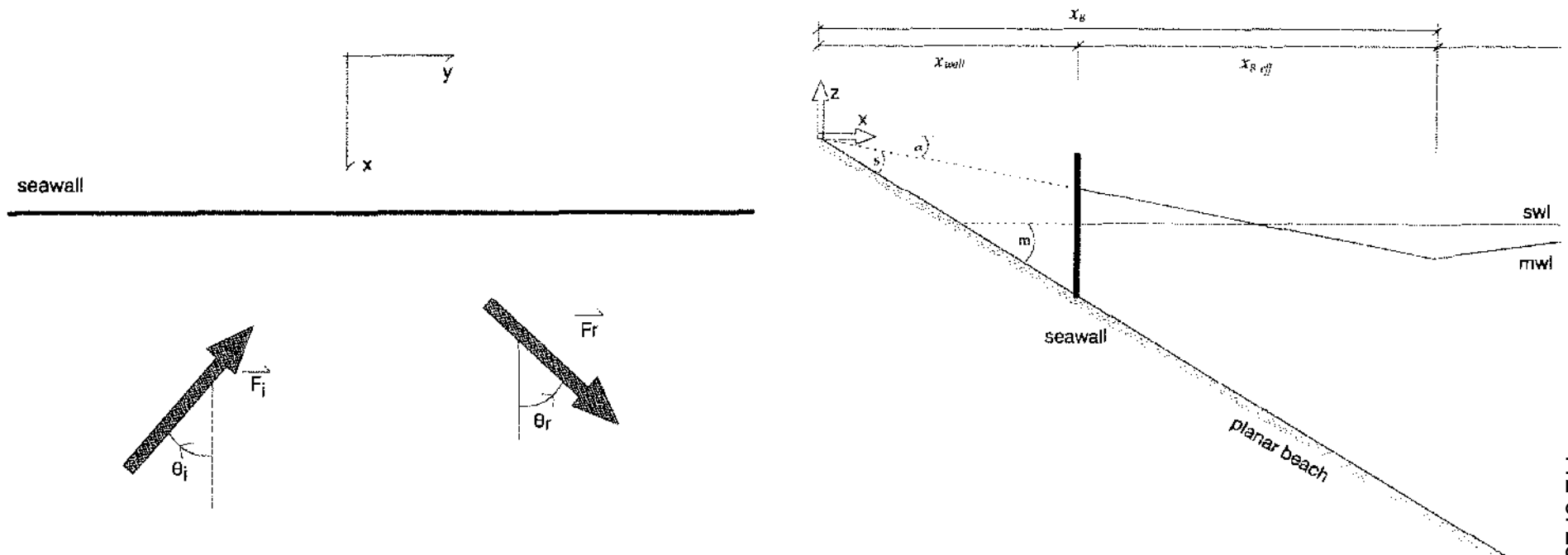
- Reflected waves reduce the undertow, and have a small effect on the longshore current.
- Reflected waves have a small effect on beach profile evolution.
- Reflected waves reduce erosion close to the seawall.

**Miles et al., 2001. Field measurements of sediment dynamics in front of a seawall, Journal of Coastal Research, 17(1), 195-206.**

- Mean suspended sediment concentrations were found to be up to 3 times larger in front of the wall than on the natural beach.
- The longshore current in front of the wall was stronger than that observed on the natural beach.
- This combination resulted in a longshore sediment transport rate which was an order of magnitude greater in front of the wall.

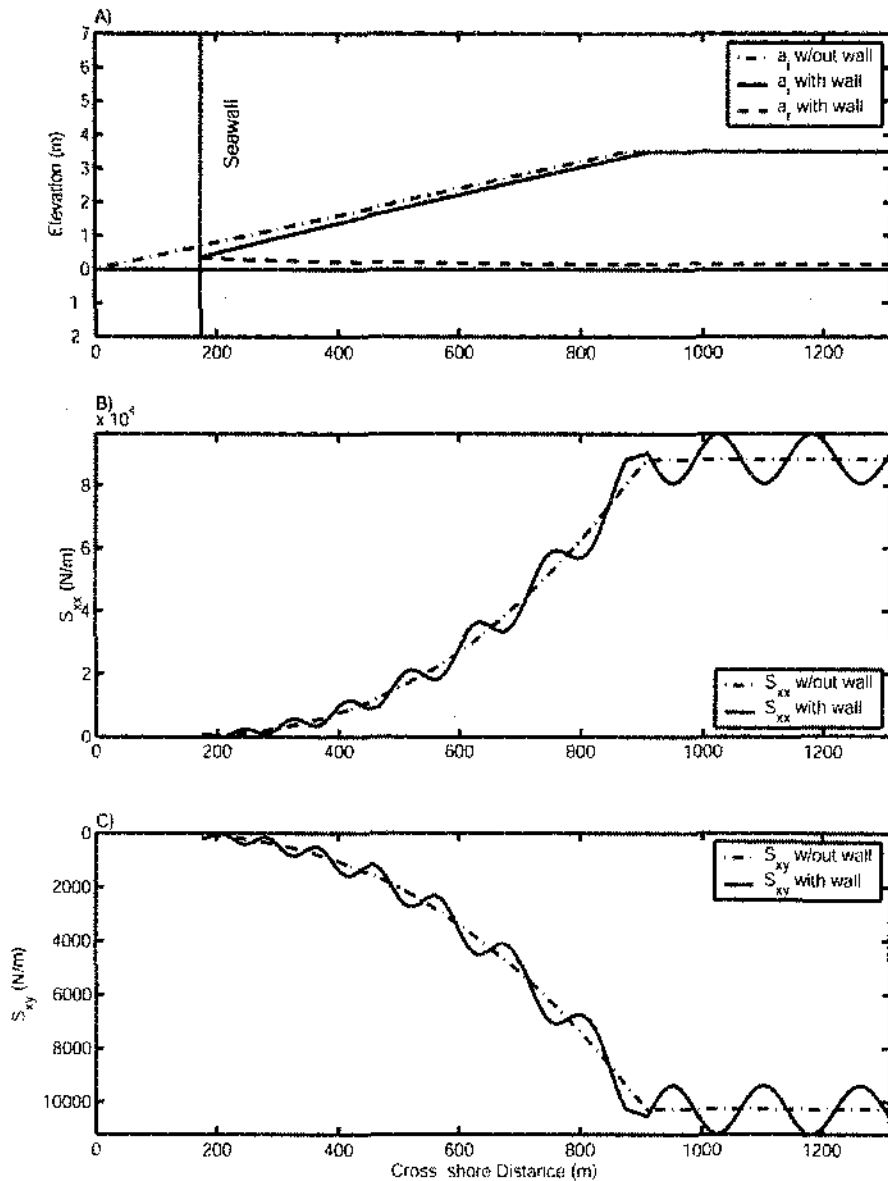
**Ruggiero, P. and McDougal, W.G. 2001, An analytic model for the prediction of wave setup, longshore currents, and sediment transport on beaches with seawalls, Coastal Engineering, (43), 161-182.**

**Longshore currents and sediment transport on beaches backed by walls can be MORE OR LESS than that for a natural beach!**



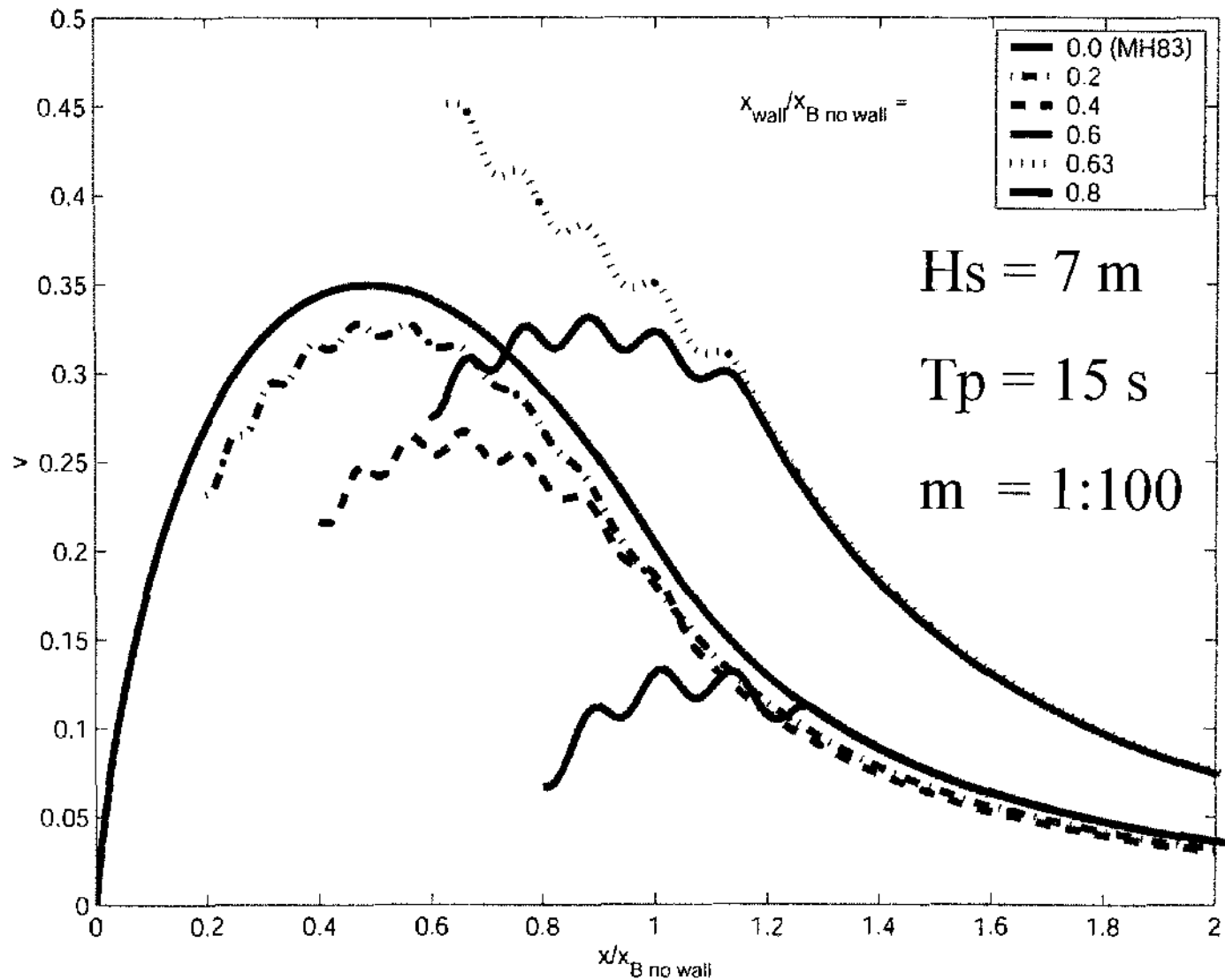


# Effect of Seawall on Nearshore Processes

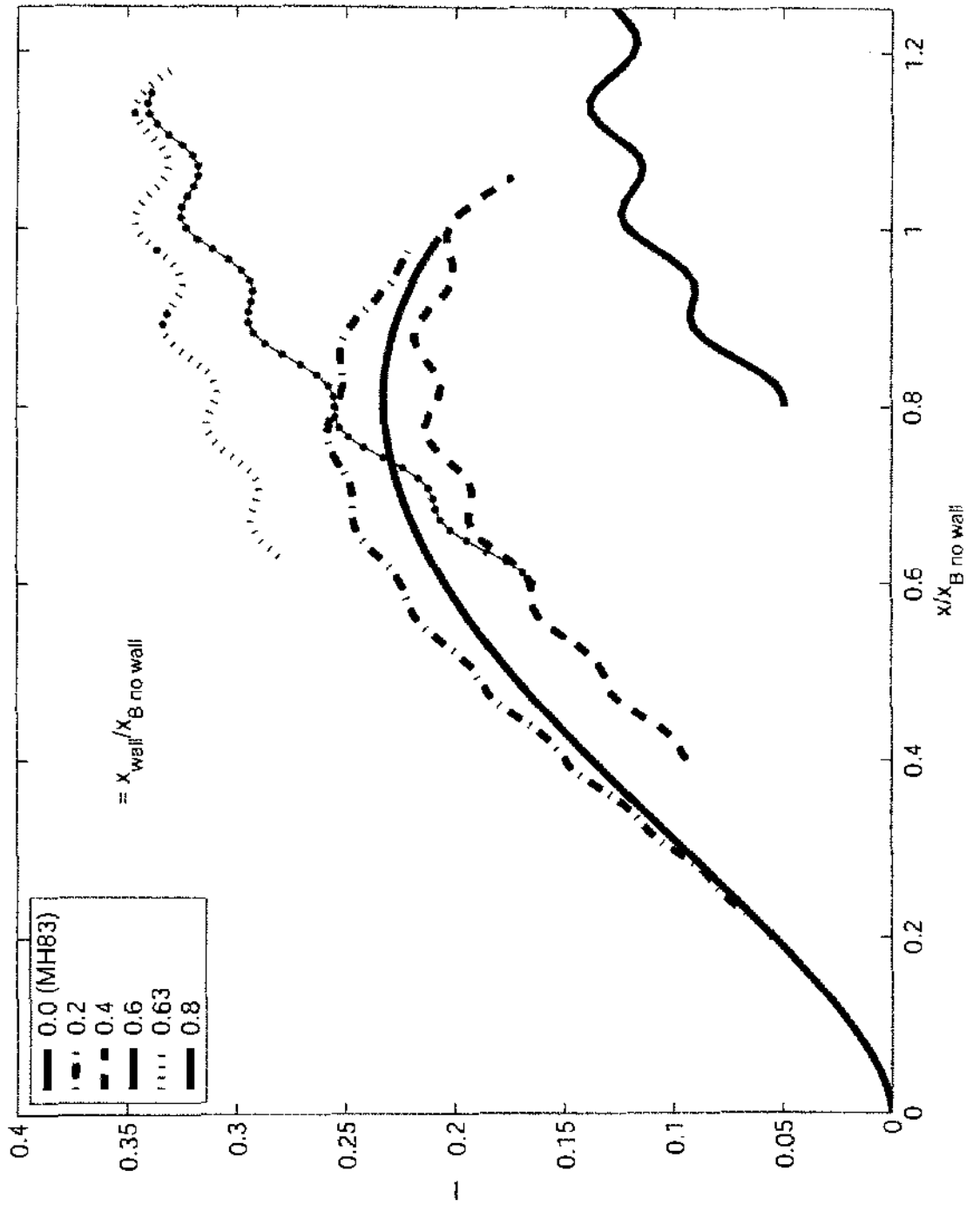


1. Breaking position moves seaward
2. Effective surf zone width is reduced
3. Cross-shore distribution of radiation stresses, wave setup, and bottom stress are modulated by a partial standing wave
4. Ratio of wavelength to beach slope determines number of oscillations in surf zone

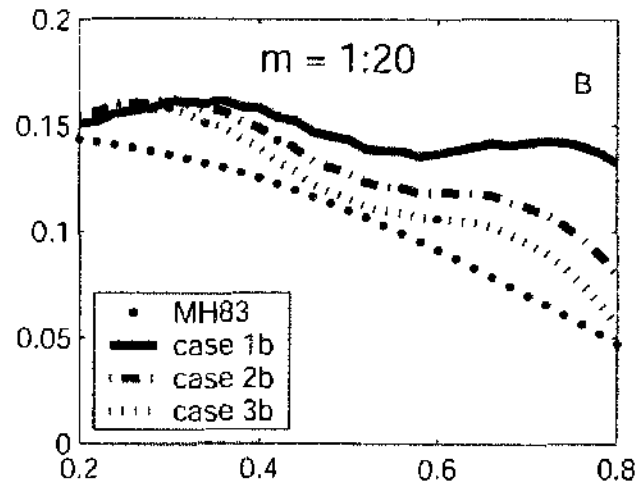
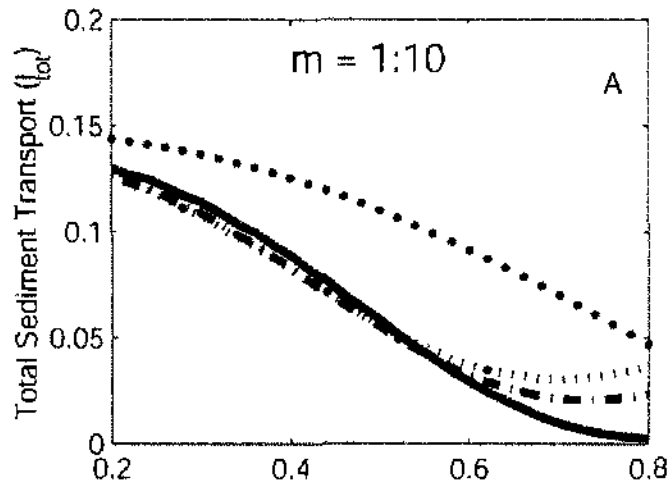
# Effect of Seawall on Longshore Current Velocity



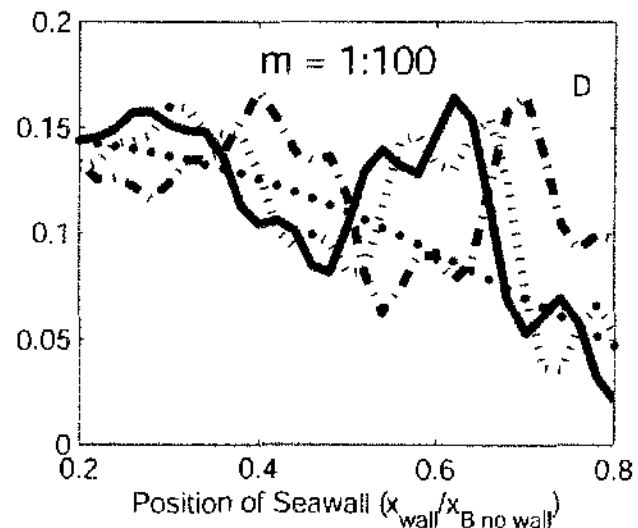
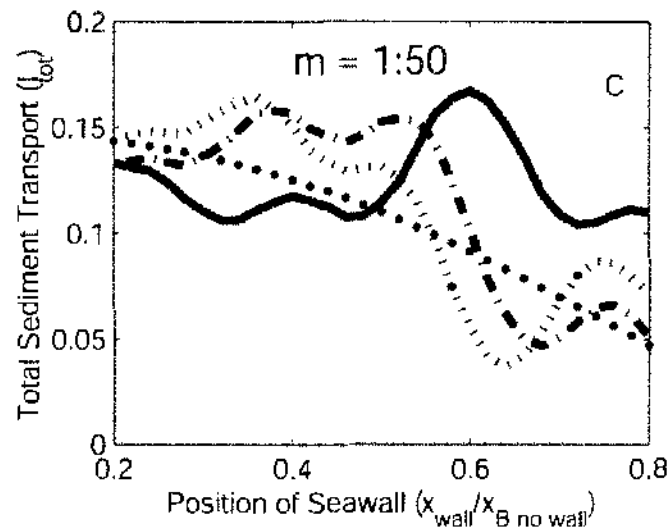
# Effect of Seawall on Longshore Sediment Transport



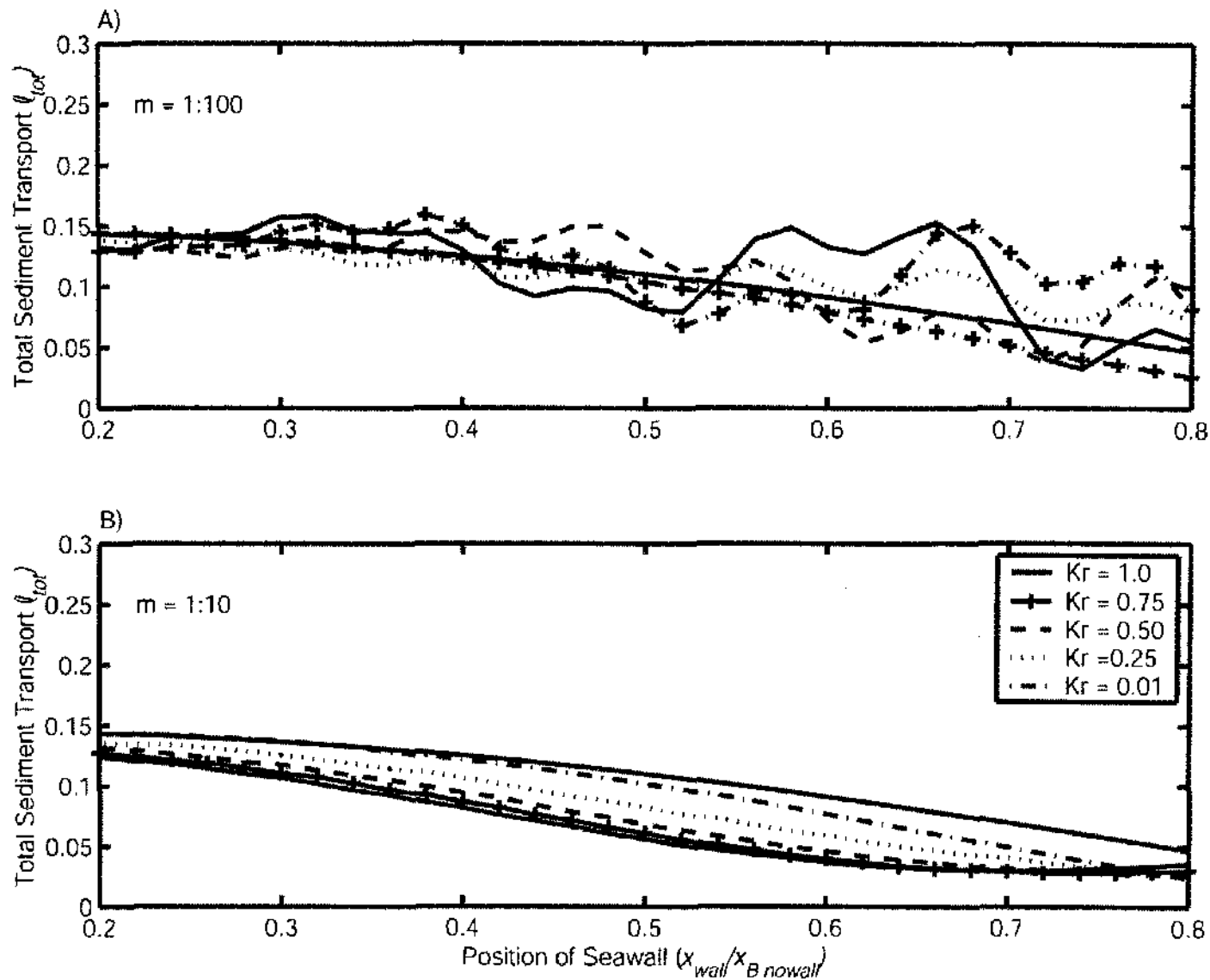
# Effect of Seawall on Total Longshore Sediment Transport



1.  $H_s=1.0 \text{ m}, T=6 \text{ s}$
2.  $H_s=3.0 \text{ m}, T=10 \text{ s}$
3.  $H_s=7.0 \text{ m}, T=15 \text{ s}$



# Effect of Reflection Coefficient on Longshore Sediment Transport



# Summary

- **The debate about the influence of seawalls on beaches has not been resolved!**
- **A simple analytical model sheds light on the confusion found in the literature; but there is much more to do.**
- **The effect of seawalls on beaches appears to be most sensitive to the position of the seawall in the surf zone, the beach slope, and the reflection coefficient.**

# **Suggested Future PS Research**

- **Synthesize existing inventories of armoring trends; identify field sites for field experiments and modelling efforts; quantify % of PS shoreline suffering from passive erosion?**
- **Investigate the interactions between seawalls and active nearshore processes via examination of the following: Random high frequency waves, complicated beach morphology and mixed sediment environment, variable water levels changing position of seawall relative to surf zone.**
- **Quantify rates (volume) of sediment source reduction due to shoreline armoring.**
- **Investigate the linkages between shoreline armoring and biological impacts.**

# Suggested Approach

- **Investigate seawall impacts via beach monitoring, field experiments, and modeling efforts.**
  - **Nearshore morphology monitoring: both walled/no-walled sections of coast. Separate short-term morphodynamic variability (active) from interannual or longer-term shoreline change trends (passive).**
  - **Field experiments: examine the cross-shore and alongshore hydrodynamics and sediment transport characteristics on walled/no-walled sections of coast.**
  - **Numerical models: examine the cross-shore and alongshore hydrodynamics and sediment transport characteristics on beaches backed by seawalls.**



## **EXHIBIT 8**

## Does science justify bulkhead rules?

Published August 14, 2009 Best Available Science , Regional Planning 16 Comments

*from an email to Puget Sound Shoreline Planners by Hugh Shipman,  
Coastal Geologist, WA Department of Ecology (emphasis added)*

Shoreline armoring (seawalls, bulkheads, riprap) is one of the more challenging issues we all deal with on Puget Sound. In May, a group of us (Ecology, WDFW, UW, Corps, USGS) organized a three-day workshop intended to pull together the **limited amount of science** that has been done the effects of armoring. Our focus was the applicability to Puget Sound, but we tapped experts from around the country.

The workshop confirmed 1) **the challenges of managing armoring** -- not just here, but everywhere, 2) **the limited scientific research** that has been done on the impacts of armoring on either geologic or ecologic processes; and 3) **the difficulty of applying the science that has been done elsewhere** to Puget Sound given the unique aspects of our system.

The event was a big step forward, and will likely be significant at the national level as well as within our own region, but **it also showed just how difficult addressing this issue will be at both the scientific and political levels.**

A full description of the workshop and the presentation materials can be found on the U.S. Geological Survey website. A Proceedings document will be published by the USGS by early 2010. When they are, we will publish a link on this website.

**EXHIBIT 9**

# Puget Sound Shorelines and the Impacts of Armoring:

State of the Science

## Abstracts and Conference Proceedings

Shoreline Armoring on Puget Sound Workshop  
May 12-14th, 2009  
*Speakers Schedule*

Tuesday, May 12

### Session #1 Introduction and Puget Sound Context

8:30-10:10 am *Welcome and Introductions* (Hugh Shipman)

- **Guy Gelfenbaum (USGS)**  
*Workshop Goals and Objectives (PDF, 1.7 MB)*
- **Tim Quinn (WA Dept of Fish and Wildlife)**  
*Context of Puget Sound Shoreline Issues*
- **Hugh Shipman (WA Dept of Ecology)**  
*The Geologic Setting of Puget Sound Beaches*  
*Shoreline erosion on Puget Sound: Implications for the construction and potential impacts of erosion control structures*

10:10-10:40 Break

### Session #2 Ecological and Regulatory Setting

10:40-12:00

- **Megan Dethier (UW Friday Harbor Labs)**  
*The Ecology of Puget Sound Beaches*
- **Doug Myers (People of Puget Sound)**  
*Shoreline development on Puget Sound (PDF, 1.16 MB)*
- **Randy Carman/Kathy Taylor (WA Dept of Fish and Wildlife)**  
*Regulating Shoreline Armoring in Puget Sound*

12:00-1:00 Lunch

### Session #3 National Perspectives on Armoring

1:00-2:00

- **Karl Nordstrom (Rutgers)**  
*Mitigating the Effects of Bulkheads on Estuarine Shores: An Example from Fire Island National Seashore*
- **Jim O'Connell (Hawaii Sea Grant)**  
*Shoreline Armoring Alternatives and Concerns along Massachusetts' Southern Shores and Kauai, Hawaii (PDF, 5.25 MB)*
- **Gary Griggs (UC Santa Cruz)**  
*The Effects of Armoring Shorelines - The California Experience*

2:00-2:30 Break

Home
Workshop Description
Links
Program and Schedule
Abstracts / Presentations
Attendees

**Session #4 Coastal Geological Processes**

- **Paul Komar (Oregon State University)**  
*"Design with Nature" Strategies for Shore Protection: Successes and Limitations of a Cobble Berm in an Oregon State Park*
- **Jim Johannessen (Coastal Geologic Services)**  
*Assessing sediment supply and beach condition in Central Puget Sound*
- **Phil Osborne (Golder Associates)**  
*Observations of gravel transport and morphological response on a supply-limited beach backed by bulkheads and exposed to waves, wakes, and tidal currents, Point White, Bainbridge Island*
- **Guy Gelfenbaum** Poster Orientation

3:45-5:30 Poster Session No host bar

5:45-7:00 Dinner

**Wednesday, May 13****Session #5 Beach Processes and Ecological Response I**

8:30-9:30

- **Casey Rice (NOAA)**  
*Biological effects of shoreline modification in Puget Sound: Case studies and future directions*
- **Jason Toft (University of Washington)**  
*Shoreline Habitats and Restoration along Urbanized Sections of Central Puget Sound: Fish and Invertebrate Response*
- **Kirk Krueger (WA Dept of Fish and Wildlife)**  
*Anticipated Effects of Sea Level Rise on Beach-spawning Fishes in Puget Sound*

9:30-10:00 Break

**Session #6 Beach Processes and Ecological Response II**

10:00-11:00

- **Peter Ruggiero (Oregon State University)**  
*Impacts of shoreline armoring on sediment dynamics*
- **Jenifer Dugan/David Hubbard (UC Santa Barbara)**  
*Ecological effects of coastal armoring on sandy beaches in southern California*
- **Nancy Jackson (NJ Institute of Technology)**  
*Armoring of estuarine shorelines: geomorphic-biotic relationships in Delaware Bay*
- **Hugh Shipman** Field Trip Orientation

11:30-9:00 Field Trip

**Thursday, May 14****Session #7 National Context and Human Dimensions**

8:30-10:10

- **Susan Roberts (National Research Council, Washington, D.C.)**  
*NRC Study: Mitigating Shore Erosion on Sheltered Coasts*
- **Carolyn Currin (NOAA, North Carolina)**  
*The living shoreline approach to estuarine shoreline stabilization*
- **Tom Leschine (UW School of Marine Affairs)**  
*Human Dimensions of Nearshore Restoration and Shoreline Armoring*
- **9:40-10:00** Observations/Impressions following field trip

10:10-10:40 Break

**Session #8 Management Needs for Improved Science**

10:40-12:00

- **Paul Cereghino (WA Dept of Fish and Wildlife)**  
*Shoreline armoring, capital grants, and ecosystem restoration*
- **Bob Barnard (WA Dept of Fish and Wildlife)**  
*Developing design guidance for Puget Sound marine shore modifications*
- **Peter Namtvedt Best (City of Bainbridge Island)**  
*Local government needs and approaches to shoreline armoring*

12:00-1:00 Lunch

**Session #9 Known Linkages - working with models**

1:00-2:40 Breakout Groups

- Geology-biology links
- Climate Change
- Social and Institutional

2:40-3:00 Break

**Session #10 Data Gaps and Science Needs**

3:00-5:00 Breakout Groups

- Physical
- Biological
- Social and Management
- **Curtis Tanner (WA Department of Fish and Wildlife)**  
*Summary Comments*

**Context of Puget Sound Shoreline Issues (PDF, 5.4 MB)****Tim Quinn**

Timothy Quinn is Chief Scientist of the Habitat Program at the Washington Department of Fish and Wildlife. Tim received his MS degree in Physiological Ecology in 1987 and his doctorate in wildlife ecology from the University of Washington in 1992. Since 2000, Tim has been an adjunct faculty at The Evergreen State College where he teaches Conservation Biology in the Masters of Environmental Studies Program.

**The Geologic Setting of Puget Sound Beaches (PDF, 2.9 MB)**

Hugh Shipman (WA Dept of Ecology)

**Abstract**

Puget Sound occupies a complex network of deep glacial channels and basins within a landscape characterized by thick deposits of late Pleistocene glacial drift and fluvial sediment. The result is a steep, convoluted shoreline dominated by coastal bluffs and narrow, mixed sand and gravel beaches. The Sound contains 3000 km of coastline, half of which consists of bluffs and small barriers, with the remainder including bedrock shores, several large river deltas, and hundreds of sheltered estuaries and back-barrier lagoons.

The bluffs vary significantly in height, composition, and morphology. Eroding bluffs provide the primary source of sediment to local beaches, although small streams may contribute sediment within some reaches. In most areas, larger rivers are not believed to be a significant source of beach sediment. The complex shape of the shoreline, combined with the fetch-limited wave environment, leads to the division of the coast into hundreds of discrete littoral cells, each with its own sources and sinks of sediment. Wave action is often highly oblique to the shore, emphasizing the role of longshore sediment transport in shaping coastal landforms. Redistribution of coastal sediment has resulted in widespread occurrence of small spits, cusped forelands, and other barrier forms.

The tidal range increases from about 2 m in the Strait of Juan de Fuca to 4 m in southern Puget Sound and exerts significant control over the interaction of waves with the shoreline. Beaches on Puget Sound typically exhibit a two-part profile, with a steep, coarse-grained beach face and a broad finer-grained, low tide terrace. Beaches are composed primarily of sand and gravel, although broken shell, cobble, and boulders are often common components. Beaches are laterally heterogeneous, reflecting the irregular shoreline orientation and complex wave environment, but also the fundamental role of geological factors such as the resistance to erosion of coastal bluffs and the nearshore platform, the variability in abundance and texture of local sediment sources, and the geomorphic evolution of landforms within individual littoral cells.

**Shoreline erosion on Puget Sound: Implications for the construction and potential impacts of erosion control structures (PDF, 3.77 MB)**

Hugh Shipman (WA Dept of Ecology)

**Abstract**

Much of Puget Sound's shoreline is subject to erosion, although the rates and mechanisms by which it occurs vary significantly. Important factors include the wave environment, the resistance of coastal materials to erosion (bedrock or glacial outwash), the geomorphic context (bluff, barrier beach, or artificially filled shoreline), and the character of the adjacent beach. Erosion and retreat of coastal bluffs is a complex function of wave-induced toe erosion, driven by high-tide storm events, and hillslope mass-wasting, typically triggered by heavy rainfall and elevated groundwater levels. In exposed settings, long-term erosion rates may exceed 10-20 cm/yr, although on most shorelines, long-term average rates are believed to be only a few cm/yr.

Seawalls and bulkheads are widespread on Puget Sound. The high value of coastal property and the relatively modest wave environment make armoring both desirable and practical. Residential-scale armoring typically involves the construction of rock, timber, or concrete seawalls, with riprap revetments more common in industrial settings. Currently, approximately one third of Puget Sound's shoreline is armored, although the proportion varies regionally due to differences in geology and development patterns.

Concerns about the potential impacts of armoring have increased in recent years, in part due to a greater awareness of the role of beaches and riparian zones in the greater Puget Sound ecosystem. Possible impacts associated with seawalls and bulkheads include burial and modification of back beach areas, changes in both the delivery and the transport of beach sediment within the littoral system, beach erosion or shifts in substrate size due to wave interactions with structures, loss of ecological connectivity between terrestrial and aquatic environments, and long-term loss of the upper beach due to passive erosion. These concerns have led to increased scrutiny of armoring proposals and growing interest in alternative technologies, including beach nourishment and hybrid structures employing large wood.

**Hugh Shipman**

Hugh Shipman has been a coastal geologist with the Shorelands and Environmental Assistance program of the Washington Department of Ecology since 1989. His work focuses on Puget Sound and his interests include coastal erosion, geologic hazards, beach restoration, and the environmental impacts of shoreline modification. He provides technical assistance to state and local agencies, conducts trainings and educational workshops for shoreline planners, resource managers, and coastal property owners, and participates on a variety of technical advisory groups. Hugh received a B.A. in Earth Sciences and Engineering from Dartmouth in 1981 and an M.S. in Geological Sciences from the University of Washington in 1986. He grew up near the coast of Maine, but moved to Seattle in 1983. Hugh is dangerously fascinated by shorelines and beaches and shares his obsession at [gravelbeach.blogspot.com](http://gravelbeach.blogspot.com).

---

**The Ecology of Puget Sound Beaches (PDF, 3.6 MB)**

Megan N. Dethier  
University of Washington, Biology Dept. and Friday Harbor Laboratories

**Abstract**

Shorelines in Puget Sound are diverse in terms of their geomorphology and their biotic communities. The long coastline of this estuary consists of a large proportion of linear, relatively open shorelines plus small to large embayments and a number of large river deltas. Bedrock shorelines are quite uncommon in the Sound proper. As in all marine systems, the biota are very closely linked to the energy level (waves or currents) and the substrate type. The linear shorelines, which include most of the armored areas, can be characterized as muddy, sandy, or pebble-cobble. Many beaches have pebble and sand in the mid and upper shore regardless of the low-shore substrate; these upper-shore areas are physically unstable and biologically relatively depauperate, with sparse populations of worms and crustacea. Areas at or above Ordinary High Water, however, are important for talitrid amphipods (important decomposers and food for shorebirds) and

as spawning habitat for several species of forage fishes that are central to Puget Sound food webs. Muddy beaches (which range from extremely soft and anoxic muds to firmer sandy mud) are often dominated by burrowing mud shrimp or ghost shrimp, which aerate but further soften the sediment with their extensive tube systems. Other common occupants of mud are deposit-feeding clams (*Macoma* spp.), some polychaetes (especially spionids and capitellids), and some amphipod crustaceans (especially corophiids). Eelgrass (*Zostera marina*) is found in sandier areas. Moderate-energy sand beaches may have extensive eelgrass beds. Certain beaches in Puget Sound without eelgrass have beds of sand dollars, which primarily live subtidally but extend up into the low shore; when present, they tend to be very dense and exclude other biota via bioturbation. Areas without eelgrass or sand dollars, especially those with more wave action, have sparse clam populations (including horse clams and cockles), and a different array of sparse polychaete species than in mud. Commercially valuable geoduck clams can be found naturally or cultured on sandy shorelines. In areas where cobbles are found on the low shore, the substrate is stabilized into a complex and diverse mix of cobbles, pebbles, and sand; these habitats harbor a rich flora (on the cobbles) and fauna (both on the cobbles and infauna). Recreationally and commercially harvested clam species (mostly hardshell clams) are abundant in this habitat type, as is a rich assemblage of polychaetes (many families) and crustacea, including *Cancer* crabs, other crabs, amphipods, and isopods.

Puget Sound beaches provide key linkages between terrestrial and marine food webs. A variety of birds use the beaches, include Great Blue Heron, gulls, Dunlin, and other shorebirds. On unaltered shorelines, overhanging vegetation drops both detritus and insects onto the shore, linking to detritus-based food webs (via decomposer amphipods) and to fishes such as juvenile salmon that forage on the shore at high tide. Other animals from nearshore waters probably use the beach at high tide, although these linkages have had little documentation. Nearshore waters are critical to the beach, in turn, by bringing food for the abundant suspension feeders, as well as larvae, spores, and seeds of shoreline organisms, nearly all of which have dispersive propagules. Humans use the shore extensively, for both extractive (harvesting of clams and other shellfish, as well as algae) and non-extractive (birdwatching, walking) purposes.

### **Megan Dethier**

I grew up spending summers on the shores of Maine and was thus pre-adapted to become a marine biologist. I did my undergraduate work at Carleton College in Minnesota, despite the apparent lack of ocean there, then PhD work under Bob Paine at the University of Washington, near a real ocean. My dissertation revolved around the community ecology of intertidal pools. Since completing graduate work I have been in residence at the Friday Harbor Labs and am a Research Professor in the Biology Department at U.W. I have thus worked on shoreline ecology of the Pacific Northwest for over 30 years, first exclusively on rocky shores but now also in mud, gravel, and salt marsh habitats. I designed a marine habitat classification system for Washington state, and helped the National Park Service and various Washington agencies design shoreline mapping and monitoring programs. My recent research efforts include: 1) Investigating the linkage between physical features of shoreline habitats and their biota; 2) studying the plant/herbivore ecology and ecophysiology of an intertidal seaweed; and 3) investigating interactions between native salt marsh communities and an invasive cordgrass in Puget Sound.

---

### **Regulating Shoreline Armoring in Puget Sound**

[Presentation Part 1](#)

[Presentation Part 2](#)

Randy Carman<sup>1</sup> and Kathy Taylor<sup>2</sup>

<sup>1</sup>Washington Department of Fish and Wildlife,

<sup>2</sup>Washington Department of Ecology

### **Abstract**

The state of Washington has two main regulatory authorities for reviewing and permitting proposals to conduct armoring on Puget Sound shorelines. These authorities are carried out by the Washington Departments of Fish and Wildlife and Ecology.

The state Legislature gave the Washington Department of Fish and Wildlife (WDFW) the responsibility and authority to preserve, protect, and perpetuate fish and shellfish resources of the state. To assist in achieving that goal, the state Legislature in 1943 passed a state law now known as the "Hydraulic Code" ([Chapter 77.55 RCW](#)). Among other things, this law provides WDFW the authority to regulate shoreline armoring (bulkhead construction) in Puget Sound through issuance of permits known as Hydraulic Project Approvals (HPAs).

Bulkhead criteria were first developed for Puget Sound in 1971, and subsequently revised in 1974 to protect surf smelt spawning areas. However, regulation of activities in marine waters by WDFW was not initiated until 1977. Further restrictions on bulkhead placement in succeeding years fueled legislative lobbying by the bulkhead industry and shoreline



property owners. In 1991, the Washington Legislature passed the Marine Beach Front Protective Bulkhead law (RCW 77.55.141). Property protection and human safety issues were the focus of this legislation, not habitat conservation. The ability to deny applications for residential bulkheads was essentially revoked.

Research on the use of alternative shoreline protection techniques, coordinating and conducting science-based investigations on impacts of shoreline armoring, and working with the Legislature to modify the current regulations are requisite actions to improve WDFW regulation of shoreline armoring in Puget Sound.

Washington's Shoreline Management Act (SMA) was approved by the public in a 1972 referendum "to prevent the inherent harm in an uncoordinated and piecemeal development of the state's shorelines." The SMA has three broad policies: (1) encourage water-dependent uses, (2) protect shoreline natural resources, and (3) promote public access. Cities and counties are the primary regulators but the Washington Department of Ecology, has authority to approve local Shoreline Master Programs (SMPs) and some permits. The SMPs are based on the SMA and state guidelines and tailored to the specific needs of the community. Local SMPs include both plans and regulations. The plans are a comprehensive vision of how shoreline areas will be used and developed over time and the regulations are the standards that shoreline projects and uses must meet.

The SMA establishes a system of permitting for shoreline development. Substantial development permits are needed for many projects costing over \$5,718, or those interfering with the public's use of the waters. Many common shoreline uses are exempt from obtaining a substantial development permit, including bulkheads necessary to protect existing single family residences.

Even if a bulkhead project meets the criteria for exemption, it must still comply with the SMA and all applicable regulations and design standards contained in the local SMP. The local SMP may require conditional use permits for bulkheads, soft approaches as an alternative to hard armoring, or may prohibit bulkheads.

#### **Randy Carman**

Mr. Carman is a Puget Sound Nearshore Specialist in the Habitat Program at the Washington Department of Fish and Wildlife in Olympia. He has been involved in Puget Sound regulatory, policy and technical issues for over 20 years. He serves a primary role in providing technical and policy guidance to regional staff that implement regulatory programs for Puget Sound shorelines. He is also a member of the Puget Sound Nearshore Partnership's Implementation Team and Shoreline Armoring Workgroup and is the agency representative on the Lower Duwamish and Eagle Harbor Trustee Councils.

#### **Kathy Taylor**

Dr. Kathy Taylor is a senior marine ecologist with the Shorelands and Environmental Assistance Program at the Washington State Department of Ecology and is an affiliate faculty member with the University of Washington-Tacoma. She provides scientific and technical assistance on marine and estuarine issues related to shoreline planning, policy, and management and has over 20 years experience working in marine and estuarine ecosystems. Prior to taking her current position, she worked for the Puget Sound Action Team, served as Executive Director of the Columbia River Estuary Study Taskforce, and held a faculty position in the Biology Department of Coastal Carolina University. She earned her bachelor's and master's degrees from Western Washington University and her doctorate from Louisiana State University.

---

#### **Mitigating the Effects of Bulkheads on Estuarine Shores: An Example from Fire Island National Seashore, USA (PDF, 1.13 MB)**

Karl F. Nordstrom<sup>1</sup>, Nancy L. Jackson<sup>2</sup> and Patricia Rafferty<sup>3</sup>

<sup>1</sup>Institute of Marine & Coastal Sciences, Rutgers University, New Brunswick, NJ

<sup>2</sup>Dept. of Chemistry & Environmental Science, New Jersey Institute of Technology, Newark, NJ

<sup>3</sup>U.S. National Park Service, Fire Island National Seashore, Patchogue, NY

#### **Abstract**

Bulkheads on Great South Bay at Fire Island, New York were evaluated to determine their impact on unprotected areas adjacent to them and to identify alternatives for future protection from coastal erosion. Great South Bay is a narrow, shallow basin where fetch distances for generation of waves are usually less than 15 km. Mean spring tidal range near the middle of the bay shore is 0.24 m. Beach sediments are medium size sands.

The shoreline is part of Fire Island National Seashore and comprises several residential communities within the park. Bulkheads extend along about 18% of the 67.3 km-long shoreline. Annual topographic surveys conducted 2004-2008 at

four bulkheads and two control sites and an instrumented process-response study at one of the bulkheads reveal that erosion in a given year can be as great as 3.3 m yr<sup>-1</sup> in the upland and 6 m yr<sup>-1</sup> on the foreshore. Local bulkhead-influenced sand starvation appears to extend nearly 70 m alongshore. Building and stabilizing dunes to protect oceanfront homes has reduced the likelihood of overwash, inlet formation and migration of dunes across the island that would provide sediment to the bayside. Beach nourishment can restore the sediment budget in places but should be introduced in a way that minimizes burial of benthic habitat or creation of large scale exotic environments. The closest approximation of a "permanent" solution is to restore the sediment budget by creating feeder uplands close to bulkhead ends. Dredging of navigation channels provides a ready source of compatible fill.

A nourishment project is targeted to overcome bulkhead-induced sand starvation that is threatening a valuable maritime holly forest at Sailors Haven, a primary access point for boat traffic to the Seashore. The nourishment is designed as a pilot project to determine the potential for wider application. The plan is to initially place about 1,300 m<sup>3</sup> of sediment available from maintenance nourishment of the navigation channel along 200 m of shoreline length next to the bulkhead, creating a new berm with a width of 4 m and a top elevation of 1.3 m above the low tide terrace. This elevation corresponds to the top of the active foreshore at most sites along the bay shore and should be low enough to allow storm waves to overtop the berm and naturalize the surface by reworking the sediment and depositing wrack upon it. The width is considered narrow enough to prevent formation of a new sub-environment between the foreshore and upland and reduce the footprint on the low tide terrace but wide enough to last at least two years, given the maximum annual change of 2 m measured in topographic surveys at this site. Deposition of fill material on the low tide terrace is presently restricted by state regulations, but the project is permitted as a test of the feasibility of recycling dredged sediment. The multi-year monitoring program will consist of 1) topographic profiles to determine sediment losses through time; 2) dyed sand tracer studies to determine pathways of sediment transport; 3) streamer traps to quantify rates of transport; 4) current meters and pressure transducers to provide process data; and 5) optical backscatters and current meters placed offshore to determine rate of delivery of sediment to the navigation channel.

**Karl F. Nordstrom**

Ph.D. Geography, Rutgers University

**Current position**

Professor, Institute of Marine and Coastal Sciences, Rutgers University.

**Visiting Positions**

Geography Institute, University of Greifswald, Germany.

Dept. of Territorial Studies and Planning, Polytech. of Turin, Italy.

Marine Institute, Universidade do Vale do Itajaí, Brazil (Instructor of short course)

Department of Geography, University of Western Australia.

Department of Geography and Soil Science, Univ. Amsterdam.

Geography Institute, University of Kiel, Germany.

Geography Department, University of California, Los Angeles.

**Current Research**

I conduct research on the dynamic processes affecting the size, shape and location of beaches and dunes in ocean and estuarine environments. These investigations involve assessment of winds, waves and currents and the effect of these processes on sediments, landforms and biota. Models of beach and dune change have been formulated for both undeveloped and developed coasts. Research has also been directed toward analysis of coastal land use, requiring assessments of the social implications of changes to beaches and dunes. I have conducted research on strategies applicable at the national level, such as management requirements for national seashores and Federal Flood Insurance guidelines. Activities at the state and municipal levels include assessments of the effects of creating or altering dunes and restoring naturally functioning environments in intensively developed municipalities.

---

**The Effects of Armoring Shorelines-The California Experience (PDF, 6.2 MB)**

Gary Griggs

Director-Institute of Marine Sciences

Professor of Earth and Planetary Sciences

University of California Santa Cruz

**Abstract**

The increasing development of our coastlines is colliding with a continuing rise of sea level, as well as the infrequent but more immediately threat of ENSO events with their associated elevated sea levels and enhanced wave attack. These processes and events are all contributing to the continuing erosion of cliffs, bluffs and dunes and the ongoing retreat of the shoreline. Historically, hardening the coastline through the construction of seawalls or rock revetments has been the

most common approach in California to reducing the impacts of wave attack and attempting to halt or slow coastal retreat. Ten percent or 110 miles of California's entire coastline has now been armored, but for the state's four most southerly and heavily developed counties (Ventura, Los Angeles, Orange and San Diego), 33 percent of their shorelines are now hardened with seawalls or riprap.

Protection structures can vary widely in their cost, size, effectiveness, lifespan and impacts. The recent increase in the amount of coastline armored in California has in large part reflected the warm Pacific Decadal Oscillation cycle that began in 1978 and the associated large ENSO events. Proposals for additional shoreline armoring have been accompanied by an increased concern by both the California Coastal Commission as well as a number of environmental organizations with the cumulative impacts of these structures. The potential impacts of armoring the coastline include 1] visual effects, 2] impoundment or placement losses, 3] reduction of beach access, 4] loss of sand supply, 5] impacts on surfing, 6] passive erosion, and 7] active erosion. These potential impacts will vary from site to site and with different types of structures. It is the objective of the environmental impact assessment process to evaluate each of impacts in order to determine their significance and whether or not they can be mitigated.

### **Gary Griggs**

Distinguished Professor of Earth and Planetary Sciences  
Professor of Earth and Planetary Sciences  
University of California Santa Cruz

Dr. Griggs received his B.A. in Geology in 1965 from the University of California, Santa Barbara and a Ph.D. in Oceanography from Oregon State University in 1968. He has been a Professor of Earth Sciences at the University of California, Santa Cruz since 1968 and has served as Chairman of the Department of Earth Sciences, Associate Dean of Natural Sciences, and has been the Director of the Institute of Marine Sciences and Long Marine Laboratory since 1991. He has served as Chair of the University of California Marine Council since its inception in 1999, and is a member of the California Sea Grant Advisory Board. Gary was a member of the Board of Governors of the Consortium for Oceanographic Research and Education for 10 years representing four California academic institutions, and served from 2007-09 on the Executive Committee of Ocean Leadership.

Dr. Griggs was a Fulbright Scholar in Greece in 1974-75. In 1998 he was given the Outstanding Faculty Award in the Division of Physical and Biological Sciences at UC Santa Cruz. In 2003 he was awarded the CSBPA Joe Johnson Coastal Research Award. The UCSC Alumni Association honored him with a Distinguished Teaching Award in 2006, and in 2007 he was honored with being asked to give the Monterey Bay National Marine Sanctuary Ed Ricketts Memorial Lecture for lifetime achievement in marine research and education. In 2008 he was appointed to the first Science Advisory Team of the California Ocean Protection Council.

His research and teaching have been focused on the coast of California and include coastal processes, hazards, and coastal engineering. Dr. Griggs has written over 150 articles for professional journals as well as authored or co-authored several books: *The Earth and Land Use Planning*; *Geologic Hazards, Resources and Environmental Planning*; *Living with the California Coast*; *California's Coastal Hazards: A Critical Assessment of Existing Land Use Policies and Practices*; *Coastal Protection Structures and Their Effectiveness*; *Living with the Changing California Coast*; *The Santa Cruz Coast: Then and Now*; and *California's Coast and Beaches*.

---

**"Design with Nature" Strategies for Shore Protection: Successes and Limitations of a Cobble Berm in an Oregon State Park (PDF, 4.2 MB)**

Paul D. Komar<sup>1</sup> and Jonathan C. Allan<sup>2</sup>

<sup>1</sup>College of Oceanic & Atmospheric Sciences, Oregon State Univ., Corvallis, OR

<sup>2</sup>Oregon Dept. of Geology and Mineral Industries, Coastal Field Office, Newport, OR

### **Abstract**

The book "Design with Nature" was published in 1969, written by the Scotsman Ian McHarg, a town planner and landscape architect. With the advances in the science of ecology during the 20th century, the focus of his book was on what constitutes a balanced and sustainable environment. Based on our recent investigations of the design and success of shore protection structures, we have expanded McHarg's concept, that we can learn from Nature in our search for improved ways to protect our shores from the extremes of waves and tides. Our goal is to design structures that are both more aesthetic and less prone to failure, while at the same providing a sufficient degree of protection from erosion and flooding.

Our interest in this philosophy began with the erosion of Cape Lookout State Park on the northern Oregon coast, first associated with the strong El Niños of 1982-83 and 1997-98, culminating in a series of unusually severe storms during

the winter of 1998-99 that flooded the campground. A shore protection structure was clearly needed, but it was decided that a conventional quarry-stone revetment or seawall would be incompatible with this natural park setting. Instead, the decision was to construct a cobble berm that is similar to a natural cobble beach, backed by an artificial dune containing a core of sand-filled geotextile bags. These choices proved to be cost effective, the expense being a small fraction of what it would have cost to construct a revetment or seawall. Important for the park, the completed cobble berm and artificial dune were nearly indistinguishable from their natural counterparts on the Oregon coast; park visitors had no notion that these were shore protection "structures".

The construction of these environmentally compatible structures for shore protection provided the opportunity to monitor them to determine their degree of success and to learn more about their designs. Monitoring has included a program of periodic surveys, analyses of tides and wave runup compared with structure elevations, and other data including having tagged a large number of cobbles with PIT tags to document their mobility within the cobble berm. In the decade since construction, these structures have survived a number of major storms, when at times high tides combined with the wave runup to produce some overtopping of both the cobble berm and artificial dune. At this stage maintenance was required, mainly the loss of cobbles from the berm due to their transport to the north; this maintenance was undertaken last summer, by recovering gravel and cobbles from where they had accumulated to the north within the park, returning them to the berm.

In spite of the intensity of wave attack on the high-energy Oregon coast, this natural approach for shore protection has successfully prevented significant erosion and flooding of the park grounds. Important has been the combination of the cobble berm, which acts to dissipate the wave energy, with the artificial dune having largely prevented storm overwash events that would have carried cobbles into the park's campground.

#### **Paul D. Komar**

Dr. Komar obtained a M.S. degree in Geology in 1965 at the University of Michigan, with his thesis having been concerned with sand sorting on Lake Michigan beaches, leading to the formation of "black sand" placers. In 1969 he obtained a PhD at the Scripps Institution of Oceanography, undertaking research to measure rates of longshore sand transport related to the waves and longshore currents. Following a post-doctoral year in England (the Wallingford Hydraulics Research Station) and Scotland (St. Andrews University), supported by a NATO scholarship, Dr. Komar joined the faculty in Oceanography at Oregon State University, where he is now Emeritus Professor. During the decades of research on the coast of Oregon, he and his students have investigated a range of topics: the sources and transport of sand along that coast; the impacts of jetty construction; the dynamics of beach responses to major storms; the processes involved in episodes of property losses; and the climate controls on the erosion processes, particularly the significance of major El Niños. His other coastal research has concerned the erosion of the Nile Delta in Egypt, and most recently investigation of erosion on the coast of New Zealand. He is author or the textbook *Beach Processes and Sedimentation* (Prentice-Hall, 1976 and 1989 editions) and *The Pacific Northwest Coast: Living with the Shores of Oregon and Washington* (Duke Univ. Press, 1997).

---

#### **Assessing Sediment Supply and Beach Condition in Central Puget Sound (PDF, 4.6 MB)**

Jim Johannessen, LEG & MS, Coastal Geologic Services Inc.

The nearshore of King County and southern Snohomish County contains a variety of bluff and no-bank (accretion shoreform) shores, and serves as a useful example of the more developed shores of Puget Sound. Bluff sediment input, primarily glacially deposited units, is the primary source of beach sediment in Puget Sound. A key processes controlling nearshore systems and their continued evolution is the three-dimensional sediment transport system termed a net shore-drift cell. Shore protection structures (armoring or bulkheads) are common in King County. Bulkheads/ shore armoring have been shown to increase suspended sediment and the littoral drift rate, as well as cause increased beach scour and end erosion (Johannessen and MacLennan 2007, *Beaches and Bluffs of Puget Sound*; USACE/PSNP) and a decrease in important nearshore habitat areas.

A recent report initiated by King County DNRP was completed for the marine shoreline within WRIA 8 and 9 in Central Puget Sound. The *Inventory and Assessment of Current and Historic Beach Feeding Sources/Erosion and Accretion Areas for the Marine Shorelines of Water Resource Inventory Areas 8 & 9* (CGS/ Johannessen, MacLennan and McBride 2005; <http://dnr.metrokc.gov/wlr/waterres/marine/reports/marine-shoreline.htm>) entailed field mapping to document the current geomorphic conditions within the study area, followed by research into the historic condition of all currently modified shores. "Feeder bluffs", areas that had substantial sediment input into the net shore-drift system and thus maintain habitats, were mapped in segments and then current and historic conditions were compared at 3 scales ranging up to the landscape context, using drift cells as an analysis unit.

Modified shore in WRIA 8 and 9 comprised 45.6% of the total study area length (this did not include the BNSF railway/seawall north of Shilshole). Remaining "feeder bluff exceptional" units were located at Magnolia Bluffs, north of Saltwater State Park, Maury Island, and southwest Vashon Island. Feeder bluffs were mapped along 15.1% of the study area. Twenty-two drift cells (of 61 total cells) had no intact sediment sources, as they are now bulkheaded and considered "not properly functioning". Historic analysis (combined with current conditions mapping) revealed that the most common shoretype mapped in pre-development conditions was historic feeder bluff, which occurred along 35.3% of the 120-mile study area shore. When comparing current to historic sediment sources, there was a 63.4% feeder bluff loss for the entire study area, leaving only 36.6% of the historic sediment sources intact. Almost 40 miles of WRIA 8/9 was mapped as historic accretion shoreform; far more than the approximately 22 miles mapped during current conditions fieldwork.

Drift cells with the highest conservation prioritization in WRIA 9 include cells KI-7-2 located on the north side of Three Tree Point, and KI-13-18 on the north side of the Burton Peninsula in Quartermaster Harbor. Other high priority drift cells for conservation include southwest Salmon Bay, east Vashon Island (cell 13-12), and the Burien to Duwamish Head cell. As unmodified bluffs in the study area continue to gradually recede through erosion and landsliding, there will likely be a continued desire for landowners to build bulkheads. If carried out, this would lead to further sediment impoundment and further reduction of the natural sediment input to the nearshore system, as well as site-specific habitat impacts. The possibility of further decreasing sediment supply volumes for net shore-drift cells, along with the lag time of impacts from past modifications, would likely lead to substantially-increased, negative, cumulative impacts to nearshore habitats. Restoration and conservation efforts should proceed with this in mind.

Management of developed shores in King County needs to be a balance of minimizing additional long-term negative impacts to beaches and nearshore habitats by preserving/restoring sediment source inputs while also addressing the clearly demonstrated needs of landowners.. Moving houses landward may be the only means to both preserve habitat and allow for safety of structure over coming decades, with predicted sea level rise. Implementation of restoration of bluff sediment supply has begun but certainly needs to be accelerated to begin to restore physical processes to improve nearshore habitats.

### **Jim Johannessen**

Jim Johannessen, of Coastal Geologic Services Inc. in Bellingham, specializes in beach processes, coastal erosion mitigation and restoration, and applied coastal management. He has designed numerous projects such as beach nourishment, sediment bypassing at channels, and other methods to reduce coastal erosion throughout Puget Sound and the Northwest Straits. Jim has worked in consulting in Washington since 1984, and started Coastal Geologic Services in 1993. Jim has a BS in geology and oceanography from Univ. Rhode Island, and a MS in geology from Western Washington Univ., and is a Licensed Engineering Geologist in Washington.

Jim has recently worked on designs for beach restoration at Seahurst Park in Burien, Marine Park in Bellingham, and historic and current beach sediment source mapping in parts of Skagit, San Juan counties, and Bainbridge Island that prioritized nearshore conservation and restoration projects. Other recent work includes writing the Beaches and Bluffs White Paper for the Puget Sound Nearshore Partnership and the Corps of Engineers. Jim has been active in the effort to improve our understanding of the interaction of bulkheads and nearshore habitats, including conducting ongoing beach monitoring around the Sound. Jim has run public education workshops and trainings in all Puget Sound and Northwest Straits on coastal management.

---

### **Observations of gravel transport and morphological response on a supply-limited beach backed by bulkheads and exposed to waves, wakes, and tidal currents, Point White, Bainbridge Island (PDF, 4.7 MB)**

Phil Osborne<sup>1</sup>, Greg Curtiss<sup>1</sup>, Neil Macdonald<sup>2</sup>

<sup>1</sup>Golder Associates Inc., 18300 NE Union Hill Road, Suite 200, Redmond, WA, 98052 e-mail: [posborne@golder.com](mailto:posborne@golder.com), ph: 425-883-0777, fax: 425-882-5498

<sup>2</sup>Coldwater Consulting, 5510 Canotek Road, Suite 203, Ottawa, ON K1J 9J4

### **Abstract**

Direct measurements and observations of coarse sediment (gravel) transport, beach morphological change, scour and accretion patterns, beach sediment characteristics, and forcing mechanisms have been obtained over a number of time intervals from 2000 to present from a mixed sand and gravel beach on Bainbridge Island, Puget Sound, WA. The beach is backed by bulkheads and seawall structures along the full length of the study site (approximately 1 km) and has been exposed to wind waves, vessel-generated waves from both passenger-only fast ferries (POFF) and conventional vessels, and tidal currents at various intervals. Studies have been undertaken to quantify the relative role of the different forcing mechanisms and determine the corresponding time scales of sediment transport, morphological response, and scour. The measurements have been applied to validation of a system of integrated numerical models that include a tidal circulation

model, a wind-wave growth and transformation model, a Lagrangian Super-critical Vessel (LSV) wake model and *ProfileAnalysis*, a newly-developed one-dimensional, profile-based model that provides a long-term integrated assessment of the beach response to major forcing mechanisms. *ProfileAnalysis* was the primary tool for investigating the impacts of tides, waves and wakes on the mixed sand and gravel (MSG) shores of the study area.

Despite small differences in wave height, POFF wakes can be significantly more energetic because their periods are longer than wakes from slower and smaller vessels. The longer POFF waves result in greater swash and backwash excursion which often interact with structures. Beach profile response to POFF operation is rapid, occurring over an interval of several weeks. Large POFF wakes mobilize and remove sand and coarse-grained sediments from the upper foreshore and deposit it on the middle and lower foreshore and shallow sub-tidal areas. Smaller and shorter period wakes from smaller and slower vessels result in net accretion of sand and gravel on the upper beach over periods of months to years. Gravel tracer measurements and beach observations obtained over a 14 month interval have helped to reveal the dominant seasonal transport patterns, which include a range of wave and vessel wake climates. Transport under existing conditions is dominated by wind waves in an alongshore uni-directional process that occurs mainly in winter. However, beach response to wave climate is also controlled by site specific exposure to prevailing winds, car ferry wakes, local sediment supply, the configuration of structures, and beach morphology. In non-storm intervals transport is brought about by the combination of vessel wakes and tidal currents; the vessel wakes provide a mechanism for gradual post-storm recovery, re-distributing sediment onshore, in this low energy restricted fetch environment. Morphologic response occurs mainly as a seasonal fluctuation of the upper beach profile from steep to flat and in sediment composition from gravel to coarse sand between non-storm and storm conditions respectively. In general, beach response does not follow the high-energy coarse-grained beach model; rather, it is more consistent with the response expected for a low-energy mixed beach backed by a seawall. The relative steepness of the beach (1:5 and 1:7) and lack of a low-tide terrace may also be a factor influencing the observed beach response. Model simulations predict the dominant spatial and temporal variations in the alongshore transport of gravel observed during the time period of measurements and enable prediction of a number of impact assessment indicators including the depth of scour at the toe of structures. The findings of both the field observations and the modeling point to the need for including an accurate description of grain composition in modeling mixed sand and gravel beach response and the need for long-term observations of both forcing and response.

#### **Phil Osborne**

Phil Osborne is a senior consultant with Golder Associates in Redmond, WA where he leads a coastal geomorphology and engineering group. Phil Osborne has a Ph.D in Physical Geography from the University of Toronto with specialization in Coastal Geomorphology and 24 years of national and international experience (United States, Canada, England, New Zealand) in science and consulting engineering. Prior to consulting, Phil pursued an academic career and was a faculty member in the School of Geography, Geology, and Environmental Science at University of Auckland in New Zealand. His work typically involves a combination of field studies and numerical and physical modeling to quantify and understand physical processes and landform dynamics. He has managed and led a number of multi-disciplinary studies for waterborne transportation, ocean energy, sediment management, and waterfront development projects. He is currently the technical lead on a number of projects investigating coastal processes (waves, currents, and sediment transport), shoreline geomorphology, and their interactions with coastal structures in Puget Sound and on the Washington coast.

---

#### **Biological effects of shoreline modification in Puget Sound: Case studies and future directions (PDF, 3.3 MB)**

Casey Rice, NOAA/NWFSC  
Mukilteo Research Station

Human alteration of Puget Sound shorelines is extensive yet its ecological consequences are largely unknown. Historical research and monitoring efforts have done little to improve our understanding, in part by 1) not measuring biology directly, 2) not including anthropogenic disturbances as explicit factors in sampling design and subsequent analysis, and 3) not sampling across the full range of ecological contexts within the system. In this presentation I will briefly review several recent site- and local-scale field studies that have documented differences between natural and modified beaches in terms of abiotic attributes (e.g., microclimate) and biological condition (e.g., intertidally spawning fish embryo condition, supratidal invertebrate abundance and assemblage composition). Next, I will present a landscape-scale study combining historical biological and environmental monitoring data across all of greater Puget Sound to relate marine bird and waterfowl assemblage composition to natural and anthropogenic environmental gradients, including shoreline modification. Together these studies demonstrate that human alterations of Puget Sound shorelines dramatically affect abiotic attributes and can adversely affect the biota; these studies also point the way towards more expanded, systematic field studies to improve our understanding and management of the biological effects of altered Puget Sound shorelines.

#### **Casey Rice**

Casey Rice is a Research Fisheries Biologist at NOAA's Mukilteo Research Station. In nineteen years with NOAA he has been involved in several research projects focusing on the biological effects of human activities in coastal marine and estuarine environments. Casey holds B.A. and B.S. degrees from The Evergreen State College (1989), an M.S. in fisheries from the University of Washington (1997), and a Ph.D. from the University of Washington's School of Aquatic and Fishery Sciences (2007).

Casey's current research areas include the estuarine ecology of juvenile Chinook salmon and other nearshore fishes and gelatinous zooplankton in Puget Sound, relationships between urbanization and marine bird and waterfowl assemblages in nearshore Puget Sound, monitoring and assessment of estuarine restoration, interactions among juvenile hatchery and wild salmon, and environmental history of the Puget Sound/Georgia Basin.

---

**Shoreline Habitats and Restoration along Urbanized Sections of Central Puget Sound: Fish and Invertebrate Response (PDF, 22.4 MB)**

Jason Toft, Jeffery Cordell, Sarah Heerhartz, Beth Armbrust, and Charles Simenstad School of Aquatic and Fishery Sciences, University of Washington

Puget Sound shorelines have been heavily modified, especially those associated with urban centers. To what degree anthropogenic modifications affect fish and invertebrates, and how to best evaluate and enhance biological functions, are key to restoring the health of Puget Sound and must be addressed by integrating science and management. We will present a synopsis of recent research, highlighting case studies of shoreline armoring removals at the Olympic Sculpture Park (City of Seattle) and Seahurst Park (City of Burien). These shorelines have both had either riprap or seawalls removed, with goals of enhancing shallow water habitats for use by juvenile Pacific salmon (predominantly chinook, chum, pink, and coho). Our research seeks to assess habitat linkages and restoration progress by utilizing various sampling techniques, including snorkel surveys, enclosure nets, gastric lavage, and invertebrate sampling. We will focus our presentation on key components of nearshore juvenile salmonid use and behavior of modified, restored, and natural beaches. Results indicate that various habitat types can affect fish and invertebrate abundance and compositions, as well as fish behavior and feeding patterns. Understanding such linkages is vital to planning rehabilitation efforts along degraded portions of Puget Sound, and will help guide the restoration of salmon habitat.

**Jason Toft**

Jason Toft is a nearshore research ecologist at the University of Washington School of Aquatic and Fishery Sciences, whose primary scientific interests are the ecology of aquatic estuarine and nearshore habitats, biological monitoring of restored wetlands, juvenile salmonid abundance and prey resource dynamics, effects of non-indigenous species on native communities, and taxonomy of aquatic invertebrates.

---

**Anticipated Effects of Sea Level Rise on Beach-spawning Fishes in Puget Sound (PDF, 3.6 MB)**

Kirk L. Krueger, Kenneth B. Pierce, Jr., Timothy Quinn, and Dan Penttila  
Habitat Program, Washington Department of Fish and Wildlife, Olympia, WA 98501

Sea level is expected to rise substantially in this century and scientists expect it to affect the structure and function of the Puget Sound ecosystem. In particular, fishes that spawn on beaches, such as surf smelt (*Hypomesus pretiosus*) and Pacific sand lance (*Ammodytes hexapterus*), might be especially vulnerable to loss of suitable spawning habitat due to rising sea level. As sea level rises, the spatial extent of intertidal beaches may contract, reducing the amount of suitable spawning habitat. Where the upward extent of beach migration (adjustment) is limited by shoreline armoring, loss of spawning habitat might be exacerbated. Because these fishes are important forage for many other species, population declines due to loss of their spawning habitat could cascade through the Puget Sound food web. We use a dataset that describes the spatial distribution of surf smelt and Pacific sand lance spawning on several beaches of Puget Sound to model some likely effects of sea level rise on forage fish spawning habitat and spawning success. Protecting and restoring the Puget Sound ecosystem, given changes associated with sea level rise, constitute profound management and policy challenges.

**Kirk L. Krueger**

**Current Position**

Research Scientist, Habitat Program Science Team,  
Washington Department of Fish and Wildlife, Olympia, WA 98503  
[Kirk.Krueger@dfw.wa.gov](mailto:Kirk.Krueger@dfw.wa.gov) 360-902-2604

Kirk Krueger received a Ph.D. in Fisheries and Wildlife Sciences from Virginia Tech, a Master's in Zoology and Physiology from the University of Wyoming and a B.A. in Biology from the Minnesota State University at Moorhead. He is a Research Scientist with the Washington Department of Fish and Wildlife, Habitat Program. In this position he provides guidance regarding the design of field studies, monitoring plans, experiments, collection and analysis of remotely sensed data, and statistical analysis. His experience with WDFW includes developing and implementing watershed-scale geomorphology studies, participating in long-term salmon habitat restoration effectiveness experiments, developing statewide fish and habitat status and trend monitoring methods, conducting an experiment to detect effects of dredging on freshwater mussel survival, developing guidelines and statistical tools for eelgrass monitoring, developing a study to assess the effectiveness of beach spawning fish survey protocols, and studying spawning habitat selection and behavior of beach spawning fishes. He provides technical guidance for the development, distribution, analysis and use of field-derived and remotely-sensed data for salmon recovery and habitat restoration. His area of expertise is the intersection of stream fish ecology, fluvial geomorphology, geographic information systems, and statistical analyses.

---

**Impacts of shoreline armoring on sediment dynamics (PDF, 2.12 MB)**

Peter Ruggiero  
Department of Geosciences  
Oregon State University

The shores of Puget Sound are rapidly being hardened and covered with artificial structures. While shoreline armoring often succeeds in protecting upland investments, shoreline armoring activities are hypothesized to represent a significant source of nearshore morphodynamic and marine habitat modification in Puget Sound.

Shoreline armoring is believed to affect physical processes in many ways, primarily by causing beach narrowing, sediment coarsening, and a decrease in the natural sediment supply from eroding bluffs. Shoreline armoring is also thought to affect biological processes through loss of upper intertidal habitat, changes in sediment composition, and decreased organic input. However, it has not been confirmed in the field or the laboratory whether currents and sediment transport rates will increase or decrease in front of a hardened shoreline, as compared to a non-armored section of beach, and whether the sedimentary environment will be significantly modified. The effect of seawalls on beaches has been found to be most sensitive to the position of the seawall within the surf zone, the beach slope, and the reflection coefficient. This talk will describe a conceptual model of seawall impacts on sediment dynamics and suggest pilot investigations specific to the Puget Sound consisting of beach monitoring, field experiments, and modeling efforts.

**Peter Ruggiero**

Peter Ruggiero is an Assistant Professor in the Department of Geosciences at Oregon State University. Peter's current research interests include applied coastal geomorphology and developing methodologies for assessing vulnerability to coastal hazards particularly in light of a changing and variable climate. Peter Ruggiero earned a bachelors degree in Civil Engineering from Lehigh University in 1991 and a Ph.D. in Coastal Engineering from Oregon State University in 1997. Following his graduate work, Peter worked for the state of Washington as a principal investigator of the Southwest Washington Coastal Erosion Study. This multi-year effort developed a quantitative understanding of the regional sediment dynamics of the Columbia River littoral cell. Peter then worked for the US Geological Survey in Menlo Park, CA between 2001 and 2005 getting involved in coastal studies in Alaska, North Carolina, and Sumatra. Since 2006 Peter has been at Oregon State University focusing on a variety of projects quantifying and assessing the vulnerability of communities to coastal hazards.

---

**Ecological effects of coastal armoring on sandy beaches in southern California (PDF, 9.28 MB)**

Jenifer E. Dugan<sup>1</sup> and David M. Hubbard<sup>2</sup>

<sup>1</sup>Marine Science Institute, University of California, Santa Barbara

<sup>2</sup>Coastal Restoration Consultants, Inc, Santa Barbara, California.

**Abstract**

We investigated predictions of a conceptual model of the ecological effects of coastal armoring on open coast sandy beaches using comparisons of armored and unarmored segments of narrow bluff-backed beaches in southern California. The model was based on observations of changes in the physical environment reported for armored shorelines in combination with results of studies examining ecological factors influencing the distribution and abundance of invertebrates and birds. Ecological effects of coastal armoring on beaches were predicted to be associated with habitat loss and reductions in the widths of intertidal zones. As beach width narrows in response to armoring, intertidal zones are lost disproportionately from the upper beach. This loss of habitat along with increased wave reflectivity and altered



deposition of wrack in front of armoring structures could reduce the diversity and abundance of macroinvertebrates. Predators, such as shorebirds, could respond to a combination of 1) habitat loss, 2) decreased accessibility at high tides, and 3) reduced prey availability on armored beaches. Our results for shores with concrete seawalls supported these predictions and found some unexpected effects of armoring. Intertidal zones were fewer, lacking upper beach habitat, and narrower in front of seawalls compared to adjacent unarmored segments. Armored segments retained less wrack. The abundance and biomass of mobile macro-invertebrates of the upper intertidal were significantly lower on armored segments. The distribution of shorebirds, most of which were actively foraging, responded to coastal armoring as predicted with significantly lower species richness (2 times) and abundance (>3 times) on armored segments. The abundance of gulls and other birds (including brown pelicans and cormorants), which primarily used the beach for roosting, were also significantly lower (>4 times and >7 times, respectively) on armored segments, a result not predicted by our model. The implications of our results and the accelerating pressures on sandy beaches from coastal development, erosion and rising sea levels indicate further investigation of ecological responses to coastal armoring is needed.

### **Jenifer Dugan**

Jenifer Dugan is an Associate Research Biologist at the University of California, Santa Barbara. She is a coastal marine ecologist with wide-ranging research interests and expertise in sandy beach ecosystems. She is also an investigator with the Santa Barbara Coastal Long Term Ecological Research program. After receiving her doctorate in Environmental and Evolutionary Biology from UC Santa Barbara, she obtained postdoctoral fellowships in South Africa and New Zealand. Jenny works closely with colleagues around the world on the ecology and conservation of coastal ecosystems.

### **David Hubbard**

David Hubbard is a founding partner of Coastal Restoration Consultants, Inc. in Santa Barbara, California. CRC prepares plans and implements ecological restoration projects for land conservancies and local government agencies. David got his degree in Biology from UC Santa Barbara, where he also worked as natural areas manager and ran the ecological restoration seminars for the campus from 1999 to 2005. He has investigated the ecology of sandy (and other) shores for twenty years. David has restored a wide range of habitats (coastal strand and dune, salt marsh, freshwater marsh, vernal pools, riparian and coastal sage scrub) since 1996.

---

### **Armoring of estuarine shorelines: geomorphic-biotic relationships in Delaware Bay (PDF, 1.9 MB)**

Nancy L. Jackson<sup>1</sup>, Karl F. Nordstrom<sup>2</sup> and David R. Smith<sup>3</sup>

<sup>1</sup>Dept. of Chemistry & Environmental Science, New Jersey Institute of Technology, Newark, NJ

<sup>2</sup>Institute of Marine and Coastal Sciences, Rutgers University, New Brunswick, NJ

<sup>3</sup>United States Geological Survey, Leetown Science Center, Kearneysville, WV

Alteration of shores in estuaries to increase their economic value has been a long practiced tradition. On unconsolidated shorelines these modifications can alter physical form and behavior as well as the ecosystem functions these environments provide. In Delaware Bay, attention has focused on changes occurring to sandy transgressive barriers and American horseshoe crabs (*Limulus polyphemus*) that annually spawn in the foreshores. Spawning and subsequent egg development success is important to population viability for species under stress due to commercial demand. Recent declines in the American horseshoe crab population from past harvest and foreshore modification for shore protection have raised concerns for long-term viability of the species and dependent species including migratory shorebirds. This presentation provides a review of the sandy shoreline resources in Delaware Bay, describes the spatial and temporal scales of processes that govern their dimensions, location, morphology and sedimentary characteristics and compares management programs in the state of Delaware and New Jersey. Data from a series of field studies are used to highlight some of the important links between beach dynamics and habitat suitability on developed shoreline reaches.

The physical processes that rework the sandy foreshores of Delaware Bay affect the suitability of the foreshore for horseshoe crab spawning and egg development by controlling its shape, location, and sedimentary characteristics across and along the shore. Shore protection projects can alter these interactions. Elimination of estuarine beaches by bulkheads that intersect below mean water level on the intertidal profile has been noted but the effects of bulkheads that intersect higher on the profile or in adjacent un-bulkheaded beach enclaves have not been examined. Bulkheads higher on the beach profile may only affect swash uprush/backwash processes at high water levels. During low wave energies the magnitude of sediment activation fronting bulkheads is not as great as the magnitude of activation due to horseshoe crab bioturbation. During high wave energies the magnitude of sediment activation fronting bulkheads is greater than at similar elevations on adjacent un-bulkheaded beach enclaves.

Beach nourishment is viewed as preferable to bulkhead construction, but nourishment can lead to changes in sedimentary characteristics and geometry of the profile that can influence both spawning and egg development. Sediments are finer on

nourished beaches than unnourished beaches in Delaware Bay. Low wave energy conditions suppress reworking of fill sediments by in situ wave activation or erosion/accretion cycles. Fill placed high on the backshore reduces the flood potential landward and the amount of habitat buried on the low tide terrace, but the backshore can remain above the zone of wave influence and be separated from the active foreshore by a scarp that compartmentalizes and restricts transport of sediment and movement of fauna. Mechanical grading can reestablish a profile slope more in equilibrium with wave conditions and facilitate wave reworking of the backshore, allow for faunal interaction between the foreshore and backshore, and facilitate aeolian transport, but some sediment would be deposited on the low tide terrace.

---

**National Research Council Report on Mitigating Shore Erosion Along Sheltered Coasts (PDF, 2.4 MB)**

Susan Roberts, Ph.D., Ocean Studies Board, National Research Council, The National Academies

The National Research Council report, *Mitigating Shore Erosion Along Sheltered Coasts*, examines the impacts of shoreline management on sheltered coastal environments (e.g. estuaries, bays, lagoons, mud flats, deltaic coasts) and identifies conventional and alternative strategies to minimize potential negative impacts to adjacent or nearby coastal resources. These impacts include: loss of intertidal and shallow water ecosystems, effects on species, and loss of public trust uses. The study provides a framework for collaboration between different levels of government, conservancies, and property owners to aid in making decisions regarding the most appropriate alternatives for shoreline protection. The report considers how design criteria, the mix of technologies employed, and land use plans could be implemented for the protection of the environment and property over the long term given current trends in erosion and inundation rates and a possible acceleration of relative sea-level rise. The report concludes that although loss of small parcels of shoreline habitat from hardening may not have a large impact on the ecosystem, the cumulative impact of the loss of many small parcels will at some point, alter the properties, composition, and values of the ecosystem.

**Susan Roberts**

Susan Roberts became the director of the Ocean Studies Board, a unit of The National Academies' National Research Council, in April 2004. Dr. Roberts received her Ph.D. in marine biology from the Scripps Institution of Oceanography. Her research experience has included fish muscle physiology and biochemistry, marine bacterial symbioses, and cell biology and cytogenetics. Since 1998, Dr. Roberts has worked at the National Research Council's Ocean Studies Board on a variety of ocean policy studies including *Increasing Capacity for Stewardship of Oceans and Coasts: A Priority for the 21st Century* (2008); *A Review of the Ocean Research Priorities Plan and Implementation Strategy* (2007); *Mitigating Shore Erosion Along Sheltered Coasts* (2007); *Nonnative Oysters in the Chesapeake Bay* (2004); *Decline of the Steller Sea Lion in Alaskan Waters: Untangling Food Webs and Fishing Nets* (2003); *Effects of Trawling & Dredging on Seafloor Habitat* (2002); *Marine Protected Areas: Tools for Sustaining Ocean Ecosystems* (2001); and *Bridging Boundaries Through Regional Marine Research* (2000). Dr. Roberts specializes in the science and management of living marine resources.

---

**The living shoreline approach to estuarine shoreline stabilization (PDF, 2.3 MB)**

Carolyn Currin, NOAA Center for Coastal Fisheries and Habitat Research, Beaufort, NC

Along the southeast coast of the Atlantic, estuarine shoreline habitats are pinched between increasing coastal development and increased erosion as a result of sea level rise, coastal storms and boating activity. Salt marshes occupy much of the relatively low-relief shorelines in the southeast, and are valued for the variety of ecosystem services they provide, including wave attenuation and shoreline stabilization. Research demonstrates that narrow fringing marshes provide many of the same ecosystem services as do more extensive marshes. However, the higher wave energy experienced by fringing marshes can alter sediment grain-size and sediment accretion patterns. Shoreline stabilization efforts incorporating salt marshes, with or without additional hardened structures, are known as 'living shorelines', and several states have adopted specific permitting guidelines in an effort to promote this approach. Evaluation of 'living shoreline' projects is preliminary, but suggests that project design and success can vary significantly with site conditions. Incorporation of intertidal oyster reefs into living shoreline design, where possible, can significantly enhance the ecosystem services provided and reduce construction costs.

**Carolyn Currin**

Carolyn Currin is a Microbiologist at NOAA's Center for Coastal Habitat and Fisheries Research in Beaufort, NC. She has a Ph.D. in Marine Science from the University of North Carolina-Chapel Hill. Currin is leader of the Coastal and Estuarine Ecology team investigating ecosystem structure, function and response to environmental change. Food web research has examined trophic relationships in natural and restored estuarine systems, and identified the role of benthic primary producers in supporting fishery production in coastal and reef ecosystems. Recent work has addressed the ecology of fringing salt marshes, the response of estuarine habitats to sea level rise, and the effects of shoreline stabilization

structures on ecosystem services. Current projects include research on factors impacting the response of salt marshes to sea level rise, and an assessment of historic shoreline erosion rates, on Marine Corps Base Camp Lejeune (NC), as part of an interdisciplinary team developing an ecosystem management plan for the Base. Currin is also working with university scientists, NERRS staff, and state regulatory agencies to perform research and develop outreach tools and decision-support tools in support of the implementation of a sustainable estuarine shoreline stabilization policy for NC.

---

**Human Dimensions of Nearshore Restoration and Shoreline Armoring (PDF, 992 KB)**

Thomas M. Leschine  
School of Marine Affairs  
University of Washington

Human relationships with the natural environment are exceedingly complex. Commonly referred to quality-of-life definitions incorporate aspects of culture, lifestyle, personal health, and family and social relationships as well as people's "relationship to salient features of their environment". Ecosystems have both intrinsic and instrumental value to humans and activity that extracts direct social and economic benefits from nature may do so at the cost of unintended degradation of ecosystem services. From this perspective, the task of management is to strike a balance that maintains or restores sustainability, with restoration one of numerous available tools. Seawalls and other engineered features of occupied shorelines embody many contradictory aspects of the human relationship with nature. In that they prevent erosion or wave attack, and create or protect agricultural lands or areas of human habitation, they are generally regarded as making positive contributions to ecosystem goods and services. Improved scientific understanding reveals numerous tradeoffs across ecosystem functions, goods and services associated with the extensive armoring of Puget Sound shores, in association with altered patterns of sediment delivery to nearshore ecosystems. We have little understanding of how people in the region view such tradeoffs however. Dialogue with public stakeholders can enlarge understanding of the roles that removal of shoreline armoring can play in a restored Puget Sound ecosystem in which humans are considered to be integral elements. So can empirical social research.

**Thomas Leschine**

Thomas Leschine is Director and Professor at the School of Marine Affairs and Adjunct Professor of Fisheries at the University of Washington. His research interests are in the areas of environmental decision-making in relation to marine environmental protection and the use of scientific and technical information and expertise in environmental decisionmaking. He has served on numerous National Research Council panels and chaired the NRC Committee on Remediation of Buried and Tank Wastes, 1996-2000. In Washington State he serves on the Nearshore Science Team of the Puget Sound Nearshore Partnership, a multi-agency consortium developing a major program of environmental restoration for Puget Sound, and recently served as advisor to the Joint Legislative Audit and Review Committee of the Washington State Legislature. He served on the Washington State Pilotage Commission from 1992-98. Earlier, he led the U.S Coast Guard team that produced the Federal On-Scene Coordinator's Report following the 1989 T/V Exxon Valdez oil spill, and following service in 2007-08 on an NRC panel examining the risk of oil spills in the Aleutian Islands, he was appointed to the Marine Board of the National Academy of Sciences. Dr. Leschine received his PhD in mathematics from the University of Pittsburgh. His transition to a career in marine policy came by way of a post-doctoral position in marine policy, and later as a policy associate, at The Woods Hole Oceanographic Institution in Woods Hole, Massachusetts.

---

**Shoreline armoring, capital grants, and ecosystem restoration (PDF, 110 KB)**

Paul Cereghino, Marine Habitat Specialist, NOAA Restoration Center

**Abstract**

The existing socio-economic system for implementing restoration with public funds has innate strengths and weaknesses. Ecologically meaningful management of sediment supply and transport provides a particular set of challenges that our current system is not designed to meet. Restoration and regulatory protection must become better integrated. Project selection will require accurate assessment of existing conditions, erosion risks, and patterns of future degradation. Achieving desired future conditions will require more elegant and precise outreach and communications strategies with a broader audience of private shoreline property owners.

**Paul Cereghino**

Paul Cereghino is a Marine Habitat Specialist with NOAA Restoration Center. He develops and manages the Estuary and Salmon Restoration Program (ESRP), in partnership with Washington Department of Fish and Wildlife, the State Recreation and Conservation Office, The Puget Sound Partnership, and the Puget Sound Nearshore Ecosystem Restoration

Project. ESRP is a capital grants program developing networks and systems for increasing accountability and learning through publically funded grants, to enhance ecosystem restoration and stewardship.

---

**Developing design guidance for Puget Sound marine shore modifications (PDF, 5 MB)**

Bob Barnard (WA Dept of Fish and Wildlife)

The Aquatic Habitat Guidelines (AHG) are a joint effort among state and federal resource management agencies in Washington to develop guidance documents, underlying scientific surveys, and training in ecologically sound management techniques. The AHG program was initiated in 1999 in support of salmon recovery efforts to ensure aquatic and floodplain restoration planning and design efforts were strategic, effective and the best use of limited resources. The scope of the program has since broadened to the promotion, protection, and restoration of fully functioning marine, freshwater, and riparian ecosystems through comprehensive and effective management of activities affecting Washington's aquatic and riparian ecosystems. Guidelines developed in the AHG program employ an integrated approach to protection and restoration. They seek to protect and restore the structure and function of whole ecosystems by striving to consider projects in their landscape and watershed contexts.

The restoration, regulatory and marine shoreline community is looking for guidance documents to help them protect nearshore resources while permitting development. A primary key to this problem is a thorough understanding of nearshore biological and geologic processes. A proposed Marine Shoreline Protection Guideline will integrate current science into the assessment and design processes. The current focus is the promotion and development of alternative shoreline protection techniques, "soft" armoring. Some examples of these techniques will be shown.

**Bob Barnard Biography**

I am an Environmental Engineer working for the Washington Dept of Fish and Wildlife for 13 years, chiefly in the freshwater environment on habitat restoration, bank protection, and fish passage. I researched and developed the stream simulation culvert design method and worked on the AHG guidance documents. My day to day duties are to provide technical assistance to the regulatory program and restoration community, as well as designing water crossings and enhancement projects. Recently I have begun evaluating and designing estuary restoration projects and marine bank protection.

---

**Local government needs and approaches to shoreline armoring (PDF, 7 MB)**

Peter Namtvedt Best (City of Bainbridge Island)

**Abstract**

Shoreline armoring in Washington State is managed by local, state, and federal agencies, although many shoreline armoring project occur outside of federal jurisdiction. The Washington State Shoreline Management Act (RCW 90.58; WAC 173-26; WAC 173-27) establishes a joint management scheme between local governments and the State Department of Ecology, but shoreline armoring permits are usually administered through a process that occurs purely at the local government level with few shoreline armoring permits being directly reviewed by Ecology. Therefore, the State Department of Fish and Wildlife and local governments are the primary agencies directly managing shoreline armoring, but administer completely different sets of statutes and rules. This presentation will provide a brief overview of the shoreline management scheme in Washington and summarize limitations within that management scheme. Local government experience with managing new shoreline armoring, repair and maintenance of existing shoreline armoring, and removal of shoreline armoring during restoration projects will be used to highlight information and data needed by local governments to better manage shoreline armoring.

**EXHIBIT 10**

February 2011

A REVIEW OF  
**PROTECTION OF MARINE RIPARIAN FUNCTIONS  
IN PUGET SOUND, WASHINGTON**

A WASHINGTON SEA GRANT PAPER<sup>i</sup>

Authored by Jim Brennan, Hilary Culverwell,  
Rachel Gregg, and Pete Granger

Reviewed by Donald F. Flora, PhD

## SUMMARY

The paper under review (hereafter "Brennan et al") moves toward proposed widths for buffers adjacent to Puget Sound shorelines. The destination is widths for each of seven buffer "functions". Three routes are involved. The first ventures to a 1993 "FEMAT" report for data, from which 80-percent levels of buffer "effectiveness" are entrained. The second route is an excursion through selected literature. The third takes a group of experts aboard for counsel and affirmation.

This review criticizes the conjecture that buffer objectives and efficacy on headwater streams in old-growth forests, and buffer performance in erosion-prone farms and feedlots, have direct relevance for nearshore tidewater ecotones. Most of the Brennan paper's science sources are irrelevant to tidewater buffering.

The paper discusses seven functions of freshwater riparian areas and associated buffers. All seven, considered desirable for streams, have effects deleterious to marine nearshores.

Despite the well-known diversity of aquatic and marine shore situations, the paper advances one-size-fits-all-places buffering, and arrives at buffer widths by improper use of averages and ranges. It also arrives at "effectiveness" levels, generally without defining effectiveness in quantitative terms.

Brennan et al relies only fractionally on recent research; and many statements are unfounded.

At no point does the paper indicate the relevance of upshore ecosystems, whether buffers or residential places, for marine biota. Nor does it treat socioeconomic aspects of nearshore buffering, despite obvious reasons to do so.

These problems and others are discussed here, as well as the cautious conclusions reached by a panel of experts. While the paper cites some interesting research it offers little valid guidance for tidewater nearshore buffering.

This paper drew my attention because I had been involved in research leading to the 1993 FEMAT report, and because later I became interested in various aspects of buffering. I reviewed over 3700 published, peer-reviewed papers on buffers and related

*subjects. That exploration generated considerable skepticism about the relevance of freshwater studies to Puget Sound buffering, as well as the general efficacy of tidewater buffers, which scepticism has not been diminished by Brennan et al.*

## CONTENTS

The 1993 buffer-effectiveness venture

Irrelevance: Headwater ecology and tidewater ecotones

Looking beyond FEMAT

The panel of experts

The seven riparian functions

    Microclimate

    Shade

    Large woody debris (fallen trees and branches)

    Litter fall/organic matter

    Root strength and slope stability

    Fine sediment control (surface erosion)

    Water quality

    Fish and wildlife habitat

Conclusions

Notes

Figures 1 and 2





## **THE 1993 BUFFER-EFFECTIVENESS VENTURE**

Brennan et al relied heavily on this earlier enterprise for buffer-efficacy relations.

### **FEMAT, in 1993, assembled science relating to old-growth headwater streams**

The Forest Ecosystem Management Assessment Team (FEMAT), a large group of scientists, joined to devise a version of forestry that would be applied throughout the range of the northern spotted owl. This was response to a court-ordered halt in Northwest federal timber sales. The work was hasty, driven by anxiety of the timber industry to get back to work, and by equal anxiety of the environmental community to forestall further loss of old-growth forests. The FEMAT report<sup>2</sup> appeared quickly, and large areas of federal backcountry (as much as 85 percent, varying by national forest and Bureau of Land Management district) were put into reserves.

The work included planning for more than spotted owl welfare. In fact most of the reserved lands were streamside ('riparian') reserves to protect flowing waters. The analysts were surprised by the extent and roles of small and intermittent streams in freshwater habitats: They account for over 70 percent of stream channel lengths in PNW mountain watersheds.<sup>3</sup>

### **Those findings and associated conjecture were embedded in the Northwest Forest Plan<sup>4</sup>**

That plan, issued in 1994, replaced standard fixed-width riparian buffers, usually 100 feet along fish-bearing streams, with purportedly site-specific widths that, in practice, were invariant across broad portions of watersheds.

### **"Site-Potential Tree Height" was introduced as a metric**

This apparently came out of increasing interest in fallen trees relative to stream geometry.<sup>5</sup> The intent was to identify the greatest distance from which a down tree could engage the stream's bank. It was understood that many if not most buffer

trees would not actually reach the stream.<sup>6</sup> Another reason given for using tree heights was that it was "...a better indicator...of degree of shade than is an arbitrary distance."<sup>7</sup>

In any case, the SPTH measure remains in use.

**This measure presents certain problems in the forest and even more if applied in the tidewater nearshore**

First, "site potential". Site is a classification (usually I through V) indicating the relative productivity of the place for trees. If no trees are present site class is sometimes judged from stumps' growth rings; more often just guessed from other vegetation. Tables have been developed to relate height to age for the various sites, however another problem is that sites are often enhanced with fertilizers, competing veg is removed, or thinning is done, all of which can change heights and thus apparent site quality.

Another SPTH issue is which species to use, given that different kinds of mature trees have different heights. FEMAT chose old-growth Douglas-fir trees, even though many streamsidess support alders, willows, and other species. Along tidewater add cedars and madrones. All are much shorter at maturity than firs.

Finally is the mere matter of relevance. SPTH is a code whose comprehension involves consulting a manual for each organization that uses the tree-height metric.

Buffer widths were based on old-growth heights. This made sense where old trees were present; little sense where streamsidess had been harvested, with old-growth-like conditions and ancient-forest character recessed perhaps for centuries. Later it was conveniently concluded that "late-successional" features, presumed to accrue by age 100 or so, would suffice.

Indeed, even in federal forests the notion of relating management to old-growth parameters was dubious. "It is estimated that the amount of old growth forest probably ranged from 25 to 75 percent during the last 3,000 years."<sup>8</sup>

All stream buffers were assigned width classes varying only by stream size and the presence or absence of fish. This on federal forests throughout virtually all of western Washington and western Oregon.

FEMAT adopted conifer-oriented Site IV for almost all places. This meant a SPTH of 150 feet.<sup>9</sup> All buffer widths were expressed as ½, 1, or 2 SPTHs. Shorter SPTHs were identified for alders and other common shoreside trees, but were not used. So much for diversity.

**"Effectiveness percentage" begged the real effects issue.**

FEMAT never identified 'effect' in measurable terms. There was vague reference to 'percent of attributes' and 'percent of functions and processes' without signaling how one would recognize a hundred percent or any other proportion. Thus, for example, would 50 percent of shading effectiveness mean that shade occurred over half the space, or cut off half the insolation, or accomplished half of whatever shade was expected to generate, or protected half of whatever shade was considered able to defend?

**FEMAT considered habitat factors important to streams. There are fallacies entwined in transposing science from old-growth high-country streams to tidewater.**

The FEMAT factors were<sup>10</sup>

Microclimate (soil and air temperature, soil moisture, relative humidity, radiation, and wind speed)

Root strength (slope stability)

Litter fall

Coarse wood debris to stream (large woody debris or LWD)

Shading

The Brennan et al buffer functions were those plus<sup>11</sup>

Water quality

Fine sediment control (surface erosion)

**In dealing with the FEMAT functions that group produced plotted**

**curves of buffer effectiveness.**

Those curves are in Figure 1, attached. Note that 'effectiveness' is not really defined, and that distances are given in 150-foot SPTHs.

Notice too that incremental effects of riparian vegetation decrease with an increasing distance from the streambank. "Generally, most ecological processes occurred within 100 feet [the old standard buffer width] (about two-thirds the height of a site-potential tree)."<sup>12</sup>

Brennan et al borrowed similar curves for water quality, from a publication discussed later.

**IRRELEVANCE: HEADWATER ECOLOGY AND TIDEWATER ECOTONES**

**Brennan et al is largely wrong in equating marine nearshores with freshwater riparian areas.**

Marine life is very different from aquatic fauna. A Scripps Institution professor has remarked, "...seawater is a toxic material to most land organisms and highly inimical to their survival..."<sup>13</sup>

Few marine shore birds stroll the margins of streams.

The effects of trees falling toward other trees are very different from trees falling toward nearshore houses. And trees falling into streams have dynamic roles, while those in tidewater are largely static. Even in the best of windthrow worlds, the roles of downed trees are very different along streams relative to tidal shores.

The biota of stream-held logs are different from those in beach logs.

Most waters in country covered by FEMAT are seasonal; those on the Sound are diurnal.

Wind's role along streams is very different from its intertidal activities.

Old-growth forest headwater streams are typically high-gradient

and narrow

Fire has played a determining role in backcountry forests and riparian areas; burning bushes along the bay are rare.

Aquatic insects are key players in streams; neither they nor other insects have much to do with tidewater, where they play a minor role in diets of juvenile salmon.

Nutrients are scarce, limiting, and welcome in forest streams; they are (perhaps wrongly) considered hostile in the Sound, where oceanic sources are immense. \$15 million is about to be spent at the Central Kitsap sewage plant to keep nitrogen out of Puget Sound; meanwhile volunteers are hand-carrying high-nitrogen salmon carcasses to forest streams. A noted marine biologist has suggested that primary production in tidewater is constrained by light, not nutrients.

Snow and ice are common arrivals in FEMAT-related riparian areas; not so along the Sound.

Eroded tidelands are considered problems along tidal routes; eroding beds are a natural part of the aquatic profile.

No research has shown that humidity, air temperature, windspeed gradients, nor soil-moisture profiles are the same above tidewater shores as those adjacent to streams.

FEMAT deals with surface erosion (sediment) from old-growth logging on steep slopes. Most of the literature cited by *Brennan et al* on this subject is from the East and Midwest, involving row-crop agriculture, overgrazed pastures, and feedlots. No research has shown that Puget Sound nearshores share any of these causes, nor the effects whatever their cause.

Mosses, lichens and amphibians have major presences and are major concerns in managing forest nearshores. They are absent or minor matters along Puget Sound.

Shade is important to water temperatures in streams; virtually irrelevant to tidewater.

**Brennan et al's general approach to buffer-width conclusions is convoluted.**

Brennan et al curiously defines buffers as representing "mature

vegetation".<sup>14</sup> Since the report extrapolates from FEMAT findings for old-growth forests, we must assume that trees are implied. Yet 80 percent of Bainbridge Island is developed, much of it landscaped with perfectly functional lesser vegetation that is not "mature" nor looming like trees. Obviously "mature" needs further explanation.

In their employment of FEMAT curves, Brennan *et al* inexplicably 'grew' site-potential tree heights (SPTHs) to 200 feet from the officially prescribed 150 feet. This alteration appears throughout the Brennan *et al* paper. Its effect is to falsely indicate buffer 'needs' one-third wider than FEMAT counseled. Where the paper notes that FEMAT curves flatten at 80 percent effectiveness<sup>15</sup> at .6 SPTH, they convert this to 122 feet when it should be 91 feet.<sup>16</sup> This leads to a one-third overstatement of indicated buffer widths.

#### LOOKING BEYOND FEMAT

Passing on from the distorted FEMAT material to other literature, Brennan *et al* assembled six other review documents, listed at their page 3, dealing with buffers. They were considered "thorough, frequently cited, scientifically sound", and relevant to the region. It is not clear how they were employed; presumably as sources of specific studies reviewed later and listed in Appendix C. That appendix summarizes buffer findings from 20 studies.

"Relevance to the region" meant, to Brennan *et al*, Washington State or the Puget Lowland or coastal systems.<sup>17</sup>

"Relevance" is certainly relative. Of the six non-FEMAT sources all had six defects.

One is the ecogeographic sources of the studies reviewed. Even the nearby-authored science reviews relied mainly on fetched-far studies, dealing mostly with agricultural pollutants. I picked two of the Brennan *et al*-chosen literature surveys to examine their analytical worth: Desbonnet *et al* and May (I used the May 2003 report to Kitsap County).<sup>18</sup> The May collection covering pollution buffering included 23 studies of pollutant buffering and 24 studies of fine sediment removal. Desbonnet used 16 studies for nitrogen, 17 for phosphorus, 10 for sediment. Almost without exception the research had been done in the

Midwest and East Coast, involving manure or cropland.

Second, given the very large number of such studies world-wide, it is not clear what criteria May and Desbonnet (and the others) used in choosing the cited studies. For water quality studies to be relevant to Puget Sound, most should have been done in places with:

Slopes like ours, above and within the study buffers

Shallow soils like ours, underlain by hardpan or bedrock

Fall-winter research when vegetation is dormant like ours

Prolonged rains, not short burst typical of Midwest and East

Threats that aren't farm-related

Threats of long duration, not short pulses

Buffers that are exclusively grass or shrubs or trees. The kind of vegetation, like slope, is highly important to buffering.

These criteria exclude most studies included in Brennan *et al's* research surveys.

Third, Many of the study reports seen by the Brennan *et al* analysts do not report key factors like those listed just above. Those reports should be excluded pending full information.

Fourth, the Brennan *et al* paper deals in averages (Appendix G) and ranges (Appendix C) of effects but does not portray effects' dispersion. These are available in at least the May and Desbonnet reports (FEMAT shared this failing). When WDFW resorted to averaging<sup>19</sup> Buell<sup>20</sup> commented:

There is no scientific or technical basis for the use of averaging, taking the median value, or any other measure of "central tendency" when arriving at a conclusion regarding the effectiveness of protective measures, such as streamside buffer widths, without first evaluating the relevance or appropriateness of *each* of the values being used in the analysis to the watershed or stream types subject to protection. At the very least, some reasoned



analysis must be performed and a weight assigned to each value reflecting the similarity of the watershed, vegetation condition, and fish and wildlife resources present prior to arriving at a conclusion....The best way to use the research is to choose one or more scientific studies which apply particularly well...and use those studies for guidance.

Fifth, where effects data, relevant to buffer width, is tabulated, there are no tests of its statistical relevance. I did so for May's compilation for fine sediments and Desbonnet's on sediments, nitrogen and phosphorus, using nonlinear regression suggested by Desbonnet. In every case except phosphorus the equations could reasonably predict intercepts but not slopes. This supports the hypotheses that buffer width had an effect, but that effect did not change with buffer width. A change of buffer width did not produce a predictable change, up nor down, in pollutant reduction. Phosphorus met conventional standards of predictability.

Sixth, few studies report the absolute quantitative reduction in pollutants, in addition to percentages. (Desbonnet's Table 2 is an exception.) So Brennan et al follows the easy route, to percentages. Yet the streams are affected by absolutes, not proportions.

**Brennan et al chose a one-width-fits-all-sites approach.**

The authors gave little recognition and no quantification to the diversity of conditions in forests and along saltwater shores. This despite the wide range of ecologic circumstance implicit in the broad spectrum of buffer widths found in the literature. There seems, in the paper, to be an underlying unverified presumption that one size fits all across wide ecologic strata.

#### **THE PANEL OF EXPERTS**

**A panel of specialists had concerns about extrapolating old-growth streamside science to marine shores.**

The tables and curves were handed to a group of specialists in marine or freshwater matters. The experts agreed that the effectiveness curves (in Figure 1 here) are conceptually correct

(Brennan et al page 8). Diminishing marginal returns are fixtures of analytical ecology and appear in all the FEMAT curves.

The group was asked to "provide their opinion on the capacity of undisturbed marine riparian areas to provide each function or process on a scale of 1(lowest) to 10 (highest)" (p. 108). The panel chose woody and leafy debris, runoff and erosion as most-important near-marine concerns (p. 129).

The panel clearly did not choose to draw tidewater buffer-width guidance from streams. They were cautious about ascribing the conditions and dynamics of transitional stream riparia to the abrupt ecotones at marine fringes. They did not subscribe to notions that marine pollutant dynamics are analogous to those of streams (p. 111). They noted that the mechanisms and benefits of shade differ between streams and the marine environment (p. 114). They learned that most marine driftwood comes from distant places, while large woody debris in streams is mostly from adjacent slopes. They agreed that while leaf litter has comparable roles, associated insects dominate fish diets in streams but are minor in tidewater (p. 119). They identified "a strong contrast in natural and anthropogenic sediment issues in freshwater and marine systems" (p. 122).

#### THE SEVEN RIPARIAN FUNCTIONS

Following are comments on individual functions: FEMAT's treatment, subsequent research, Brennan et al's research selections, and the science panel's conclusions.

#### MICROCLIMATE

FEMAT was "...aware of no reported field observations of microclimate in riparian zones..."<sup>21</sup> They relied on a single study of the microclimate factors inside old-growth forests, relative to distance from adjacent clearcuts, at two places in the Cascades.<sup>22</sup> That this study had little relationship to the structure and dynamics of stream riparia was necessarily overlooked.

Riparian microclimate is influenced heavily by wind exposure, on both the uphill and stream sides. Not only are usual conditions

affected but also the range of variability. These matters were under discussion at the time of FEMAT but not quantified.<sup>23</sup> Indeed the first sentence in the previous paragraph was repeated verbatim eight years later.<sup>24</sup>

FEMAT emphasis on microclimate was based primarily on the needs of mosses, lichens, and amphibians.<sup>25</sup> [Mosses are present in Island tidewater yards to nuisance degree, while amphibians stay well away from the shore.] FEMAT ascribed the distinct microclimate along stream channels to cold air drainage and the presence of turbulent surface waters.<sup>26</sup>

**Subsequent research** has included studies of water seepage into and away from streams at levels below the water's usual surface (hyporheic flow). It is this two-way interchange that is primarily responsible for the kinds of life adjacent to backcountry streams, because of bacteria and invertebrates that ride along.<sup>27</sup> [Such kinship would be fatal to upland biota along tidewater shores.]

Given that microclimate in riparian areas is defined largely by cold-air drainage and interaction with fresh water,<sup>28</sup> it is hard to find a logical tie between headwater-stream microclimates and those of the Puget Sound nearshore.

**Brennan et al's research selections** are not specific to microclimate within buffers but rather to shade beyond.

### SHADE

**FEMAT** relied apparently on two reports, both suggesting that old-growth buffers (of unknown character except 100 feet wide) could create as much shade as broader ancient forest.<sup>29</sup>

Dr. John Pizzimenti<sup>30</sup> has reported:

The Oregon Forest Industries Council commissioned a review study of the scientific evidence supporting the FEMAT riparian shade effectiveness curve. The resulting 1999 report found that neither the scientific source nor the technical basis of the FEMAT shade curves could be independently verified. In addition, the data and curves from the FEMAT-referenced studies did not fit the published FEMAT shade relationship. The same study also found empirical data that indicated that the FEMAT curve

underestimates the shade contribution from riparian vegetation.

**Subsequent research** has been considerable, with special emphasis on shade along small streams, where trees and shrubs may arch over the waterway or shade it from a distance. The possibility of temperatures lethal to fish has been confirmed and the wide variation in, and numbers of, factors affecting temperature have been measured. Temperature has little to do with buffer width, much to do with buffer height, stream width and its compass orientation, and solar angle.<sup>31</sup>

Biomass studies have substantially altered professional thinking about stream temperatures. Net biomass production in streams can increase with high temperatures even when (rarely) the heat is lethal<sup>32</sup>. This because juvenile fish mature faster and their prey are more numerous and also faster growing.<sup>33</sup>

Biomass production may depend inversely on buffer presence. In western Oregon, "net primary production" of biomass in clearcut streams was 8 times that of closed coniferous forests.<sup>34</sup> Likewise, shade over smaller streams can "result in light levels that sustain only low levels of aquatic primary productivity, such as by algae and mosses"<sup>35</sup>. In the south Sound coho spawners refused to enter several creeks because their sources were cold hyporheic (underground) water close to the Sound.<sup>36</sup>

**Brennan et al's research selections** come almost entirely from the realm of small backcountry streams, with shade arching over from both sides, and a primary focus on water temperature. They employed only one of the citations listed here and apparently ignored all of the numerous published reports showing that shade can retard stream biomass production, including fish. I have listed more than a dozen such reports in end notes herein.

Two of the Brennan et al tidewater citations (Rice and Sobocinski) are of little use because of study design<sup>37</sup> and another (Brennan and Culverwell) is not primary research.

There is reference to a discussion of barnacles' seeming sensitivity to exposure in the latitude of La Jolla, accompanied by conflicting experience with limpets.<sup>38</sup> Ricketts saw desiccation as separate from and more important than high temperatures, though both are factors in the upper-intertidal zone. That reduced underwater time caused correspondingly lower

exposure to food supplies was given little emphasis.

**Brennan et al's conclusions** include an effectiveness percentage graph, related to buffer width, with every one of the faults listed earlier. There is no explanation of which data set(s) they used nor how they were melded (if that was done). A problem that permeates the Brennan et al report is that one tree height is taken to be 200 feet while the FEMAT curve displaying the same factor sets tree height at 150 feet. Thus Brennan et al's presentations to the panel and the public, such as 80-percent-effective buffer widths, are 1/3 too large. This, for example, in Table 2 of Brennan et al.

There are three dimensions to shoreline shade: the height of vegetation, the outreach of branches, and above all the height and compass orientation of terrain. There has been much analytical attention to height. For example, at the summer solstice when shade might matter most, a (say) 40-foot tree casts only a 20 foot shadow.<sup>39</sup>

If the tree is 10 feet from the bank, vertical shade reaches only 10 feet beyond. None of the Brennan et al-cited research indicates how much forage-fish spawning beach this would affect. Nor does the cited work, for instance by Brennan, Pentilla, Rice, Sobocinski, nor Tonnes. And nowhere does Brennan et al make even a casual examination of the amount of Puget Sound's shoreline that faces the sun, in summer months, at low tide.

The staff and their **science panel** seem not to have distinguished between dessication and temperature effects on intertidal life. Shade, however it is contrived, seems unlikely to prevent dessication.

The text on upper-intertidal protection of forage fish is well taken but largely irrelevant to the central Sound where summer spawning of surf smelt occurs in only three places, all of which are openly exposed to sunlight and have been for a century. Yet the smelt return.

#### **LARGE WOODY DEBRIS (FALLEN TREES AND BRANCHES)**

This was perhaps the most prominent element of the Aquatic Conservation Strategy associated with FEMAT and its resulting Northwest Forest Plan. Where the FEMAT focus on shade was mainly for stream temperatures, the aim of large woody debris (LWD) was stream structure, notably pools and riffles.

In FEMAT's time there were at least 27 studies (some of them literature reviews) of LWD, none oriented to tidal nearshores. The concern was to provide down trees to the ravines in which streams flowed, mostly to obstruct flows enough to rearrange the bottom sediments enough to encourage and maintain riffles and pools. This proved, then and now, to be difficult because of surges of stormwater and snow melt that altered whole stream channels. Indeed the natural course was annual flushing.<sup>40</sup>

For buffering the concept was to create a tree-retention strip wide enough that any large tree falling directly downhill would reach the stream. This concept was conjectural, of course, when buffering already-clearcut places, considering that well over a hundred years would be needed to make that width relevant. This fact was apparently ignored when FEMAT-informed policies were created.

**Subsequent research** has been prolific, still stream-related. A book-length summary of the science, interesting even to casual readers, had been available by 1988.<sup>41</sup> A fascinating portrayal of an enduring part of forestry: In time, every tree falls. With 350 references, it helped to counter long-standing practices of vigorously removing debris, natural and logging-based, because they blocked fish passage, created log jams, and caused channel scouring. A correct perception but the cure, intensively pursued, was perverse.

Research has shown that fallen trees bridging across small streams and supporting mosses and ferns, also house invertebrates, some of whom fall into the nutrient-short waters below. Such logs hang about for decades, deteriorating at perhaps one to two percent per year, though some pieces have been in channels for 200 years or more.<sup>42</sup> About 60 percent of LWD in streams comes from trees growing within 15 feet of stream banks; about 90 percent comes from trees within 50 feet.<sup>43</sup>

**Brennan et al's research selections** start with FEMAT, deriving a plotted relationship between LWD recruitment "effectiveness" and tree height. The error related to site-potential-tree-height reappears. And what does full (100 percent) effectiveness mean? The proportion of trees in the buffer that touch the stream? The proportion of what is deemed needful? Over what period of time? For what conditions of slope, stream width, fish occupancy, or biota presence? Brennan et al reveals nothing.

All this makes Brennan et al's conclusion, translating FEMAT

relationships to tidewater, rather dubious. First, the vegetative complex in low-order streams (which comprise 70 percent of the running waters in spotted-owl country) is not the same as Puget Sound's. Second, and obviously, the receiving waters have entirely different dynamics and biota. Third, the critical nature of LWD in streams is well known and to some degree quantified, while the functions, even the presence, of LWD on marine shores have not been measured nor linked analytically to source uplands. How much driftwood is "needed"?

A driftwood study by Tonnes<sup>44</sup> is mentioned. Well done, it could be the foundation for a book, for which I have suggested chapter titles. However a finding that beach temperatures are lower under logs than elsewhere<sup>45</sup> seems to have little relevance for, say, forage fish spawning.

**The research panel** apparently had little to add to the deifying text on large debris. They found FEMAT's effectiveness curve "conceptually valid", a finding they repeated regularly for upland circumstances.

**Brennan et al's conclusions**, that more driftwood is better, are questionable. For instance, studies in log-storage areas have suggested that bark leachates are chemically hostile to benthic marine life.<sup>46</sup> Smothering by logs and sloughed-off bark has been well-documented for decades.<sup>47</sup> Contrarily, log booms have apparently had both good and bad effects on fish. And the Brennan et al statement that "Backshore areas can be relatively dry, exposed and nutrient deficient, and driftwood may play an important role in providing...moisture and nutrients..." (p. 18) is conjectural to a fault. Driftwood may in fact be pickled. Another overreaching statement is that "Buffer width effectiveness is strongly influenced by...potential height of mature trees" (p. 19). This begs the question of beach welfare during the centuries past and future without "mature" trees.

#### **LITTER FALL / ORGANIC MATTER**

**FEMAT** noted that "Riparian vegetation contributes leaves, twigs, and other forms of fine litter that are an important component of the aquatic ecosystem food base"<sup>48</sup>. This has never been an issue in that stream nutrients, that feed bacteria, aquatic insects and other invertebrates, have to come from beyond the waters. There is an issue with regard to how much during what seasons for what order of stream to nourish how many fish. That

was partially answered by Erman et al<sup>49</sup> in 1977:

The composition of benthic invertebrate communities in streams with riparian buffers greater than 100 feet were indistinguishable from those in streams flowing through unlogged watersheds." "The effectiveness of floodplain riparian forests to deliver leaf and other particulate organic matter declines at distances greater than approximately one-half a tree height away from the channel."

Another study available at the time was generally consistent with Erman.<sup>50</sup> A 1992 paper<sup>51</sup> provides an estimate that small streams receive 300-600 grams of carbon per square meter annually from above-ground vegetation and water-carried underground particles. Included are cones, twigs, leaves, and needles, plus the hyporheic particles. They take one to several years to decay.

FEMAT said, "We are unaware of studies examining litter fall from riparian zones as a function of distance of litter sources from the channel."<sup>52</sup> Meanwhile most of the questions indicated above have persisted, despite the clear importance of "litter" to aquatic welfare. So the FEMAT curve associated with litter fall is conjectural for sites in general, not to mention particular streams, banks, and vegetation.

**Subsequent research** has been preoccupied with large woody debris. However there has been increasing interest in the roles of intermittent streams in the backcountry, which are typically fishless but contribute greatly (because of the immense number of such streams) to insect and organic matter downstream.<sup>53</sup>

**Brennan et al's research collection** on litter is correspondingly wan. Only four citations pertain to tidal waters of which two relate to outer coasts. Of the two relevant to Puget Sound one raises questions about the difference between 'altered' and 'natural' beaches.<sup>54</sup>

**The research panel** remarked on the importance of insects to streams and their probable importance to tidewater fish. They apparently were unaware that, based on four juvenile-salmon diet studies, about 12 percent of the fishes' intake is insects; about 12 percent of those are probably tree-sourced.<sup>55</sup>

The proceedings imply that nutrients, from decaying carcasses or animal and bird excreta and arriving above the shore, are a good



thing. This is certainly pertinent to forest streams. However it seems to run counter to the current wave of alarm about nutrients conveyed into Puget Sound and ignores the vast oceanic nutrient source.

Brennan *et al* concluded that the panel did not know enough about litter delivery to tidewater wrack to render judgments. An expert on nearshore marine biota has commented that, on a regional basis, most marine detritus is composed of eelgrass and macroalgae.

**Brennan *et al*'s conclusion** (Figure 5, page 23) is that 80 percent "effectiveness" is attained within 80 feet of the edge. Brennan *et al* never suggests how one would recognize full effectiveness nor fractions thereof.

#### **ROOT STRENGTH AND SLOPE STABILITY**

**FEMAT** faced the bipolar perceptions of shoreline trees that are still with us. Falling trees that plunge into streams are encouraged for fish habitat reasons. But they carry with them rootwads laden with sediments unwanted in the streams, nests, perching places for raptors, windbreaks, and microclimate; an ecotone moves landward and an ecosystem is altered.

FEMAT relied on literature and professional counsel that roots are physically functional in gripping soil within half a tree crown's width. For slopes less than 30% they concluded that mass soil movements were an issue and could be reasonably secured by roots on trees within 50 to 75 feet of streams.<sup>56</sup>

This says nothing, of course, about the debris slides and flows that dominate the sediment budgets of pristine watersheds and start far above riparian areas.<sup>57</sup> These major, episodic slides can and do barrel right on through treed buffers.

**Subsequent research** on forest streams' mass soil movements has been considerable. The literature embraces geology, engineering, plant physiology and botany, and forestry.

Scarcely mentioned by Brennan *et al* but more to the point of contemporary Puget Sound slope stability are the papers by Shipman, Finlayson, Johannessen, and Schulz and the works they cite.<sup>58</sup> Schulz, William H. Landslide susceptibility revealed by LIDAR imagery and historical records, Seattle, Washington. *Engineering Geology* 89:67-87.

Bipolar perceptions appear again on Puget Sound, with mass soil collapse seen as beneficial to beach processes, hostile to upland functions. Concerning the former, no research tells us, for any site, over any time period, the right amount of slope instability.<sup>59</sup> Concerning the latter, The Department of Ecology has warned repeatedly about the perils of trees close to the shore:

"In the Pacific Northwest, forested buffers are often "created" as leave-strips around wetlands or along streams when the surrounding forest is cleared for land development. These forested strips are then exposed to winter windstorms, which are common, often resulting in substantial loss of large trees due to blowdown."<sup>60</sup>

"Large trees should be used on the face of slopes sparingly and with caution. Should these trees collapse because of undermining of the root system by erosion or by windthrow, large volumes of earth can be disturbed by the tree roots when they pull from the slope. The resulting large, bare areas are opened to further erosion, which may endanger adjacent land and vegetation. New major trees should not generally be established on the face of coastal slopes."<sup>61</sup>

"Any process that adds weight to the top of a potentially unstable slope can increase the risk of sliding." "Vegetation growth increases weathering of soils and root action can, particularly in compact units like glacial till, loosen natural fractures and joints in the material, leading to failure. Movement of trees by wind stress may loosen soils, enhancing infiltration, and in some cases, may impart significant loads to the slope itself that may trigger failure."<sup>62</sup>

**Brennan et al** lists a dozen **research selections**, mostly dealing with surface runoff rather than bank stabilization. None suggests ranges of buffer widths for the Northwest generally nor for Puget Sound in particular.

However the Brennan et al document twice displays (at pages 27 and 127) suggested "setbacks" from bluffs, for structures, attributed to a 1994 Macdonald et al publication<sup>63</sup> which draws on a 1992 paper by Griggs et al<sup>64</sup>. Brennan et al does not reveal that the senior author of the original paper, Dr. Gary Griggs, was referring to ocean-facing California beaches, nor that his figures assume 50 years' retreat of tops of bluffs above a protected (bulkheaded or bedrock) toe, nor that the tops of "stable" slopes are assumed to retreat up to 50 feet in 50

years.

It is appropriate to question the Macdonald-Griggs et al assumptions about potential slope angles. That shoreside banks will ravel to an ultimate angle of repose of 45 degrees, seems unrealistic for Puget Sound, where toe-protected bluffs remain nearly vertical and support irrepressible vegetation as they relax. Puget Sound shores are surely different from California's coastal sites.

Brennan et al err in describing Griggs et al figures as "setbacks". Macdonald et al, echoing Griggs et al, (reproduced here as Figure 2) proposes not blanket setbacks but rather a construction zone within which geologic stability must be demonstrated. Inland from that zone structures are not impeded. If the bluff is judged stable, the zone extends inland as far as the bluff is high (thus assuming a 45-degree potential slope), measured horizontally from the bluff's toe. If moderately stable, the zone reaches as far as a 30-degree angle of repose would reach: the bluff's height multiplied by 2 and measured horizontally from the bluff's current toe.<sup>65</sup> If the bluff is unstable development would be excluded within the first-mentioned zone, and stability must be demonstrated the rest of the way to the 2x point. Given a favorable geologic report, this is quite a different thing from outright setbacks.

Another error lies in Table 6 and Figure 6, (Brennan et al page 27) where the figures for unstable bluffs are incorrect. That zone is not the sum of the 45 and 30-degree zones, but rather only the 30-degree zone, even with an unfavorable geologic report.

The Macdonald et al figures and Brennan et al's discussion imply a precept that the 60 percent of Puget Sound shores that are bluffs will descend with and without shore protection, providing after all the much-sought longshore sediment movement.

**The research panel** savored the setbacks but pointed out that vegetation on the bank may reduce the setback need. Yet they liked erosion and blown-down trees. Bipolarism again. **Brennan et al's conclusion** is that buffering above the shore is good, without regard to alternative management of such sites and without suggesting buffer widths. Brennan et al believes that buffers can control runoff (presumably by infiltration of winter rains), providing "normative" rates of erosion, whatever those are. Nobody has ever devised buffer guidelines to meet quantitative levels for those goals.

### FINE SEDIMENT CONTROL

**FEMAT** had good reason to be concerned about surface erosion and its arrival in streams as "fine sediment". Agriculture, the prime universal source of surface erosion, was not present in federal forests, but logging was. On the West Side, the region of FEMAT's concern, vegetation is largely irrepressible, but surface erosion was a factor in the interim between harvesting and plants' return.

Some of the surface-erosion concern was reflected by FEMAT in water quality and slope stability measures, but some was explicit.<sup>66</sup> FEMAT apparently relied on five publications of which two were Northwest research reports and one was a literature review that repeated those two PNW studies but recited no others dealing with Northwest water quality, much less fine sediment.<sup>67</sup>

**Subsequent, as well as earlier, research** has been abundant. As mentioned above, most of the literature on this subject is from the East and Midwest, involving row-crop agriculture, overgrazed pastures, and feedlots. It demonstrates that vegetated buffers can, on moderate slopes, impound sediments that are otherwise headed for streams, and thereby constrain contaminants, such as phosphorus, that attach to soil particles. Depending on local circumstances of soil character, stormwater flow rates and durations, season of the year, topography, use of the land above the buffer, and the kind and density of buffer veg, buffers can be quite narrow for this function.<sup>68</sup>

**Brennan et al's science selections** (ten, mostly literature reviews) on surface erosion demonstrate the wide variation in buffer efficacy. Their inclusion of Desbonnet and May, mentioned here earlier, reinforces the low correlation between buffer widths and effectiveness, simply because of the manifold factors controlling buffer utility. Desbonnet's sediment data<sup>69</sup> portrays the diversity that is concealed in Brennan et al's sediment control curves (p. 122) said to be 'adapted' from Desbonnet. Statistical analysis of Desbonnet's data suggests that 6-foot buffers are as strongly associated with sediment restraint as are 200-foot buffers.

**The research panel** preferred to maintain upland sediment movements beachward, where they are seen as part of the natural

system and not an impediment as they would be in streams. That those sediment may convey pollutants (metals and organic compounds) was apparently seen as secondary. Which is not surprising given the absence of quantitative research relating pollutants to sediment arrivals in Puget Sound below, say, residential areas like Kitsap County's.

**Brennan et al's conclusions** about whether erosion in the neighborhood of marine shores should be corralled by buffers, or by any other of the available methods, are unknown. Their statements relate entirely to stream buffering.

Statements by both the panel and the authors reflect yet another instance of bipolarism alongshore.

### WATER QUALITY

Here we have another convolution. Brennan et al quotes FEMAT which quotes Castelle which quotes the other sources that Brennan et al quotes. Embedded here are bipolar views of "water quality".

To **FEMAT** water quality meant negligible sediments, low water temperatures, and high dissolved oxygen. All but oxygen are covered in other sections of the Brennan et al paper. Aeration is not mentioned, though it is a tidewater issue in various places.

**Brennan et al's science selections** overlap those for fine sediment. To Castelle and Brennan et al water quality includes pollutants that either weren't in FEMAT's domain or were welcome there (nitrogen). Still another instance of bipolarism.

Nitrogen and metals interested Castelle as pollutants, though he cited only one metals study<sup>70</sup>. Yard chemicals are mentioned by Brennan et al (p. 34) but are not included in their cited literature.

Brennan et al borrows effectiveness curves from Desbonnet for water quality. These are subject to the same criticism mentioned above for sediments.

Brennan et al portrays agriculture as significant to Puget Sound's welfare, ignoring the minuscule occupancy of nearshore spaces by farms, their bare ground and nutrients.

Concerning buffers' role, the **science panel** observed, "relative to the larger watersheds that deliver pollutants to Puget Sound, marine riparian areas contribute a small fraction of the ecological function in mitigating water quality impacts at a landscape scale".<sup>71</sup>

**Brennan et al's conclusions** for tidewater buffers are obscure. They cite effectiveness curves from Desbonnet that have nothing to do with tidewater nor the Puget Sound region. (Nor does the Desbonnet data that I used to find that incremental increases in buffer widths are not associated with increases in water quality.)

### FISH AND WILDLIFE HABITAT

**FEMAT** had little to say about wildlife other than fish and spotted owls. There is a one-sentence reference to ungulates (Appendix V-F) and reference to 1991 state guidelines for wetland wildlife buffers.<sup>72</sup> There is a discussion of problems faced by amphibians (irrelevant to this critique because there are no tidewater amphibians unless one redefines river otters).

FEMAT also drew on a literature review done for Washington's Timber Fish and Wildlife program.<sup>73</sup> It dealt with freshwater riparian areas and mentions beavers, muskrats, nutria, mountain beavers, marsh shrews, and other species specific to fresh water. Also covered are 23 birds that are obligate freshwater riparian inhabitants across the Pacific Northwest.

Still one sees statements like "359 of the 414 wildlife species of western Washington and Oregon use riparian habitats"<sup>74</sup> which smoothly became "Approximately 85% of Washington's terrestrial vertebrate species use riparian habitat..."<sup>75</sup> This is an acknowledgment that mobile living things use surface water, not that they require a certain vegetative mix along the margin. On the other hand, in a residential setting the figures suggest an hypothesis that primary productivity is higher in people's waterfront yards, thereby fueling a more robust food chain than is found in inland woods.

**Subsequent research** has shown the limited relevance of buffers for stream-oriented wildlife. A study of 62 Olympic Peninsula streams and associated riparian zones concluded that the characteristics and even the presence of the riparian forest had

no influence on the persistence of fishes and stream-related birds and mammals.<sup>76</sup> Research on 18 Washington Cascades streams found that total abundance and species richness of birds and small mammals using areas close to streams before any timber harvest were comparable to the number and kinds after harvest.<sup>77</sup> A 16-stream study in southwest Washington showed that, on average, total salmon biomass was twice as high on clearcut as on old-growth sections.<sup>78</sup> Corresponding results have been found in research in Oregon and British Columbia.<sup>79</sup> [These several studies have implications for tidal shores.]

A 1997 update of the abovementioned state guidelines<sup>80</sup> has been cited widely and recently. The following statement is from Buell:<sup>81</sup>

Appendix C [of the 1997 update] is usually appealed to as representing the *minimum* buffer 'needed to retain' functions. This is not true...these values were the *maximum distance studied* by investigators. This distance is nearly always significantly in excess of that required for *complete or nearly complete protection* of 100% of fish and wildlife needs...the [Appendix C] table itself is a rather egregious exaggeration and misrepresentation of the underlying science and the facts.

**Brennan et al's research selections** for wildlife welfare are scant and almost wholly drawn from freshwater studies.

**The science panel** did not identify obligate upshore marine species but knew that many terrestrial species pass through. They felt that absence of buffering might affect species diversity and/or abundance, but did not indicate what conditions were assumed to prevail in the absence of buffers. They suggested more study of ecotones, presumably their barrier and/or synergistic roles. Somebody felt that animal excrement in buffers would migrate helpfully to tidewater, apparently one of the faulty translations of aquatic to marine perceptions.

Prof. John Marzluff, a member of the science panel, has been critical of the wildlife research community for its lack of rigorous experimental design and paucity of quantification.<sup>82</sup> He has done much to change that situation, especially with regard to urban and exurban birds.

**On Bainbridge Island** alternatives to wildlife buffers are already in place. They are the residential shoreline places

already landscaped, plus wetland buffers already proclaimed, plus parks and other already-dedicated open spaces. Together they total at least 30 percent of the Island's area. All of these are in regular use by upland species for nesting, burrowing, hunting, feeding, and breeding.

As is most of the Island's other 70 percent. The wild things are with us almost everywhere. Byways, backyards, and open places provide creature comforts to wildlife from birds to voles. Day and/or night the four-legged kinds sally near, as do the aviators.

Shoreside yards clearly share that abundance, by day, night, or both. Indeed some nearshore transients, including raccoons, river otters and deer, are increasing,<sup>83</sup> despite the fact that 4/5 of the Island's tidewater shore is developed.

From where do they come? From hideouts in holes and cavities, under boards and beneath bushes and brambles. From treetops, grassy clumps, fence corners, yard burrows, and shrub lands.

Repeated studies along Northwest forest streams have shown that birds, small mammals, invertebrates and fish prosper in the absence of buffers.<sup>84</sup> Bainbridge back yards and verges are surely far more hospitable than streamside forest clearcuts.

The State's Department of Fish and Wildlife has listed 'priority species' across the state. Among the 51 priority marine birds are 17 that visit Puget Sound. Most are passing through toward nesting sites to the north and east. Five may nest on Bainbridge island.<sup>85</sup> Of those, one is oriented to fresh water, leaving bald eagles and great blue herons.

Plus two: pigeon guillemots and terns which, if here, nest in self-dug holes in bluffs. For these, best protection may be shore protection. A collapsing bluff would not help these priority birds.

The growing inventory of bald eagles comes at the expense of herons. This because eagle predation of heron eggs and chicks is causing herons to abandon rookeries, even where herons have long ignored nearby human disturbances. Such tradeoffs may be far more significant to wildlife welfare than the Island's long-existing nearshore development. In any case, while herons pace the water line, eagles perch on dock railings and piling as well as the Island's million treetops.



It is interesting that Brennan et al's discussions of habitat turn on amounts of land to set aside, the 'supply side'. There is no reference to the 'demand side'—how many of what species we want here and how much habitat that requires. It isn't even clear that habitat is a limiting or enabling factor for fish or wildlife; other things may be more important. Nor are we offered quantitative information on the useful habitat roles of developed land.

### CONCLUSIONS

**The Brennan et al paper invites a number of rather negative concluding comments.**

The paper tries to rationalize buffering for old-growth headwater forest streams with that of tidal saltwater shores. It ignores the difference between streams' smooth incremental transitions from waterways to woodlands, and the abrupt ecotonal breaks at tidewaters' banks. The key defining feature of freshwater riparian areas is the two-way interchange of water between the stream and the shore, to their joint benefit including a clearly apparent boost to macro- and micro-organisms in both environments. Contrarily, upland ecosystems beside tidewater traffic only one-way in fluids, conveying organisms that perish in saltwater. Upland places are crucial to few marine creatures.

The paper reveals the resulting bipolarity of the seven "riparian" functions. The functions of falling trees differ between streams and tidewater. Mass soil movement and fine sediment are bad for streams, presumed good for tidal beaches. Nutrients considered bad for the salt chuck are welcomed for headwater streams. Shade may have merit on upper-beach spawning; it can be deleterious for fish rearing in woodland streams. Organic matter from the shore supports most of the aquatic food chain; intertidal litter and wrack can be of little consequence to general marine nutrition and welfare. And, while a number of wildlife species have an obligatory relationship with streamside areas,<sup>86</sup> the science panel was uncertain whether any wildlife species are obligate upon upland places adjacent to tidewater.

Tidewater circumstances are mentioned little, except where (conflicting) goals are cited for shade, sediment, nutrients, woody debris, and slope stability. And there is no mention of ecologic nor wildlife values of the extensive residential uses

of the upland.

The paper proposes common buffer widths for all shores, ignoring diversity of functionality, need, opportunity, and alternatives.

There are two significant mensurational errors, one having to do with mature-tree heights, the other with the setback implications of low-stability bluffs.

For the various ecologic functions the paper uses 'effectiveness curves' each "characterized" mostly from a handful of decade-old studies hurriedly melded for spotted-owl territory. The curves have several faults, including failure to define effectiveness and absence of quantitative measures. The curves cannot be independently verified. Their seemingly sole benefit is demonstration of diminishing returns. Brennan et al's choice of 80-percent effectiveness as indicative in some cases depends entirely on a normative decision on where to put an inflection point in a curve. Similarly, Brennan et al's use of the literature's averages depends entirely on which literature is selected. Brennan et al's reference list is hardly exhaustive.

Unmentioned in the paper are scientists' recent concerns about those curves and their interpretation in terms of buffer widths. An early conclusion had been that "Generally, most ecological processes occurred within 100 feet (about two-thirds the height of a site-potential tree)". A decade later a review group surmised that adequate protection could be attained with narrower buffer strips and/or alternative silviculture approaches.<sup>87</sup>

Also unmentioned is downhill relevance. Neither for fresh water nor salt does this report indicate the relevance to what is really being protected, the biota below. To what degree are invertebrates and their piscine predators affected by changes in the various nearshore "ecological functions"? For, say, litter fall, what amount of biologic response can be expected per unit volume of litter? That can be estimated; where are the numbers? In some places the report is misleading - a decade of studies has shown that, in western Washington, an *absence* of shade is beneficial. Along tidewater shores an *abundance* of sediment is considered nice.

Missing, curiously, is a discussion of Puget Sound nutrient budgets and their dependence, if any, on existing inshore circumstances (largely residential).

Among the most important failings of the paper is the authors' ignoring socioeconomic analysis, available in FEMAT and many other places. Although FEMAT was largely concerned with old-growth communities and activities, it established a protocol for human-welfare assessments.

Finally, much research has shown that the welfare of headwater streams and their occupants is heavily influenced by arriving upstream waters. These findings do not translate to tidewater. However the effects of arriving oceanic upwelling are being recognized and to some extent quantified.<sup>88</sup> Curiously no measured nutrient budgets for Puget Sound nearshores are presented by Brennan *et al*. In fact, Brennan *et al* offers not a single quantified nearshore relationship.

## NOTES

1. Brennan, Jim, et al. 2009. *Protection of Marine Riparian Functions in Puget Sound, Washington*. Seattle: Washington Sea Grant.
2. Forest Ecosystem Management Team [FEMAT]. 1993. *Forest Ecosystem Management: An ecological, economic, and social assessment*. Portland, OR: US Departments of Agriculture and Interior, et al.
3. Scientific Analysis Team [SAT]. 1993. *Viability Assessments and Management Considerations for Species Associated with Late-Successional and Old-Growth Forests of the Pacific Northwest*. Portland, OR: USDA Forest Service, p. 447.
4. Tuchmann, E. T., et al. 1996. *The Northwest Forest Plan: A report to the president and Congress*. Portland, OR: USDA Forest Service, Pacific Northwest Research Station.
5. Haynes, Richard W., et al. 2006. *Northwest Forest Plan - The First Ten Years (1994-2003), A Synthesis of Monitoring and Research Results*. Gen. Tech. Rpt. PNW-GTR-651. Portland, OR: USDA Forest Service, Pacific Northwest Research Station, p. 201.
6. Haynes et al 2006, above, p. 201.
7. FEMAT 1993, above, p. V-34.
8. Wimberly, M. C., et al. 2000. Simulating historical variability in the amount of old forests in the Oregon Coast Range. *Conservation Biology* 14(1):167-180. Cited in Spies, Thomas A., et al. 2002. The ecological basis of forest ecosystem management in the Oregon Coast Range. In: Hobbs, Stephen D., et al., eds. *Forest and Stream Management in the Oregon Coast Range*. Corvallis, OR: Oregon State University Press.
9. FEMAT 1993, above, used 170 feet, but this was reduced in Table V-5 and in:  
USDA Forest Service and USDI Bureau of Land Management. 1994. Standards and guidelines for management of habitat for late-successional and old-growth forest related species within the range of the northern spotted owl, Attachment A, p. C-30 In: *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl*.

The 150-foot SPTH figure is repeated in Haynes et al 2006, above, p. 201, 203.

This figure is misrepresented by Brennan et al as 200 feet (Sea Grant 2009 p. 16, 20, et al). The pre-FEMAT Scientific Analysis Team (above) had recommended 150 feet. For Bainbridge Island 149 feet has been recommended by: Herrera Environmental Consultants. 2005. *City of Bainbridge Island*

---

Critical Areas Update - Review of Best Available Science: Stream Riparian Areas. Seattle.

10. FEMAT 1993, above, p. V-27.
11. Brennan et al 2009, above, p. 3, 31 ff.
12. Haynes et al 2006, above, p. 201.
13. Isaacs, John D. 1978. Testimony on modification of secondary treatment requirements for discharges into marine water. In: Hearings before the Subcommittee on Water Resources of the Committee on Public Works and Transportation, House of Representatives, 95<sup>th</sup> Congress, May 24-5, 1978. Washington DC: GPO.
14. Brennan et al 2009, above, p. 6.
15. For example, at p. 19.
16. At p. 20.
17. At p. 3.
18. Desbonnet, Alan, et al. 1994. *Vegetated Buffers in the Coastal Zone, A Summary Review and Bibliography*. Narragansett, RI: University of Rhode Island;
- May, Christopher. 2000. *Protection of Stream-Riparian Ecosystems: A Review of Best Available Science*. Prepared for Kitsap County.
19. Knutson, E. Lea et al. 1997. *Management Recommendations for Washington's Priority Habitats - Riparian*. Washington Department of Fish and Wildlife, Appendix C.
20. Buell, J. W. 2000. Review of Kitsap County draft "Land Use & Development Policies", "Critical Areas Ordinance", and supporting documentation. Portland, OR: Buell & Associates, Inc.
21. FEMAT 1993, above, p. V-28.
22. Chen, J. 1991. Edge effects: microclimatic pattern and biological responses in old-growth Douglas-fir forests. PhD dissertation. University of Washington.
23. Scientific Analysis Team. 1993. *Viability Assessments and Management Considerations for Species Associated with Late-Successional and Old-Growth Forests of the Pacific Northwest*. Portland, OR: USDA Forest Service.
24. Haynes, Richard W., et al. 2001. *Northwest Forest Plan Research Synthesis*. General Technical Report PNW-GTR-498. USDA Forest Service, Pacific Northwest Research Station, p. 119.
25. SAT 1993, above, p. 281.

---

26. FEMAT 1993 above, p. V-25.

27. Montgomery, David R., et al, eds. 2003. *Restoration of Puget Sound Rivers*. Seattle: University of Washington Press, p. 261.

28. Kauffman, J. Boone, et al. 2001. Wildlife of riparian habitats. In: Johnson, David H. And Thomas A. O'Neil. *Wildlife-Habitat Relationships in Oregon and Washington*. Corvallis: Oregon State University Press.

29. Beschta, R. L., et al. 1987. Stream temperature and aquatic habitat: fisheries and forestry interactions. In: Salo, E. O., et al, eds. *Streamside Management: Forestry and Fisheries Interactions*. Contrib. No. 57. Seattle: University of Washington, Institute of Forest Resources.

Steinblums, I. 1977. Streamside bufferstrips: survival, effectiveness, and design. MS thesis. Corvallis: Oregon State University.

30. Pizzimenti, J. 2002. Efficacy and economics of riparian buffers on agricultural lands, State of Washington. Englewood, CO: GEI Consultants, Inc.

31. Montgomery et al 2003, above. p. 255.

32. In the relatively sunstruck area near Roseburg, OR, mortality has been seen at 80 degree F water temperatures, "a level that is seldom reached" (personal statement by Prof. Michael Newton, Oregon State University). At 72 degrees fish slow their feeding.

33. Montgomery et al 2003, above, p. 255; Beschta et al 1987, above; also:

Moldenke, A. R. and C. Ver Linden. 2007. Effects of clearcutting and riparian buffers on the yield of adult aquatic macroinvertebrates from headwater streams. *Forest Science* 53(2):308-319.

Gregory, S. V. 1980. Effects of light, nutrients, and grazing on periphyton communities in streams. PhD dissertation. Corvallis: Oregon State University.

Newbold, J. D., et al. 1980. Effects of logging on macroinvertebrates in streams with and without buffer strips. *Canadian Journal of Fisheries and Aquatic Science* 37:1076-1085.

Murphy, M. L., et al. 1981. Effects of canopy modification and accumulated sediment on stream communities. *Transactions of the American Fisheries Society* 110:469-478.

Murphy, M. L. and J. D. Hall. 1981. Varied effects of clear-cut logging on predators and their habitat in small streams of the Cascade Mountains, Oregon. *Canadian Journal of Fisheries and Aquatic Science* 38:137-145.

Hawkins, C. P., et al. 1983. Density of fish and salamanders in relation to riparian canopy and physical habitat in streams of the northwestern United States. *Canadian Journal of Fisheries and Aquatic Sciences* 40:1173-1185

Gregory, S. V., et al. 1987. Influence of forest practices on aquatic

---

production. In: Salo, E. O. and T. W. Cundy, eds. *Streamside Management: Forestry and Fishery Interactions*. Contribution No. 57. University of Washington Institute of Forest Resources p. 233-255.

Meehan, William R. 1996. Influence of riparian canopy on macroinvertebrate composition and food habits of juvenile salmonids in several Oregon streams. Research Paper 496. Portland: US Forest Service, Pacific Northwest Research Station.

Raphael, Martin G., et al. 2002. Effects of streamside forest management on the composition and abundance of stream and riparian fauna of the Olympic Peninsula. In: Johnson, Adelaide C., et al, eds. *Congruent Management of Multiple Resources*. General Technical Report PNW-GTR-563. Portland: US Forest Service, Pacific Northwest Research Station.

Bisson, Peter A., et al. 2002 Influence of site and landscape features on vertebrate assemblages in small streams. In: *Congruent Management...*, next above.

Hauer, F. R. et al. 2003. Landscapes and ecological variability of rivers in North America: Factors affecting restoration strategies. In: Wissmar, Robert C. et al, ed. *Strategies for Restoring River Ecosystems*. Bethesda, MD: American Fisheries Society.

34. Gregory, S. V., et al. 1991. An ecosystem perspective of riparian zones. *Bioscience* 41(8):540-551.

35. Lindenmayer, D. B. and J. F. Franklin. 2002. *Conserving Forest Biodiversity - A Comprehensive Multiscaled Approach*. Island Press, p. 101;

Strahler, A. N. 1957. Quantitative analysis of watershed geomorphology. *Transactions of American Geophysical Union* 38:913-920.

36. Konovsky, John. 2008. Temperature regimes and coho production in south Sound lowland stream systems. 2008 South Sound Science Symposium Abstracts 41. Washington State Department of Ecology.

37. The Rice citation describes a week of diurnal beach temperatures and two surf-smelt egg counts several days apart, all in front of a bulkheaded treeless backshore and a nearby treed, unprotected shore. He fails to document the size and configurations of the bulkhead and the vegetation. No indication is given of the relative roles of the two features; only vegetation is mentioned vaguely in the report. Indeed the study's design precludes the comparison. The total number of smelt eggs was larger at the treed site, as was the number of dead eggs, though the latter was not statistically significant. The report mentions but does not quantify the presumably more-rapid cycling of egg maturation at the unshaded site, which may be producing more and larger juvenile fish per unit time.

It is difficult to share the author's willingness to extrapolate the findings of this 1-site 1-week study to all of Puget Sound.

The Sobocinski thesis is more elaborate, but it is confounded by the presence

---

of fresh water, flowing and/or stationary, at most of her tidewater study sites. This is important because of the role of aquatic insects in her invert traps. Differences in insect capture may well be attributable to aquatic matters rather than (her supposition) the presence or absence of trees.

38. Ricketts, Edward F., et al. 1939 (5<sup>th</sup> ed. 1985) *Between Pacific Tides*. Stanford University Press, p. 453 ff.

39. Berg, Dean Rea et al. 2003. Restoring floodplain forests. In: Montgomery et al, above, p. 256.

40. Maser, Chris, et al. 1988. *From the Forest to the Sea: A Story of Fallen Trees*. General Technical Report PNW-GTR-229. Portland, OR: USDA Forest Service, Pacific Northwest Research Station. Cited incorrectly by Brennan et al. as Maser and Sedell.

41. Maser, et al 1988, above.

42. Maser et al 1988, above, p. 64.

43. Murphy, M. L., et al. 1987. The relationship between stream classification, fish, and habitat in Southeast Alaska. Research Paper R10-MB-10. USDA Forest Service, Tongass National Forest;

VanSickle, J. and S. V. Gregory. 1990. Modeling inputs of large woody debris into streams from falling trees. *Canadian Journal of Forest Research* 20:1593-1601.;

McDade, M. H., et al. 1990. Source distances for coarse woody debris entering small streams in western Oregon and Washington. *Canadian Journal of Forest Research* 20(3):326.

44. Tonnes, D. M. 2008. Ecological functions of marine riparian areas and driftwood along north Puget Sound shorelines. Master's thesis, University of Washington, School of Marine Affairs.

45. Brennan et al p. 18, citing Tonnes 2008, above.

46. Log storage has been an environmental issue in Puget Sound and waters northward until log barging and lower harvests diluted the issue. Studies of bark toxicity include:

Jackson, R. G. 1986. Effects of bark accumulation on benthic infauna at a log transfer facility in southeast Alaska. *Marine Pollution Bulletin* 17(6):258-262.

Graham, J. L. And F. D. Schaumburg. 1969. Pollutants leached from selected species of wood in log storage areas. *Proceedings, Industrial Waste Conf.*

Freese, J. L. And C. E. O'Clair. 1987. Reduced survival and condition of the bivalves *Protothaca staminea* and *Mytilus edulis* buried by decomposing bark. *Marine Environmental Research* 23(1):49-64.



---

Servize, James A., et al. 1971. Toxicity and oxygen demand of decaying bark. *Journal of the Water Pollution Control Federation*. 43(2):278.

47. Overall, log booms in tidewater have been both beneficial and harmful for fish and their prey, as discussed in Sedell, J. R., et al. Water transportation and storage of logs. Chapter 9 in Meehan, William R., ed. 1991. *Influences of Forest and Rangeland Management on Salmonid Fishes and Their Habitats*. Special Publication 19. Bethesda, MD: American Fisheries Society. However these are quite different matters from storm-driven, derelict, borer-riddled logs upon the backshore.

48. FEMAT 1993 above, p. V-25, citing Vannote et al. 1980. The river continuum [sic] concept. *Canadian Journal of Forest Research* 20:1593-1601.

49. Erman, D. C., et al. 1977. Evaluation of streamside bufferstrips for protecting aquatic organisms. California Water Resources Center, Contribution No. 165. Davis, CA: University of California; cited in FEMAT 1993 above, p. V-26.

50. Gregory, S. V., et al. 1987. Influence of forest practices on aquatic production. In: Salo, E. O., et al, eds, above, p. 233-256.

51. Naiman, Robert J., et al. 1992. Fundamental elements of ecologically healthy watersheds in the Pacific Northwest coastal ecoregion. In: Naiman, R. J., ed. *Watershed Management - Balancing Sustainability and Environmental Change*. New York: Springer-Verlag.

52. FEMAT 1993 above, p. V-26.

53. For example Reeves, G. H., et al. 1995. A disturbance-based ecosystem approach to maintaining and restoring freshwater habitats of evolutionarily significant units of anadromous salmonids in the Pacific Northwest. *American Fisheries Society Symposium* 17:334-349.

54. Mentioned at page 33, the Sobocinski study involved four sites, each with an altered (bulkheaded) beach adjacent to a natural (vegetated) beach. Only half the sites showed a statistically valid difference in wrack and leaf litter presence between beaches within pairs (her Table 2). When I visited the sites in June, 2007, there was no wrack on any of the eight beaches.

55. Flora, D. F. 2007. A perspective on insects eaten by juvenile Puget Sound salmon. Peer reviewed but unpublished; available from the author.

56. FEMAT 1993 above, pp. V-26, V-38.

57. Skaugset, Arne E., et al. Landslides, surface erosion, and forest operations in the Oregon Coast Range. In: Hobbs, Stephen D., et al, ed. 2002. *Forest and Stream Management in the Oregon Coast Range*. Corvallis, OR: Oregon State University Press.

58. For example, Shipman, Hugh. 1995. The rate and character of shoreline erosion on Puget Sound. In: *Puget Sound Research '95*. Olympia: Puget Sound Water Quality Action Team.

---

Shipman, Hugh. 2001. Coastal landsliding on Puget Sound: A review of landslides occurring between 1996 and 1999. Report 01-06-019. Olympia: Washington Department of Ecology.

Shipman, Hugh. 2004. Coastal bluffs and sea cliffs on Puget Sound, Washington. In: Hampton, M. A., et al, eds. *Formation, Evolution, and Stability of Coastal Cliffs - Status and Trends*. Professional Paper 1693. Denver: US Geological Survey.

Finlayson, David. 2006. The geomorphology of Puget Sound Beaches. Technical Report 2006-02. Puget Sound Nearshore Partnership, published by Washington Brennan et al, Seattle.

Johannessen, Jim, et al. 2007. Beaches and bluffs of Puget Sound. Technical Report 2007-04. Puget Sound Nearshore Partnership, published by Seattle District, US Army Corps of Engineers.

59. Using nonlinear regression I have estimated that 60 percent of variance in net shore drift can be explained by fetch and drift-cell length. This leaves only 40 percent to be explained by bluff geometry, sediment sizes, beach profiles, bulkhead existence or placement, offshore bathymetry, or other presumed drivers of beach dynamics. The data was from Schwartz, Maurice L., et al. 1989. Net shore-drift in Puget Sound. *Engineering Geology in Washington, Volume II*. Bulletin 78. Washington Division of Geology and Earth Resources, pp. 1137-46.

60. Sheldon, Dyanne, et al. 2003. Freshwater wetlands in Washington State, Volume 1: A synthesis of the science. Publication 03-06-016. Olympia: Washington Department of Ecology. p. 5-46.

61. Myers Biodynamics, Inc. 1993. Slope stabilization and erosion control using vegetation, a manual of practice for coastal property owners. Publication 93-20. Olympia: Washington Department of Ecology. p. 25-26.

62. Shipman 2001 above. p. 19, 20.

63. Macdonald, Keith and Bonnie Witek. 1994. Management options for unstable bluffs in Puget Sound, Washington. Report 94-81. Olympia: Washington Department of Ecology, at page 5-16.

64. Griggs, G. B., et al. 1992. [Title not given] Shore and Beach Vol 60 [pp not given].

65. The cotangent of 30 degrees, rounded up to 2.

66. For example, FEMAT 1993 above, p. V-38; and standards and guidelines in Scientific Analysis Team 1993 above, p. 450.

67. Castelle, Audrey J., et al. 1992. Wetland buffers: Use and effectiveness. Publication 92-10. Washington State Department of Ecology.

68. I have written several papers on this matter, available on request.

- 
69. Desbonnet et al 1994, above, Table 4 and Figure 4.
70. Gallagher, J. L., et al. 1980. Marsh plants as vectors in trace metal transport in Oregon tidal marshes. *American Journal of Botany* 67:1069-1074.
71. Brennan et al p. 111.
72. Roderick, E., et al. 1991. Management recommendations for Washington's priority habitats and species. Washington Department of Wildlife. Cited in FEMAT Appendix V-E.
73. In Appendix V-E. The report is O'Connell, M. A., et al. 1993. Wildlife use of riparian habitats, a literature review. TFW-WL1-93-001.
74. Oakley, A. L., et al. 1985. Riparian zones and freshwater wetlands. In: Brown, "E. R., ed. *Management of Wildlife and Fish Habitats in Forests of Western Oregon and Washington*. F&WL-192-1985. USDA Forest Service, Region 6.
75. Knutson et al 1997, above, p. xi.
76. Bisson, Peter A., et al. 2002. Influence of site and landscape features on vertebrate assemblages in small streams. In: Johnson, Adelaide C., et al, eds. *Congruent Management of Multiple Resources: Proceedings from the Wood Compatibility Initiative Workshop*. General Technical Report PNW-GTR-563. Portland: USDA Forest Service, Pacific Northwest Research Station.
77. O'Connell, M. A., et al. 2000. Effectiveness of riparian management zones in providing habitat for wildlife. Final Report. Timber Fish & Wildlife Report 129. Olympia: Washington Department of Natural Resources.
78. Bisson, Peter A. and James R. Sedell. 1984. Salmonid populations in streams in clearcut vs. old-growth forests of western Washington. In: Meehan, William R., et al, eds. *Fish and Wildlife Relationships in Old-Growth Forests, Proceedings of a symposium in Juneau, Alaska, April, 1982*. American Institute of Fishery Research Biologists, p. 121-129.
79. Meehan, William R. 1996, above.
- Hall, James D. And Richard L. Lantz. 1969. Effects of logging on the habitat of coho salmon and cutthroat trout in coastal streams. In: Northcote, T. G., ed. *Symposium on Salmon and Trout in Streams*. H. R. MacMillan Lectures in Fisheries. Vancouver, BC: University of British Columbia, Institute of Fisheries.
- Ward, Bruce R., Donald J. F. McCubbing, and Patrick A. Slaney. 2003. Evaluation of the addition of inorganic nutrients and stream habitat structures in the Keogh River watershed for steelhead trout and coho salmon. In: Stocker, John G., ed. *Nutrients in Salmonid Ecosystems: Sustaining Production and Biodiversity. Proceedings of the 2001 Nutrient Conference*, Eugene. Bethesda, MD: American Fisheries Society.
- Beschta, R. L. et al. 1987, above.
80. Knutson et al 1997, above.

---

81. Buell 2000, above.

82. Marzluff, John M., et al. 2000. Understanding the effects of forest management on avian species. *Wildlife Society Bulletin* 28(4):1132-1143.

83. Brown, Richard. 2007. *Wildlife issues at the Bloedel Reserve*. Bainbridge Island Broom. Winter 2007.

84. See notes 76-79, above.

85. Paulson, Ian and George Gerdt. 1996. Checklist of Bainbridge Island birds. Bainbridge island Park and Recreation District.

86. McGarigal, K. And W. C. McComb. 1992. Streamside versus upslope breeding bird communities in the central Oregon Coast Range. *Journal of Wildlife Management* 56:10.

Kauffman, J. Boone, et al. 2001, above.

87. Reeves, Gordon H. 2006. The aquatic conservation strategy of the Northwest Forest Plan: An assessment after 10 years. In: Haynes, Richard W., et al. *Northwest Forest Plan, The First Ten Years (1004-2003)*. General Technical Report PNW-GTR-651. USDA Forest Service, Pacific Northwest Research Station.

88. For instance, work by USGS and UW's Applied Physics Lab in Hood Canal.

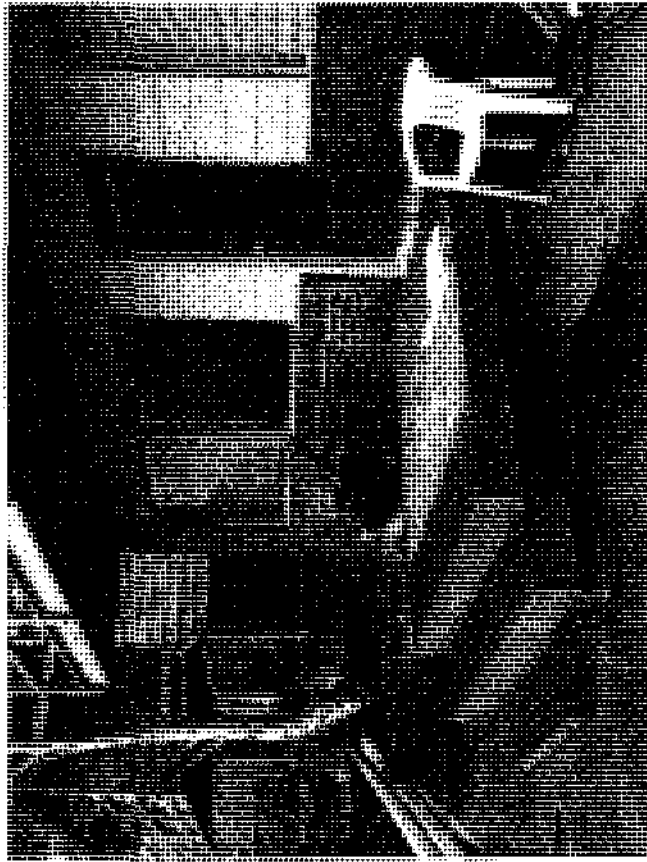
**EXHIBIT 11**

# Nonconforming Uses and Structures

Washington Dept. of Ecology  
Betty Renkor  
October 25, 2007

# Nonconforming structures

Beach Drive house

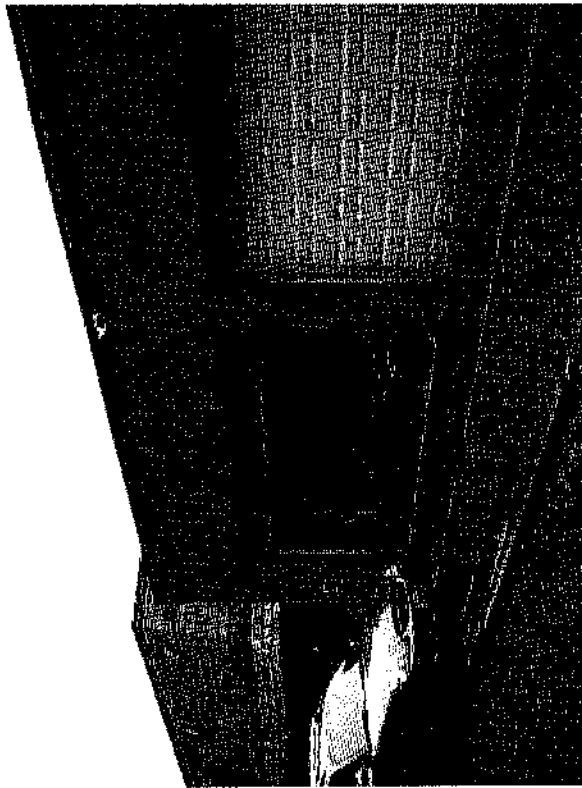


● Beach Drive beach



# Nonconforming structures

- North Vashon garage

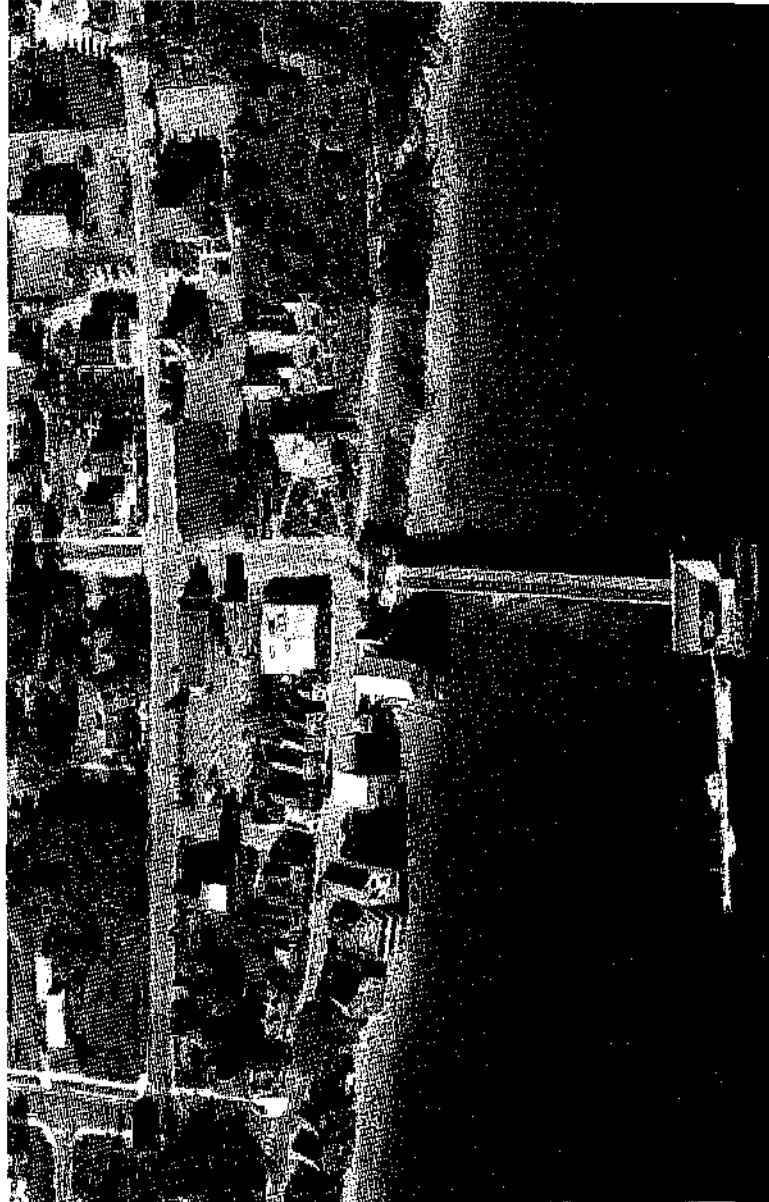


- North Vashon beach





# Nonconforming structures



# Nonconforming and SMPs

- Isn't this in the WAC?
- Yes, but... (applies only if your SMP doesn't cover it)
- Your SMP can be different than WAC

# Nonconforming and SMPs

- Basic information
- SHB and court cases
- WAC 173-27-080
- Permits
- SMP examples
- Considerations

# Nonconforming basics

- Lawfully established or built
- Prior to effective date of SMA/SMP
- Do not conform to current SMP
  - Use - no longer allowed in environment
  - Structure –inconsistent with bulk, setback, height, density
- Not consistent w/ community vision

## Nonconforming basics

- Can continue to exist
- Long term goal: eliminate
- Nonconformity cannot increase
- Abandoned: NC status expires
- Reality: many exist for a long time

# SHB and Court cases

- Rhod-a-zalea v. Snohomish County
  - NC uses disfavored; restrict so they phase out
- Jefferson Co. v. Seattle Yacht Club
  - NC uses disfavored
- SHB 95-6
  - If setbacks not intended to phase out residential use, invites piecemeal granting of variances

## SMA & Guidelines

- SMA: silent on nonconforming
- Guidelines: address nonconforming uses and properties (WAC 173-26-191(2)(a)(iii)(A))

# WAC 173-27-080

- **Conforming use, NC structures**
  - OK to maintain & repair
  - Can expand, but not increase extent of nonconformity
- **NC uses cannot expand, except for SFR**
- **Structure that needed variance**
  - Legal nonconforming structure
  - NC regulations apply



# WAC 173-27-080

- NC development that is damaged
  - Up to 75%, may be rebuilt to prior configurations
  - Apply within 6 months
  - Complete restoration within 2 years of permit
- NC use that is discontinued
  - NC rights expire
  - Subsequent use shall be conforming

# Recent permits

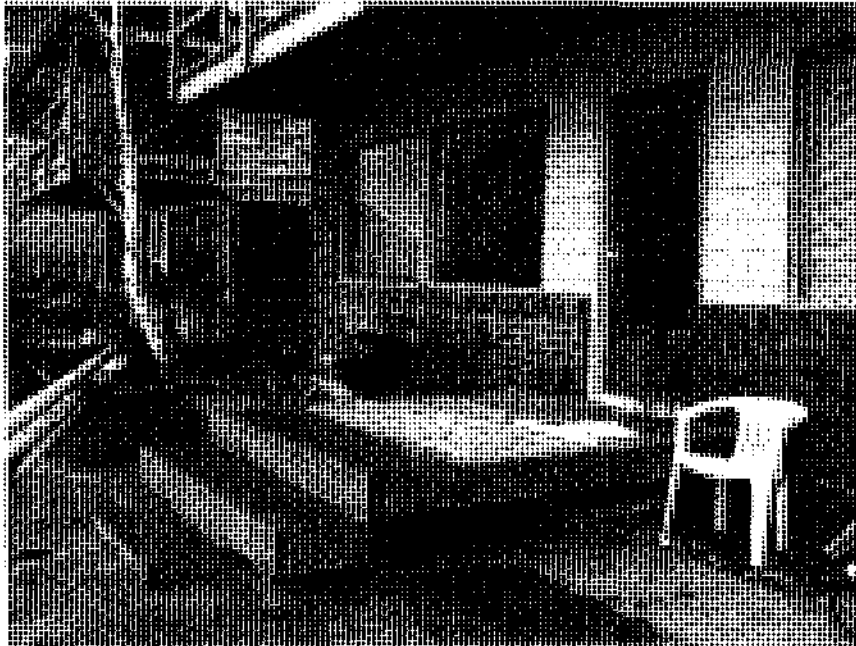
- Snohomish County



- Proposal – add 2<sup>nd</sup> story, unheated attic, same footprint
- New house underway
- Ecology denied variance
- SHB
  - Adding 16' of height increases encroachment
  - Setback line extends into the air

# Recent permits

- West Seattle



- Proposal – Add partial 3<sup>rd</sup> story, additions
- Stringline setback – nearest shoreside corners
- SMP – No expansion in any manner that increases extent of NC
- Ecology denied variance

# SMP examples

- Bellingham

- CUP needed to expand NC structure
- No expansion toward shoreline
- Must meet 35–ft height restriction
- No increase in impervious surface
- Commercial – public access, restoration may be required
- Residential - buffer enhancement may be required

# SMP examples

- Port Townsend

- NC use discontinued for 365 continuous days loses NC status
- NC structure damaged more than 50% replacement cost must conform to SMP to be restored
- NC residential structures destroyed may be rebuilt
- Commercial, marine, etc. – interior, nonstructural changes OK, limited to 50% replacement cost over 5 years

# SMP examples

- Whatcom County

- Expansion of SFR needs CUP
- Can go upland & into side yards
- No expansion waterward or into side yard setback
- Can go higher if meet view blockage requirements
- Buffer planting needed
- Expanding waterward, into side yard setback or above height standards needs variance

# SMP examples

- Pt. Roberts salmon cannery



- Whatcom proposed SMP revisions
- CUP to require public access, beach planting
- Hotel/restaurant - change roofline, water views for guests

# Considerations

- Vashon shoreline



- Shoreline with lots of NC structures
- Is variance needed for new development
- Consider appropriate designations and regulations



# Considerations

- Address nonconforming regulations in cumulative impact analysis
- Is no net loss achieved?
- Time frame for abandonment
- Maximum % destroyed & allowed to rebuild
- What does zoning code allow?
- NC structures can be rebuilt to same footprint & height prior to destruction

# Conclusion

- Guidelines allow some flexibility
- Nonconformities need to be managed
- Think it through; show your work
- Ecology considers statewide interest, public access, habitat restoration

**EXHIBIT 12**



**THE SHORELINE MANAGEMENT ACT AND PUBLIC ACCESS**

**A Critique of Common Practices**

**and**

**Limitations on “Furthering Substantial Governmental Purpose” When Considering Public Access Requirements for Washington State Shorelines under the Shoreline Management Act**

Alexander Mackie  
Perkins Coie LLP.  
1201 3rd Avenue, Suite 4800  
Seattle, Washington 98101  
amackie@perkinscoie.com  
206-359-8653

March 25, 2011





## **A Critique of Common Practices**

Many communities are in the process of updating Shoreline Master Programs, which are the regulatory tools used to enforce the Shoreline Management Act requirements throughout the State of Washington. This paper is addressed to the public access requirements of the Washington State Shoreline Management Act, Chapter 90.58 RCW, and the Shoreline Management Act guidelines adopted by the Washington Department of Ecology in 2003, Chapter 173-26 WAC.

Public access to state shorelines for use and enjoyment is a goal emphasized by WDOE in the guidelines, but one that must be tempered by legal limitations in the form of regulatory and constitutional limits on the ability of public agencies to require public access as a condition of developing on the state's shorelines. During the update process, local governments are often advised to emphasize the agency guidelines in providing for public access. In too many cases, however, the public access requirements in master programs are set forth in mandatory terms without processes or procedures designed to identify and implement regulatory and constitutional limits inherent in mandating public access to private property. The effect of this failure to adequately provide a process to temper the public demand for water access with private property rights to exclude others is to shift the burden of assuring private property interests are protected from the municipality adopting the program in advance of taking action, to the property owner forced to prove illegality of a required dedication after the condition has been imposed. The point of this paper is to assert that such burden shifting is contrary to the SMA guidelines, unlawful, and a sound basis to challenge the program of any jurisdiction that fails to address the "property rights" issues inherent in public access requirements at the outset.

As will be discussed below, local governments following the program of adopting required public access exactions without adopting clear guidelines as to when such requirements may be imposed are facing a variety of potential challenges, which may include:

### ***As Written:***

- The guidelines fail to comply with the policies of the Shoreline guidelines by which programs will be evaluated and may be challenged by property owners or groups adversely affected by the threat of unlawful requirements.

### ***As Applied:***

- When a local government seeks to impose a public access requirement as a condition of shoreline development, it is the local government which has the burden of proving both nexus and proportionality measured against the impacts of the proposal under review. The mere fact of development on the shoreline is not sufficient justification for conditioning approval by some form of public access. The local Government must tie any condition to the circumstances of the case, and has the duty to prove the condition is "reasonably necessary under the

circumstances. Conditions such as linear trails or direct access where none has existed before violate a fundamental right of property ownership—the right to exclude others and will be subject to successful challenge under many circumstances.

- Subdivision creates the potential for new homes and population that may increase the demand for access to waterfront property. Programs that treat the subdivision of waterfront properties differently from subdivision of upland properties, however, although both create similar demands on waterfront access attempt to impose a condition based on a distinction without rational justification and creates the potential for challenge on equal protection grounds.

## **I. Background**

Securing public access to private property, even in the context of development, redevelopment, or modifications of shoreline property, is fraught with legal constraints and constitutional sideboards that limit the public's unrestricted right to command such access. The purpose of this paper is to explore the requirements and limitations on local authority to command public access to shorelines in connection with private development and to examine the various theories in which such access may be required and those instances where such requirements are unlawful under a variety of established doctrines.

As will be discussed in detail below, cities and counties must read the public access guidelines very carefully and understand that while the guidelines encourage public access where at all feasible, such encouragement does not mean that cities and counties may require access with impunity. The shoreline guidelines, corresponding city requirements, and legal commentary on each element of public access follow. As we review the statutory requirements, the administrative guidelines, and the local responses, it is well to remember a key legislative caveat concerning protection of property rights in developing shoreline policy stated in the Shoreline Management Act:

... 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. ...

RCW 90.58.020, emphasis supplied.

As will be demonstrated by the language of the guidelines below, State Law imposes a duty on local governments to plan for the local master programs to provide mechanisms and processes that assure the protection of private property rights. The burden is on local governments to identify such a process in the master program itself, and not, as evident in so many programs, mandate public access as a condition of most or all shoreline developments under a variety of conditions,

and merely affirm but make no provision for providing the required protections or standards by which adequate protection of property rights may be measured administratively.

Instead, all too often the master plans leave the protection of property rights to the property owner forced to challenge a requirement to provide public access. It is this failure to provide a process to address and temper public access requirements with a recognition that the burden is on the municipality to demonstrate both nexus and proportionality as a condition to securing public access that is the material defect in the local planning programs. Ignoring the limits of municipal authority in the shoreline update, and shifting the burden to protect property rights to those who can afford appeals and litigation, violates the Shoreline Management Act and applicable guidelines and provides a sound basis for challenge if not corrected.

## **II. The Legislative Mandate--Local Governments are Required to Protect Property Rights During the Planning Process.**

The analysis starts with the only legislatively mandated public access requirement in the Shoreline Management Act. The provision is set forth in the legislative declaration of policy, which states:

*...local government, in developing master programs for shorelines of statewide significance, shall give preference to uses in the following order of preference which:*

(5) Increase public access to publicly owned areas of the shorelines;

RCW 90.58.020, emphasis supplied.<sup>1</sup>

The Legislature also recognized the inherent problem between the public's interest in access and the need to protect private interests.

*The legislature further finds that much of the shorelines of the state and the uplands adjacent thereto are in private ownership; ... and, therefore, coordinated planning is necessary ...while, at the same time, recognizing and protecting private rights consistent with the public interest. ...*

RCW 90.58.020.

It is important to note, first, that the legislative directive is aimed only at "shorelines of statewide significance" and second, and more importantly, that the directive is at the point where the local jurisdiction is "developing master programs" and that it is the "planning" for shoreline management that must make provision to accommodate and protect private property rights.

---

<sup>1</sup> A second and parallel provision calls for an increase in the recreational opportunities for the public "in the shoreline," but with no reference to whether that increase is related to public or private lands.



### III. Regulatory Implementation

#### A. "Governing Principles"

Guidelines for "developing" master programs are found in Chapter 173-26 WAC and the initial assertion of responsibility to local governments for planning to protect private property during the development of the master program is set forth in WAC 173-26-186, "Governing Principles of the Guidelines."

The governing principles listed below are intended to articulate a set of foundational concepts that underpin the guidelines, guide the development of the planning policies and regulatory provisions of master programs, and provide direction to the department in reviewing and approving master programs. ...

WAC 173-26-186.

The Governing Principles first specifically note that regulation is not the only technique by which the planning goals may be achieved:

(4) The *planning policies* of master programs (as distinguished from the development regulations of master programs) *may be achieved by a number of means, only one of which is the regulation of development*. Other means, as authorized by RCW 90.58.240, include, but are not limited to: The acquisition of lands and easements within shorelines of the state by purchase, lease, or gift, either alone or in concert with other local governments; and accepting grants, contributions, and appropriations from any public or private agency or individual. Additional other means may include, but are not limited to, public facility and park planning, watershed planning, voluntary salmon recovery projects and incentive programs.

WAC 173-26-186, emphasis supplied.

The Governing Principles also specifically note that the burden is on local government to develop a lawful approach to regulation of private property; not, as so many plans propose, to put the burden of protecting "protected rights" on the back of the property owner.

(5) The policy goals of the act, implemented by the planning policies of master programs, may not be achievable by development regulation alone. *Planning policies should be pursued through the regulation of development of private property only to an extent that is consistent with all relevant constitutional and other legal limitations (where applicable, statutory limitations such as those contained in chapter 82.02 RCW and RCW 43.21C.060) on the regulation of private property.*

WAC 173-26-186, emphasis supplied.<sup>2 3</sup>

The section goes on to provide that local governments are required to develop a “process” by which such protection is assured.

... Local government should use a process designed to assure that proposed regulatory or administrative actions do not unconstitutionally infringe upon private property rights. ...

WAC 173-26-186(5).

#### **B. Public access**

The WDOE “Public Access” guidelines are found at WAC 173-26-221(4). (Copy attached as Attachment 1.) At the outset it should be noted that the guidelines expand the public access requirements consideration from the statutory “shorelines of statewide significance” noted above, to all shorelines.

##### (4) Public access.

(a) Applicability. Public access includes the ability of the general public to reach, touch, and enjoy the water’s edge, to travel on the waters of the state, and to view the water and the shoreline from adjacent locations. Public access provisions below apply to *all shorelines of the state* unless stated otherwise.

WAC 173-26-221(4).

There is no definition of “public access” in either the legislation or the definition section of the guidelines and as such the provisions above are the only guide to understanding the intended scope of the term.

---

<sup>2</sup> While the regulation uses the term “should,” the definitions in the guidelines, WAC 173-26-020, make it clear that in this context “should” is a mandate, excused only for good cause shown.

(32) “Should” means that the particular action is **required** unless there is a demonstrated, compelling reason, based on policy of the Shoreline Management Act and this chapter, against taking the action.

<sup>3</sup> The statutory provision goes on to state: “A process established for this purpose, related to the constitutional takings limitation, is set forth in a publication entitled, “State of Washington, Attorney General’s Recommended Process for Evaluation of Proposed Regulatory or Administrative Actions to Avoid Unconstitutional Takings of Private Property,” first published in February 1992. The attorney general is required to review and update this process on at least an annual basis to maintain consistency with changes in case law by RCW 36.70A.370.” WAC 173-26-186(5). (See AGO 1992-23 attached, which addresses property rights issues under GMA and attaches a copy of the referenced guidelines.)

A key point of this provision, beyond addressing all shorelines, is to note that the term “public access” as used in the guidelines contemplates a variety of activities on and near shorelines:

- Reach, touch, and enjoy the water’s edge;
- Travel on the waters; and
- View the water and the shoreline from “adjacent” locations.

The section quoted does not identify when each is appropriate or whether one form of access is more important than others. Note that the regulations do expand public access objectives to all shorelines, not just those of shorelines of statewide significance. Having expanded the scope of the public access rules to cover all shorelines, not just those of statewide significance, the guidelines still reaffirm the duty of the **municipality** while developing its program to address competing interests in both gaining public access and protecting private property rights and focus specifically about access to waters “held in public trust”:

(b)(i) Promote and enhance the public interest with regard to rights to access waters held in public trust by the state *while protecting private property rights* and public safety.

WAC 173-26-221(4), emphasis supplied.

As will be discussed in detail below, the rights inherent in the “public trust doctrine” focus on the rights inherent in using the state’s waterways and the state’s regulatory authority over waterways and do not suggest or imply the ability to command public access on dry lands above the line of ordinary high water.

The guidelines then address a recommended “planning process” in which they note the difficulty in creating hard and fast rules for public access and instead recommend certain guidelines.

(c) Planning process to address public access. Local governments should plan for an integrated shoreline area public access system that identifies specific *public needs* and *opportunities to provide public access*. Such a system can often be more effective and economical than applying uniform public access requirements to all development. This planning should be integrated with other relevant comprehensive plan elements, especially transportation and recreation. *The planning process shall also comply with all relevant constitutional and other legal limitations that protect private property rights. ...*

WAC 173-26-221(4), emphasis supplied.

The guidelines emphasize public access to publicly owned properties:

**At a minimum**, the public access planning should result in public access requirements for shoreline permits, recommended projects, port master plans, and/or *actions to be taken to develop public shoreline access to shorelines on public property*.

WAC 173-26-221(4)(c), emphasis supplied.

But also recognizes the desirability to provide:

... a variety of shoreline access opportunities and circulation for pedestrians (including disabled persons), bicycles, and vehicles between shoreline access points, consistent with other comprehensive plan elements.

WAC 173-26-221(4)(c), emphasis supplied.

The guidelines then identify four standards, reproduced below that “should guide”<sup>4</sup> public access provisions in local master programs.

(d) Standards. Shoreline master programs should implement the following standards:

(i) **Based on the public access planning** described in (c) of this subsection, establish policies and regulations that protect and enhance both physical and visual public access. The master program **shall address public access on public lands**. The master program **should seek to increase the amount and diversity of public access to the state’s shorelines consistent with the natural shoreline character, property rights, public rights under the Public Trust Doctrine, and public safety**.

(ii) [Public access to publicly owned shorelines].

(iii) Provide *standards for the dedication and improvement of public access in developments* for water-enjoyment, water-related, and nonwater-dependent uses and *for the subdivision of land into more than four parcels*. In these cases, *public access should be required except*:

(A) Where the local government provides more effective public access through a public access planning process described in WAC 173-26-221 (4)(c).

---

<sup>4</sup> Remember the mandatory nature of “should” unless the community can demonstrate why the guideline cannot be achieved. See footnote 2, p. 6, *supra*.

(B) Where it is demonstrated to be *infeasible due to reasons of* incompatible uses, safety, security, or impact to the shoreline environment or due to *constitutional or other legal limitations that may be applicable*.

In determining the infeasibility, undesirability, or incompatibility of public access in a given situation, *local governments shall consider alternate methods of providing public access*, such as offsite improvements, viewing platforms, separation of uses through site planning and design, and restricting hours of public access.

(C) For individual single-family residences not part of a development planned for more than four parcels.

WAC 173-26-221(4), emphasis supplied.

As you read the guidelines, it is important to note that the direction is for local governments to put a program in place that achieves public access goals, but which also recognizes appropriate limitations on the public's ability to command public access from private property owners.

Unfortunately, many draft master programs simply copy the language of the guidelines as a short cut to describing public access policy in the local master programs. As a result, the local master programs often contain a mandate for public access and related improvements, with a statement about protecting private property rights, but make no effort to define how those rights are to be protected. In such cases in implementing the master program, then, the community follows its own rules, insists on the identified public access in connection with specified developments and leaves to the property owner the cost and effort necessary to protect their private property rights where such access is not legally authorized. As noted above, such programs turn the guidelines on their head: It is the local government, through its planning process, that is to define a program that in fact protects private property rights in advance of a mandate for public use of private property, not force each individual property owner to assert such rights or lose them.

In examining your local draft program you may be able to identify a number of problems that may exist in seeking to push public access requirements as part of the shoreline update. We will explore these specific defect types in the section that follows.

To reiterate the salient point of this paper, in developing planning policies and regulations dealing with public access, the burden is on the local government to pursue such regulation requirements in the development of their master programs "only" to the extent that such regulation is consistent with "all relevant constitutional and other legal limitations," *Ibid*, and provide a mechanism for dealing with the issue during the permit review process.

A problem with deferring evaluation of legal limits to public access conditions to the appeal stage of the permit process is that hearing examiners and City Councils will often decline to consider

issues of constitutional import, as will the Shoreline Hearings Board, which is a required administrative appeal before judicial review is warranted.<sup>5</sup>

Thus, property owners, upon whom unlawful requirements have been imposed, will be forced through several levels of expensive administrative litigation in which projects with unlawful conditions are likely held up while they must make the necessary record in forums that will likely refuse to decide the constitutional question. Only after administrative appeals are exhausted and judicial review is sought can the property owner seek real relief for the unlawful action. As noted above, the thesis of this paper is that the guidelines did not contemplate shifting the burden of proving violation of property rights in public access cases to the property owner in after-the-fact appeals. The law does not presume the validity of such conditions, and as will be discussed in detail below, the courts have made it very clear that a municipality seeking to impose public rights on private lands that intrude on the property right to exclude others has a heavy burden to prove entitlement to such conditions. As such, where master programs fail to make early and clear definition where public access conditions may lawfully be imposed, and a contemporary provision for protection of private rights in the process, those participating in the master program update process should challenge such efforts and seek to have local governments follow the program requirements in advance and not shift the burden to the property owner.

A more detailed discussion of the legal framework in which master program conditions must be viewed follows.

#### **IV. The Constitution and Legal Limitations to Public Access**

##### **A. Private property is a recognized as a fundamental right under the Washington State Constitution and U.S. Constitutions**

Any analysis of the authority of a Washington city or county to command public access to lands abutting the shoreline must first begin with the understanding of fundamental principles set forth in the State's constitution:

A frequent recurrence to fundamental principles is essential to the security of individual right and the perpetuity of free government.

Article 1, section 32, Washington State Constitution.

---

<sup>5</sup> See e.g. *William Walker v. Point Ruston LLC*, SHB Nos. 09-013, 09-016 (Consolidated), Order on Summary Judgment, "The Board also concludes that its de novo review authority cures any process issues, and that to the extent Petitioner's claims raise constitutional challenges they are beyond the jurisdiction of the Board." p. 3.

In a treatise on the origins and meanings of section 32, the author noted the core principle in the state constitution to be the protection of individual rights, which as will be seen included property rights.

At the heart of the Washington Constitution is the emphasis on protecting individual rights. Washington, like other states, begins its constitution with a Declaration of Rights. The Declaration of Rights sets the tone for Washington's government by proclaiming the paramount purpose of government; "governments ... are established to protect and maintain individual rights

Brian Snure, *A Frequent Recurrence To Fundamental Principles: Individual Rights*, 67 Washington Law Review 669, July, 1992.

The author discusses the "natural law" origins of Article I, section 32 and a much earlier article on natural law that recognized three fundamental attributes of individual rights:

To Blackstone the three absolute rights which proceed from the law of nature are the right of personal security, the right of personal liberty and **the right of private property.**

Yale Law Journal, *The Law of Nature in State and Federal Judicial Decisions*, 25 YLJ 617, June, 1916.

Examining both federal and state jurisprudence on shoreline cases related to the recognition and protection of competing rights at the shoreline reveals a significant difference between public rights below the line of ordinary high water and the limitation on public rights to lands abutting the shoreline but above the line of high water, commonly referred to as fast lands.

**B. Private property at the shoreline—Riparian lands vs. fast lands—the federal perspective**

The ability of the public to regulate shorelines has been a topic of much jurisprudence through the country's history. The defining feature is that the public owned and could regulate without compensation the navigable waters of the U.S., but could not regulate without compensation those "fast lands," being defined as lands abutting shorelines above the line of ordinary high water.

A case addressing the accepted doctrine along navigable shorelines is *U.S. v. Willow River Power Co.*, 324 U.S. 499, 65 S.Ct. 761 U.S., 1945, in which the Court reviewed the historic rights of riparian owners vis-à-vis the public along the shorelines. Quoting a recognized author on the topic the court noted:

The owner of the bank has no jus privatum, or special unfructuary interest, in the water. He does not from the mere circumstance that he is the owner of the bank, acquire any special or particular interest in the stream, over any

other member of the public, except that, by his proximity thereto, he enjoys greater conveniences than the public generally. To him, *riparian ownership brings no greater rights than those incident to all the public, except that he can approach the waters more readily, and over lands which the general public have no right to use for that purpose.*

324 U.S. at 507-508, emphasis supplied.

The key distinction in the historic shoreline cases was a recognition of a very different set of rules affecting properties along the shorelines. Below the line of ordinary high water on navigable waters—the “riparian” area—the public had an interest in the navigable stream that could be exercised without compensation to the abutting land owner in most circumstances. But above the line of ordinary high water, the public’s right to act to interfere with the owner’s rights came with a duty to compensate the private owner for interference, as the public had no inherent rights on fast lands. *U.S. v. Kansas City Life Ins. Co.*, 339 U.S. 799, 70 S.Ct. 885 U.S. 1950.

A final case that deals with the issue of navigability and public rights was *Kaiser Aetna v. U. S.*, 444 U.S. 164, 100 S.Ct. 383 U.S. Hawaii, 1979, in which the court was asked to deal with the issue of whether a private pond subsequently connected to a navigable water, created not only jurisdiction for the U.S. under USCOE permit authority over navigable waters, but also a right of the public to use the previously private pond.

The case summary provided a helpful overview:

Mr. Justice Rehnquist, held that although marina fell within definition of “navigable waters of the United States” when owners dredged it and then connected it to a bay in the Pacific Ocean, so as to be subject to regulation by Corps of Engineers, acting under authority delegated it by Congress in Rivers and Harbors Appropriation Act, *Government could not require owners to make marina open to the public without compensating the owners.*

The language of the case is instructive on the limits of public authority over private property connected with shorelines.

The navigational servitude, which exists by virtue of the Commerce Clause in navigable streams, gives rise to an authority in the Government to assure that such streams retain their capacity to serve as continuous highways for the purpose of navigation in interstate commerce. ... But none of these cases ever doubted that *when the Government wished to acquire fast lands, it was required by the Eminent Domain Clause of the Fifth Amendment to condemn and pay fair value for that interest.*

444 U.S. at 177.



In this case, we hold that the “right to exclude,” so universally held to be a fundamental element of the property right, FN11 falls within this category of interests that the Government cannot take without compensation.

444 U.S. at 179-180.<sup>6</sup>

Significantly, at issue in the *Kaiser* case was access by water and ability to force the owner to accept public moorage at its marina on the formerly private pond, not access across the private lands owned by Kaiser.

For purposes of evaluating Shoreline Master Programs, the key point is that the Federal case law concerning lands abutting shorelines, the superior public interests stop at the line of ordinary high water, and in no instance give rights to public access across private property without compensation. The recognition of the private property right to “exclude others” is a fundamental principle of property ownership and applies to fast lands abutting the shoreline as well as others, and any state action abridging such rights would be subject to very close scrutiny as violating Federal constitutional rights.

### C. Federal limitations on state actions

Three principles are well established in connection with private rights on lands along shorelines. While often discussed, it is useful to look at cases that are commonly referred to in the context of “nexus,” “proportionality” and “equal protection,” as each may bear on analysis of a particular local requirement.

#### 1. Nexus: *Nollan v. California Coastal Commission*, 483 U.S. 825, 107 S.Ct. 3141 U.S. Cal., 1987.

The first case is *Nollan*, which is referred to in short hand for the doctrine of “nexus” or reasonable relationship between the condition imposed and the burdens created by the project under review. The case involved a condition that the property owners dedicate a public trail across the ocean frontage of their property as a condition of securing permission to tear down a small cabin and build a 1,600 square foot home. It is instructive in that case to review the specific rationale relied upon by the state and why such rationalizations were rejected by the court, as the state approach may be found behind many “public access” demands in local master programs.

---

<sup>6</sup> [FN 11]. As stated by Mr. Justice Brandeis, “[a]n essential element of individual property is the legal right to exclude others from enjoying it.” [citations omitted] Thus, if the Government wishes to make what was formerly Kuapa Pond into a public aquatic park after petitioners have proceeded as far as they have here, it may not, without invoking its eminent domain power and paying just compensation, require them to allow free access to the dredged pond.

In *Nollan* the court visited the public authority on privately owned shorelines in which the Nollans would be required to accommodate a linear trail along the beach to facilitate public traffic. The state argued the trail was permissible in connection with legitimate public interests.

The Commission argues that among these permissible purposes are *protecting the public's ability to see the beach*, assisting the public in *overcoming the "psychological barrier" to using the beach* created by a developed shorefront, and *preventing congestion on the public beaches*. We assume, without deciding, that this is so-in which case the Commission unquestionably would be able to deny the Nollans their permit outright if their new house (alone, or by reason of the cumulative impact produced in conjunction with other construction) FN4 would substantially impede these purposes, unless the denial would interfere so drastically with the Nollans' use of their property as to constitute a taking.

483 U.S. at 835-36.

But the court pointed to two doctrines that emphasize the burden is on the public to show a real justification for a condition requiring interference with standard property rights. The mere fact of proximity to the water is not sufficient justification standing alone to intrude on private rights. The footnote referred to above provides the first caution:

FN4. If the Nollans were being singled out to bear the burden of California's attempt to remedy these problems, although they had not contributed to it more than other coastal landowners, the State's action, even if otherwise valid, might violate either the incorporated Takings Clause or the Equal Protection Clause. One of the principal purposes of the Takings Clause is "to bar Government from forcing some people alone to bear public burdens which, in all fairness and justice, should be borne by the public as a whole."

483 U.S. at 836.

The second note of caution comes from the court's view that the right of exclusion is a right to be protected from excessive regulatory control. Specifically, the requirement for a linear pathway in connection with an otherwise permissible shoreline development had no connection to the interest in view corridors and therefore constituted an impermissible condition. In the language of the court:

We have repeatedly held that, as to property reserved by its owner for private use, "the right to exclude [others] is 'one of the most essential sticks in the bundle of rights that are commonly characterized as property.'" [citations omitted] In *Loretto* we observed that where governmental action results in "[a] permanent physical occupation" of the property, by the government itself or by others, [citation omitted], "our cases uniformly

have found a taking to the extent of the occupation, without regard to whether the action achieves an important public benefit or has only minimal economic impact on the owner,” [citations omitted] We think a “*permanent physical occupation*” has occurred, for purposes of that rule, where individuals are given a permanent and continuous right to pass to and fro, so that the real property may continuously be traversed, even though no particular individual is permitted to station himself permanently upon the premises.

483 U.S at 831-32, emphasis supplied.

The court noted that the ability to deny all building to achieve a legitimate public purpose could give rise to certain restrictions, including a view corridor. But without some direct connection to the legitimate purpose:

... unless the permit condition serves the same governmental purpose as the development ban, the building restriction is not a valid regulation of land use but “an out-and-out plan of extortion.”

483 U.S at 837.

The court also made it clear that mere ad hoc references to “legitimate public purposes” was not sufficient to satisfy the test of validity and due to the interests at stake. A heightened scrutiny was warranted to assure that any conditions imposed that introduce public access to private property are in fact based on a “substantial advancement “of the public interests to be protected and not merely a rationalization for avoiding compensation where compensation should be required:

We view the Fifth Amendment’s Property Clause to be more than a pleading requirement, and compliance with it to be more than an exercise in cleverness and imagination. As indicated earlier, our cases describe the condition for abridgement of property rights through the police power as a “substantial advanc[ing]” of a legitimate state interest. *We are inclined to be particularly careful about the adjective where the actual conveyance of property is made a condition to the lifting of a land-use restriction, since in that context there is heightened risk that the purpose is avoidance of the compensation requirement, rather than the stated police-power objective*

483 U.S at 841, emphasis supplied.

In the context of the Shoreline updates, where public access is being required in the context of the development or redevelopment of a shoreline property, the questions to be asked are:

- Is there a legitimate public interest identified that is being adversely affected by the development in question, and

- Does the public access requirement imposed “substantially advance” the “legitimate” public interest adversely affected by the development?

Where, as in *Nollan*, there is no indicia of a public right to cross private lands to reach the water, where the interests involved were at best the “view of the water” from the public right of way, and where the condition imposed goes beyond protecting the protected public interest, the condition lacks the necessary “nexus” with the protected public interest and is an unlawful exercise of regulatory authority without the exercise of eminent domain (taking) authority.

**2. Proportionality: *Dolan v. City of Tigard*, 512 U.S. 374, 114 S.Ct. 2309 U.S.Or., 1994.**

Seven years after *Nollan*, a second case was decided in which the court took the next step and addressed the issue of limitations on municipal authority where the necessary nexus between the public interests to be served and conditions imposed are found to exist. In *Dolan*, the property owner wanted to double the size of a commercial store adjacent to Fanno Creek in the City of Tigard. The project clearly increased the need for additional stormwater controls and increased traffic, which the record showed would be alleviated in part by encouraging the use of bicycles. As a result, the City looked to a City code provision that required a dedication of a “greenway” along Fanno Creek to deal with stormwater, but also provided additional public access, and required the improvement of a 15-foot trail system to accommodate bicycles. The provisions were upheld by the Oregon Courts by reason of the existence of the “nexus” with legitimate public interests required by *Nollan*.

But on appeal to the U.S Supreme Court, the Court examined the issue of the need for a reasonable relationship between the problem being affected and the condition imposed.

Under the well-settled doctrine of “unconstitutional conditions,” the government may not require a person to give up a constitutional right—here the right to receive just compensation when property is taken for a public use—in exchange for a discretionary benefit conferred by the government where the benefit sought has little or no relationship to the property.

512 U.S at 385.

The court reiterated the heightened scrutiny required when examining an exaction ostensibly tied to a condition that proposed public use as a condition of private development and concluded that in addition to “nexus” the reviewing agencies had to consider a second inquiry, the relationship between the impact created and the condition imposed and the need for some “reasonable relationship.”

The second part of our analysis requires us to determine whether the degree of the exactions demanded by the city’s permit conditions bears the required relationship to the projected impact of petitioner’s proposed development. *Nollan, supra*, [citations omitted] (“[A] use restriction may

constitute a “taking” if not **reasonably necessary** to the effectuation of a of a **substantial government purpose**”).

512 U.S at 388, emphasis supplied.

After a lengthy discussion of the different approaches to exactions from the most strict to a more general “reasonable relationship” test, the court concluded that federal law looks to mirror the states’ which have adopted the “reasonable relationship” test, but found the “reasonableness” test potentially confusing and concluded:

We think the “reasonable relationship” test adopted by a majority of the state courts is closer to the federal constitutional norm than either of those previously discussed. But we do not adopt it as such, partly because the term “reasonable relationship” seems confusingly similar to the term “rational basis” which describes the minimal level of scrutiny under the Equal Protection Clause of the Fourteenth Amendment. *We think a term such as “rough proportionality” best encapsulates what we hold to be the requirement of the Fifth Amendment.*

512 U.S at 391, emphasis supplied.

The court continued, pointing out that it is the municipality that carries a heavy burden of proof. On the issue of burden of proof, the language of the court is critical in evaluating how local master programs address the need for supporting findings as a condition of imposing any type of public access requirements:

Justice Stevens’ dissent takes us to task for placing the burden on the city to justify the required dedication. He is correct in arguing that in evaluating most generally applicable zoning regulations, the burden properly rests on the party challenging the regulation to prove that it constitutes an arbitrary regulation of property rights. *See, e.g., Village of Euclid v. Ambler Realty Co.*, 272 U.S. 365, 47 S.Ct. 114, 71 L.Ed. 303 (1926). **Here, by contrast, the city made an adjudicative decision to condition petitioner’s application for a building permit on an individual parcel. In this situation, the burden properly rests on the city.** *See Nollan*, 483 U.S., at 836, 107 S.Ct., at 3148.

512 U.S at 391, Footnote 8, emphasis supplied.

In describing the inherent vagueness of a “reasonable” relationship the court said:

*No precise mathematical calculation is required, but the city must make some sort of individualized determination that the required dedication is related both in nature and extent to the impact of the proposed development.*

512 U.S. at 391, emphasis supplied.

In *Dolan*, the court found that there was no link between the desire to control flooding and the amount of land required to be dedicated to public access. The court found no nexus for the public access requirement in conjunction with a flood control condition. With respect to bicycles, the mere conclusory statement that the bicycle path “would alleviate traffic” was not sufficient.

... “[t]he findings of fact that the bicycle pathway system ‘*could* offset some of the traffic demand’ is a far cry from a finding that the bicycle pathway system *will*, or is *likely to*, offset some of the traffic demand.” 317 Ore., at 127, 854 P.2d, at 447 [emphasis in original]. No precise mathematical calculation is required, but the city must make some effort to quantify its findings in support of the dedication for the pedestrian/bicycle pathway beyond the conclusory statement that it could offset some of the traffic demand generated.

512 U.S. at 395-396.

After *Nollan* and *Dolan*, a community can no longer assert that the condition in question is simply required by city code and have the courts uphold the validity of the condition based on the presumption of validity of the city codes. The failure of most draft master programs to make that burden of proof clear in the process by which the city evaluates shoreline permits and requires varying degrees of public access as a condition of development is a point in which most draft programs fail to achieve the SMA guideline requirement to create a process protective of property rights.

**3. Equal protection: *Nollan v. California Coastal Commission*, 483 U.S. 825, 107 S.Ct. 3141 U.S. Cal., 1987.**

The *Nollan* court did not need to reach the equal protection issues because of the penultimate finding that sufficient nexus did not exist to warrant the requirements for a trail. In a footnote, however, they identified that equal protection is another concern when evaluating the requirement for a condition tied to shoreline access. As stated by the court:

If the Nollans were being singled out to bear the burden of California’s attempt to remedy these problems, although they had not contributed to it more than other coastal landowners, the State’s action, even if otherwise valid, might violate either the incorporated Takings Clause or the Equal Protection Clause. One of the principal purposes of the Takings Clause is “to bar Government from forcing some people alone to bear public burdens which, in all fairness and justice, should be borne by the public as a whole.” *Armstrong v. United States* [citations omitted]

483 U.S. at 835-36, FN 4.

Equal protection asks the question whether distinctions in the treatment of different properties are warranted by a rational basis for differentiation or simply an opportunistic requirement because of the property's location, but without any real justification for differentiating impacts. In *Village of Belle Terre v. Boraas*, 416 U.S. 1, 94 S.Ct. 1536, 39 L.Ed.2d 797 (1974), the court concluded that no equal protection violation will be found under a rational basis analysis if governmental action had some **rational relationship** to the permissible state objective. But given the heightened scrutiny applied to cases in which the right to exclude others is abridged by public access requirements, here again, the municipal requirement for public access to the shoreline must achieve a rational public interest and not be inequitably applied.

More recently in *Village of Willowbrook v. Olech*, 528 U.S. 562, 120 S.Ct. 1073 U.S., 2000, the court stated the rule in the following terms:

'[t]he purpose of the equal protection clause of the Fourteenth Amendment is to secure every person within the State's jurisdiction against intentional and arbitrary discrimination, whether occasioned by express terms of a statute or by its improper execution through duly constituted agents.' [Citations omitted]

528 U.S. at 564.

The Ecology guideline suggesting that all subdivisions in excess of four lots be forced to provide public access begs the question of equal protection violation. Yes it applies to all subdivided waterfront lots, but fails to address why a house on a lot created from the subdivision of a waterfront parcel created a demand for water access different from the house on an adjoining lot created out of a non waterfront lot—it does not. In fact by forcing the waterfront property owners to provide public access to their property with subdivision is to impose a double burden on the waterfront owner not paid by the upland owner. General community public access is paid for by property taxes. Generally waterfront property taxes are higher than non waterfront properties due to the value placed on waterfront. But the waterfront subdivider is given no break in their taxes by reason of alleviating the burden on the public by providing a portion of the City's public access. Instead, they are required to provide public access and still pay property taxes to provide the community public access—a distinction without rational basis for which challenge is certainly warranted.

**D. Private property at the shoreline—Riparian lands v. fast lands—the state perspective**

Washington law very much mirrors federal law in the recognition and protection of private property rights along the state's shorelines.

Washington courts have long recognized the "right to exclude" others is a fundamental attribute of private property. In an unreported case, *City of Bainbridge Island v. Brennan*, 128 Wn. App. 1046, Not Reported in P.3d, 2005 WL 1705767 Wn. App., Div. 2, 2005, the court was

comfortable reciting the basic tenants of Washington law in a footnote so well accepted that the case did not warrant publication:

FN 29. Property interests are not constitutionally created but are reasonable expectations of entitlement derived from independent sources such as state law. *Mission Springs, Inc.*, 134 Wn.2d at 962 n. 15 (citing *Bd. of Regents v. Roth*, 408 U.S. 564, 577, 92 S.Ct. 2701, 33 L.Ed.2d 548 (1972)). The right to exclude others is an essential stick in the bundle of property rights. *City of Sunnyside v. Lopez*, 50 Wn. App. 786, 795 n. 7, 751 P.2d 313 (citing *Kaiser Aetna v. United States*, 444 U.S. 164, 100 S.Ct. 383, 62 L.Ed.2d 332 (1979)), review denied, 110 Wn.2d 1034 (1988).

2005 WL 1705767 at 16.

In published decisions the Washington Courts have recognized that the property rights protected by the Washington State Constitution encompass the full range of rights inherent in property, *Orion Corp. v. State*, 103 Wn.2d 441, 693 P.2d 1369 (1985).

Washington State also has a substantial body of law dealing with riparian rights and the public trust doctrine, which mirrors the federal law on protecting navigability and ownership of the waters *below ordinary high water line* under the “public trust” doctrine:

According to the public trust doctrine, the State holds state shorelines and waters in trust for the people of Washington, and “the state can no more convey or give away this jus publicum [FN8] interest than it can ‘abdicate its police powers in the administration of government and the preservation of the peace.’ ”

FN8. Jus publicum refers to the principle that the public has an overriding interest in the navigable *waterways and the lands under them*. *Caminiti*, 107 Wash.2d at 668, 732 P.2d 989.

*Samson v. City of Bainbridge Island*, 149 Wn. App. 33, 202 P.3d 334 (2009).

But it is important to realize that the public trust doctrine deals with the navigable waterways “and the lands under them” and not the “fast lands” above the line of ordinary high water except to the extent that activities on the fast lands adversely affect the public interest in navigability. As we examine the cases, it is clear that the public trust doctrine does not translate into a public right to command public access over private lands abutting the shoreline.

#### 1. **The public trust doctrine and SMA.**

Washington cases have held that the public trust doctrine is vital in the protection of state interests in navigable waters and the associated tidelands:



The public trust doctrine is expressed, in part, in article XVII, section 1 of the Washington constitution, which reserves state ownership in ‘the beds and shores of the state’s navigable waters.’ *Citizens*, 124 Wn. App. at 571 (citing *Rettkowski v. Dep’t of Ecology*, 122 Wn.2d 219, 232, 858 P.2d 232 (1993)); see also *Esplanade Properties, LLC v. City of Seattle*, 307 F.3d 978, 985 (9th Cir.2002), cert. denied, 539 U.S. 926 (2003). The doctrine is also reflected in Washington’s Shoreline Management Act, adopted in 1971. See *Esplanade Properties, LLC*, 307 F.3d at 985-86.

\*\*\*

The public trust doctrine extends ‘beyond navigational and commercial fishing rights to include ‘incidental rights of fishing, boating, swimming, water skiing, and other related recreational purposes.’ *Orion Corp. v. State*, 109 Wn.2d 621, 641, 747 P.2d 1062 (1987) (*‘Orion IP’*) (quoting *Wilbour v. Gallagher*, 77 Wn.2d 306, 316, 462 P.2d 232 (1969), cert. denied, 400 U.S. 878 (1970)), cert. denied, 486 U.S. 1022 (1988); see also *Johnson*, 67 Wash. L.Rev. at 567; *Longshore*, 141 Wn.2d at 427.

2005 WL 1705767 at 18.

But the public trust doctrine in this state, similar to the federal rights in navigation, are limited to the public interest in “the beds and shores” of the state’s navigable waters. As such, the authority to regulate uplands under the public trust doctrine is limited to protection of that interest. While such interests include interests in the recreational use of the water and the necessary need to access the water, the Shoreline Management Act limits the upland requirements for public access to “public access of publicly owned shorelines” and does not provide rationale or justification for public access across private lands outside traditional notions of nexus and proportionality recognized at the federal level.

## 2. Nexus and proportionality—a state requirement.

Nexus has been a well recognized limit on the right of Washington municipalities to impose conditions otherwise designed to serve the public interest. The leading case under constitutional constrains is *Unlimited v. Kitsap County*, 50 Wn. App. 723, 750 P.2d 651 (1988), in which the county attempted to require a property owner to extend a county road to a property that was not developing and which road was not used or necessitated by a small commercial development on another portion of the property. As noted by the Court of Appeals:

A property interest can be exacted without compensation only upon a proper exercise of government police power. Such power is properly exercised in zoning situations where the problem to be remedied by the exaction arises from the development under consideration, and the exaction is reasonable and for a legitimate public purpose. Unless these requirements are met, the exaction is an unconstitutional taking

50 Wn. App. at 727.

More recently the court in *Honesty in Environmental Analysis and Legislation (HEAL) v. Central*, 96 Wn. App. 522, 979 P.2d 864 (1999) reiterated the fundamental limits on permitting authority in language paralleling and citing *Nollan* and *Dolan*:

Simply put, the nexus rule permits only those conditions necessary to mitigate a specific adverse impact of a proposal. The rough proportionality requirement limits the extent of the mitigation measures, including denial, to those which are roughly proportional to the impact they are designed to mitigate. Both requirements have also been incorporated into the GMA amendments to RCW 82.02 authorizing development conditions.

96 Wn. App at 533-534.

The Washington nexus and proportionality requirements have been incorporated into a statute, RCW 82.02.020, which was the statutory basis for both *Isla Verde* and for *Benchmark*. A recent Court of Appeals case holds RCW 82.02.020 does not apply to shoreline master programs. The decision does not change the requirements, it merely shifts review to constitutional guidelines rather than statutory, but in practice, the end result is the same.<sup>7</sup> Thus Washington cities and counties are limited when seeking to impose a public access condition on shoreline development, even one dictated by an adopted master program.

- Nexus: The municipality has the burden to prove that the condition is “reasonably necessary” to mitigate an existing problem created by the project under the facts of the particular case and may not simply rely on a boilerplate code provision to impose a limitation on property. *Isla Verde v. City of Camas*, 146 Wn.2d 740, 49 P.3d 867 (2002) and
- Proportionality: The municipality may not require the construction of a public facility to be developed far in excess of the burden imposed on a legitimate government interest. *Benchmark v. Battleground*, 146 Wn.2d 685, 49 P.3d 860 (2002).

Washington courts also recognize the equal protection concerns when a local government attempts to exact certain conditions from some but not all equally situate properties. *Samson v. City of Bainbridge Island*, 149 Wn. App. 33, 62, 202 P.3d 334, 349 (2009). A good summary of the tests and requirements were given by the Supreme Court in *Habitat Watch v. Skagit County*, 155 Wn.2d 397, 120 P.3d 56 (2005), in which the court said:

---

<sup>7</sup> In *Citizens for Rational Shoreline Planning v. Whatcom County*, 155 Wn. App. 937, 230 P.3d 1074 (2010), the Court of Appeals, Dwyer, C.J., held that SMPs were not subject to statutory prohibition in RCW 82.02.020 on municipalities from imposing direct or indirect taxes, fees, or charges on development. The case did not diminish the constitutional considerations, simply that RCW 82.02.020 was not the appropriate vehicle to challenge SMP provisions.

The right to equal protection guarantees that persons similarly situated with respect to a legitimate purpose of the law receive like treatment. In order to determine whether the equal protection clause has been violated, one of three tests is employed. First, strict scrutiny is applied when a classification affects a fundamental right or a suspect class. Second, intermediate scrutiny is applied when a classification affects both a liberty right and a semi-suspect class not accountable for its status. The third test is rational basis. Under this inquiry, the legislative classification is upheld unless the classification rests on grounds wholly irrelevant to the achievement of legitimate state objectives.

155 Wn.2d at 413.

The guidelines on subdivision rules suggesting that the city or county should require dedication of public access for subdivisions on waterfront properties for projects in excess of four lots creates an apparent equal protection problem. In the first place, the guidelines assume that the creation of four or fewer lots does not create a burden on the shoreline and therefore does not have to provide public access. A plat of five or more units are typically required to provide public access. The problem with the provision, and local master programs adopting the language, is that the provision assumes that the creators of lots in the shoreline are required to provide "public access" a "public amenity, while an adjoining development, with exactly the same number of new units does not. This failure to treat equal properties equally raises significant equal protection issues, as a leading case noted:

The aim and purpose of the special privileges and immunities provision of article 1, section 12, of the State Constitution and of the equal protection clause of the Fourteenth Amendment of the Federal Constitution is to secure equality of treatment of all persons, without undue favor on the one hand or hostile discrimination on the other.

To comply with these constitutional provisions, legislation involving classifications must meet and satisfy two requirements: (1) The legislation must apply alike to all persons within the designated class; and (2) reasonable ground must exist for making a distinction between those who fall within the class and those who do not.

*State ex rel. Bacich v. Huse*, 187 Wash. 75, 59 P.2d 1101 (1936), rev'd on other grounds.

If the City had a park provision where a level of service for waterfront parks was established, and residential developers were required to pay a fee in lieu of park requirements (which met the test of *Trimen Dev't Co. v. King County*, 124 Wn.2d 261, 877 P.2d 187 (1994)), then a waterfront property owner may be permitted to choose to provide comparable water access as an alternative to paying the fee. But in such case, all developers are paying for water access for new homes, and the property owner with waterfront property is not required to shoulder the burden of providing

waterfront access for new subdivisions in a manner different from all other developers of residential lots. The distinction between upland and waterfront development is not the type of distinction sufficient to warrant a duty to provide public parks on one and not on the other and the master program conditions mirroring the WAC subdivision public access provisions will certainly be subject to challenge.

Shifting public burdens to private owners simply due to proximity to water is not a sufficient justification to create a discriminatory requirement others in the community do not share, and should provide a basis for complaint both as written and as applied where communities fail to recognize the concern.

#### **D. Summary of Concerns**

When participating in preadoption reviews of draft master programs, property owners and groups would do well to point out the provisions of the Governing Principles, WAC 173-26-186, and the provisions therein that specifically provide:

“A process established for this purpose, related to the constitutional takings limitation, is set forth in a publication entitled, “State of Washington, Attorney General’s Recommended Process for Evaluation of Proposed Regulatory or Administrative Actions to Avoid Unconstitutional Takings of Private Property,” first published in February 1992.

Washington State Attorney General (Eikenberry) articulated the basic elements of property rights protection in the context of the state’s Growth Management Act, in which he attached a copy of the AGO referenced in the shoreline Governing Principles and provided his own clarification. I have attached a copy of the AGO and attachment for reference purposes (Attachment 2). His summaries are not limited to GMA regulations and are equally applicable to shoreline-related ordinances. His summaries provide a useful checklist in the evaluation of any master program public access provision. The problem with too many draft programs presently in circulation is that the authors have not considered or have chosen to ignore the Attorney General’s advice, much to the ultimate peril of the local jurisdiction considering adoption.

The concept that private property shall not be taken for public use has its origins in the Fifth Amendment of the United States Constitution which provides in part that “[n]or shall private property be taken for public use, without just compensation.” This restriction is applied to the states through the Fourteenth Amendment to the United States Constitution. Article 1, section 16 (amendment 9) of the Washington Constitution provides the same right. *Sintra, Inc. v. Seattle*, 119 Wn.2d 1, 13, 829 P.2d 765 (1992).

In addition to outright physical appropriation of property, a taking can be accomplished by over-regulation. A taking by regulation is often called an inverse condemnation, because the condemnation is found by the court after it has already been implemented by the regulation.

AGO 1992 No. 23, see copy attached as Attachment 2.

After a detailed analysis of a variety of conditions and remedies, the Attorney General identified a series of warning signs that local governments should use in examining a rule or regulation that affects property rights. Three of the areas where caution was suggested were:

- Does the Regulation or Action Result in a Permanent Physical Occupation of Private Property?

Regulation or action resulting in a permanent physical occupation of all or a portion of private property will generally constitute a taking. For example, a regulation which required landlords to allow the installation of cable television boxes in their apartments was found to constitute a taking. *See Loretto v. Teleprompter Manhattan CATV Corp.*, 458 U.S. 419 (1982).

- Does the Regulation or Action Require a Property Owner to Dedicate a Portion of Property or to Grant an Easement?

If the dedication of property is not reasonably and specifically designed to prevent or compensate for adverse impacts of a proposed development on a legitimate public interest worthy of government protection, there may be a taking.

- Does the Regulation Deny a Fundamental Attribute of Ownership?

Regulations which deny the landowner a fundamental right of ownership, including the right to possess, exclude others and dispose of all or a portion of the property are potential takings.

AGO 1992 No. 23, pp. 12-13.

As we look at the implementation of public access guidelines in many draft master programs, the fact that the draft merely mirrors the WAC provisions for access, without providing a mechanism for limiting the requirements based on legal constraints, hits all target issues in creating a suspect requirement:

- They command the physical occupation of private property with a public amenity—a paved or surfaced trail to be maintained by the private property owner.
- They command that the rights of public access be permanent through legal encumbrance on title through restrictive covenant or easement.
- They deny the private land owner a fundamental attribute of ownership; that is, the right to exclude others.

- They treat waterfront subdivisions differently than upland subdivisions with the same density and projected population.

As noted by the Attorney General, the mere fact that the activity is suspect does not mean it is unlawful. However, the opinion did provide that upon review of a land use plan by the State Growth Management Hearings Board, the question of whether a land use plan was clearly erroneous was certainly appropriate for review. Since protection of private property rights was an issue to be considered in the preparation of land use plans under RCW 36.70A.020:

... with regard to property rights, a government entity is **not** in compliance with the GMA if it **fails to consider property rights in developing its plans** and regulations, or if it considers property rights in an arbitrary and discriminatory manner. The Boards have jurisdiction to consider these issues

AGO 1992 No. 23, p. 6. The absence of a local “public process” addressing the issue of protecting property rights is a “failure to consider” a required element of the SMA guidelines and as such would certainly be a valid grounds for challenging the shoreline master program, which are now reviewed for compliance with the guidelines by the Growth Board for those counties under GMA jurisdiction and the Shorelines Hearings Board for those jurisdictions not planning under GMA. WAC 173-26-130.

Thus, the fatal flaw in many city plans is that there is no identified process or administrative guidelines to square the specific requirements in the master program with the specific limitation in the master program guidelines that:

(b)(i) Promote and enhance the public interest with regard to rights to access waters held in public trust by the state *while protecting private property rights* and public safety

(c) Planning process to address public access. Local governments should plan for an integrated shoreline area public access system that identifies specific *public needs and opportunities to provide public access*. Such a system can often be more effective and economical than applying uniform public access requirements to all development. This planning should be integrated with other relevant comprehensive plan elements, especially transportation and recreation. *The planning process shall also comply with all relevant constitutional and other legal limitations that protect private property rights.*

WAC 173-26-221(4).

Without the public process to identify and modify conditions appropriate to given conditions, local programs will be subject to challenge and critique as written, and local governments may not

be able to address excessive conditions as applied until after a long appeal process, in which the risk of damages for unlawful delay or wrongful conditions are very much a reality.

Alexander W. ("Sandy") Mackie  
Perkins Coie LLP  
Seattle, Washington  
amackie@perkinscoie.com

**LIMITATIONS ON “FURTHERING SUBSTANTIAL GOVERNMENTAL PURPOSE”  
WHEN CONSIDERING PUBLIC ACCESS REQUIREMENTS FOR WASHINGTON  
STATE SHORELINES UNDER THE SHORELINE MANAGEMENT ACT**

In a recent presentation to the Tacoma City Planning Commission, the staff and City attorney latched onto the language of a Reporter’s head note in the case of *Nollan v. California Coastal Commission*, 483 U.S. 825, 107 S. Ct. 3141, 97 L. Ed. 2d. 677(1987), suggesting that public access could be required as a condition of a shoreline permit if the public access requirement “furthers a substantial government purpose.” Unfortunately, the City cherry picked the language of the decision and failed to look closely at arguments made by the California Coastal Commission in support of the public easement claimed in that case and the complete repudiation of those arguments by the Supreme Court in rejecting requirements for public access not directly tied to burdens created by the specific project, whether or not the requirement also furthered a substantial governmental purpose.

It is important in any case to look carefully at the full text of the case to understand the reasons the court reached the result it did. Such detailed analysis shows the “substantial public purpose” basis for imposing public access requirements for shoreline projects independent of specific burdens created by the project have been used time and again by planners seeking to secure public rights above and beyond that directly attributed to a project, and time and again specifically rejected by the courts.

What follows is a detailed discussion of the language of the *Nollan* case (the law is not only what the Court said, but what they did on the facts of the particular case) and a discussion of a number of other cases where local governments attempted to impose conditions that went beyond those necessary to address immediate impacts to serve some other laudable public purpose, only to be told by the courts that the actions were unlawful as beyond the reach of police power and conditions on project-related permits.

The misconception that furthering substantial public purpose interest may provide an independent grounds for public access comes from a misreading of the *Nollan* case. The case must be read in its entirety and carefully because at the end of the day the Court in fact looked at rationales for public access requirements almost identical to those put forth by the City Planning Department and not only held the rationalizations invalid, but warned against seeking to use the guise of public benefit to attempt to acquire by condition that which they necessarily must acquire by condemnation.

There is no question the State’s Shoreline Management Act creates a substantial public interest in securing additional public access to the shorelines of the state. For that reason, the City master program should address means of securing additional public access, both from public and private owners. But the fact that public access “furthers a substantially governmental purpose” alone does not make it lawful to secure public access from private property owners absent some direct and immediate burden that needs to be addressed as a proximate result of the permit in question. We will see this theme repeated in a number of Washington state cases noted below, but it is helpful at the outset to review the precise actions before the Court in the *Nollan* case.



The Nollans live on a California coastline just south of Ventura California. They were seeking a permit to rebuild a substantially deteriorated summer cabin to create a 1,600 single-family home. As a condition of approving the permit to build, the California Coastal Commission (which issues permits for development on the shorelines of the California coast similar to our Shoreline permit process) included a condition that the Nollans provide a public pathway paralleling the shoreline to allow the public to pass in front of their home. The Nollans objected and appealed.

The California Coastal Commission relied on a host of findings and justifications to support the public access requirement. The fundamental interest articulated by the Commission was to improve public access to the beach and in this case to enable the public to walk from a state park located just north of the Nollan home to a public activity area just to the south.<sup>1</sup> The argument was that the expansion of the size of the home contributed to a “walling off effect,” which deprived the public of views of the water and access to the water (though no access from the highway to the water had ever existed here) and that the linear pathway would alleviate that “psychological barrier” to the waters the public had a right to enjoy.

The question before the Supreme Court was whether the Coastal Commission’s interest in advancing public access to the waters of the state warranted a condition for a public easement across the front of the Nollan property as a condition of the permit. The Supreme Court failed to find any connection between the walling effect of a row of houses and the need for a linear pathway on the waterfront and specifically rejected the Commission’s arguments for a public easement as having nothing to do with the identified problem (view blockage).

To understand why the substantial public interest in securing access to the water was insufficient to require the dedication or set aside of land for public access, it is important to look at both the facts and the language of *Nollan* carefully.

The Court began its analysis by noting that absent the request for a permit, the State of California could certainly secure a public path on private property, but it must do so by condemnation. The question then is what additional authority, derived from the police power to condition project permits, justifies a public access condition power in conjunction with a requested permit. The Court begins by acknowledging the ability of the government to condition permits to advance legitimate public interests. In the words of the Court:

We have long recognized that land-use regulation does not effect a taking if it “substantially advance[s] legitimate state interests” and does not “den[y] an owner economically viable use of his land,” ... (“[A] use restriction may constitute a ‘taking’ if not reasonably necessary to the effectuation of a substantial government purpose”). Our cases have not elaborated on the standards for determining what constitutes a “legitimate state interest” or what type of connection between the regulation and the state interest satisfies the requirement that the former “substantially advance” the latter. They have made clear, however, that a broad range of governmental purposes and regulations satisfies these requirements. See

---

<sup>1</sup> A picture of the coast line in question is attached, showing the approximate area of the Nollan home.

... (scenic zoning); ... (landmark preservation); ... (residential zoning). ...  
The Commission argues that among these permissible purposes are protecting the public's ability to see the beach, assisting the public in overcoming the "psychological barrier" to using the beach created by a developed shoreline, and preventing congestion on the public beaches. **We assume, without deciding,** that this is so-in which case the Commission unquestionably would be able to deny the Nollans their permit outright if their new house (alone, or by reason of the cumulative impact produced in conjunction with other construction) would substantially impede these purposes, [view blockage] unless the denial would interfere so drastically with the Nollans' use of their property as to constitute a taking.

483 U.S. at 834-36, citations omitted, emphasis supplied.

This is the language of the decision that was summarized in the head note relied upon by the City to support their arguments for a general right to demand public access to further the public interest expressed in the Shoreline Management Act for additional public access to the waters of the state.

But, in using the "substantially furthering a governmental interest which would warrant denial" as the basis for their position, the City has cherry picked language they find supportive of their desire to promote public access, and failed to read the rest of the decision and holding of the Court in that case that public access could not be required as a condition of increasing the size of the Nollan's coastal home.

If the City had taken a closer look at the decision, and what the Court did as well as said, they would find that the fact that the Shoreline Management Act supports a substantial public interest in public access does not justify a public requirement for the use and occupancy of private property along the shoreline as a condition of a development permit in the absence of creating specific need for the type of access required.

The language of the Court, omitted in the City presentation or discussion, is instructive in understanding the limitations in pursuing a governmental purpose in the absence of any direct connection with the problem created.

We have repeatedly held that, as to property reserved by its owner for private use, "the right to exclude [others is] 'one of the most essential sticks in the bundle of rights that are commonly characterized as property.' ... where governmental action results in "[a] permanent physical occupation" of the property, by the government itself or by others, ... "our cases uniformly have found a taking to the extent of the occupation, without regard to whether the action achieves an important public ... benefit or has only minimal economic impact on the owner ...

483 U.S. at 831-832.

The Court also rapidly dismissed the argument that an easement was not “permanent” occupation by the public.

We think a “permanent physical occupation” has occurred, for purposes of that rule, where individuals are given a permanent and continuous right to pass to and fro, so that the real property may continuously be traversed, even though no particular individual is permitted to station himself permanently upon the premises.

483 U.S. at 832.

Where the Court looked to a right to deny permits based on the governmental actions that furthered a substantial public interest, they cited cases approving residential zoning (*Euclid*), landmark preservation (*Penn Central*), and scenic zoning (*Agins*). Another common thread in all is that the restrictions advance a valid governmental interest (identified in each of the cases) and was grounds for denial of the permit if the conditions were not met. A common thread in all of the cases is that a right of the public to physically use and occupy the private property proposed for development was not at issue.

The City’s attempt to use the Shoreline Management Act’s expression of public interest in public access as justification for public access requirements as a condition of securing a permit for shoreline development independent of the need for access created by the project reveals a fundamental misunderstanding of the point the Court was trying to make. The Supreme Court recognized that there was a very important public purpose in securing public access to the shorelines. But the fact that the public interest was strong was not enough by itself to warrant a public access condition on private property independent of the burden created by the project.

A few of the arguments put forward by the Coastal Commission in support of the public access requirement, and rejected by the Court, echo very closely the rationalizations put forward by the City using the Shoreline Management Act and Public Trust Doctrine as providing the “public interest” sufficient to support a public access mandate in all shoreline cases.

The key fact in the case and principal rationale of the Coastal Commission was that California had a shoreline park to the north of the Nollan property, and a shoreline park to the south of the Nollan property and the State of California had a substantial public interest in providing public access between the two, which would alleviate the psychological barrier to the water caused by the larger house. As a rationale for the imposition of the pathway connection the Commission specifically found:

- that the new house would increase blockage of the view of the ocean,
- ...contributing to the development of “a ‘wall’ of residential structures”
- ...prevent the public “psychologically ... from realizing a stretch of coastline exists nearby
- *that they [the public] have every right to visit,*” emphasis supplied
- The new house would also increase private use of the shorefront.

These effects of construction of the house, along with other area development, would cumulatively “burden the public’s ability to traverse to and along the shorefront.”

As a consequence the Commission argued the public interest in access to the shoreline gave right to an ability to impose the linear path condition. As argued by the Commission:

[they] could properly require the Nollans to offset that burden by providing additional lateral access to the public beaches in the form of an easement across their property ...

483 U.S. at 829.

The Commission also argued that they had imposed such conditions on more than 40 properties, as if the fact of historical use justified the practice. The Court would have none of it. In reversing the Court of Appeals, which had upheld the Commission’s rationale, the Court said:

The Commission’s principal contention to the contrary essentially turns on a play on the word “access.” *The Nollans’ new house, the Commission found, will interfere with “visual access” to the beach.* That in turn (along with other shorefront development) will interfere with the desire of people who drive past the Nollans’ house to use the beach, thus creating a “psychological barrier” to “access.” *The Nollans’ new house will also, by a process not altogether clear from the Commission’s opinion but presumably potent enough to more than offset the effects of the psychological barrier, increase the use of the public beaches, thus creating the need for more “access.” These burdens on “access” would be alleviated by a requirement that the Nollans provide “lateral access” to the beach.*

483 U.S. at 838.

But as the Court concluded, seeking public access on private property is more than a simple manipulation of language to express a public benefit. The Court is scathing in its rejection of tortured rationale used by the Commission to achieve a result they find absolutely beyond the reach of regulatory exaction.

Rewriting the argument to eliminate the play on words makes clear that there is nothing to it. It is quite impossible to understand how a requirement that people already on the public beaches be able to walk across the Nollans’ property reduces any obstacles to viewing the beach created by the new house. It is also impossible to understand how it lowers any “psychological barrier” to using the public beaches, or how it helps to remedy any additional congestion on caused by construction of the Nollans’ new house. We therefore find that the Commission’s imposition of the permit condition cannot be treated as an exercise of its land-use power for any of these purposes.

483 U.S. at 838-839.

This paragraph expresses the very limited scope the “nexus” requirement faces when looking at imposing a regulatory condition. The important language in the decision for our purposes was that the condition imposed had to address a burden created by the Nollans’ new permit, not simply an exercise in rationalization to secure new public access. It is this connection or “nexus” that is required for a valid condition and completely overlooked in the Planning Department’s justification for public access beyond that created to respond to demand or burden created by the specific project.

The Supreme Court had previously noted:

Had California simply required the Nollans to make an easement across their beachfront available to the public on a permanent basis in order to increase public access to the beach, rather than conditioning their permit to rebuild their house on their agreeing to do so, we have no doubt there would have been a taking.

483 U.S. at 381.

Having rejected the public desire to make public access more convenient, and finding construction of the house had nothing to do with interfering with that desire, the Court recited a number of cases that had held that the public right to navigation and fishing did not give right to trespass on any private lands. Finally, and in direct rejection of the notion put forward by the City that the public may “trade” a permit for construction on the water in exchange for a concession on public access due to the public’s significant interest in that access, the Court held:

...the right to build on one’s own property—even though its exercise can be subjected to legitimate permitting requirements—cannot remotely be described as a “governmental benefit.” And thus the announcement that the application for (or granting of) the permit will entail the yielding of a property interest cannot be regarded as establishing the voluntary “exchange,”

483 U.S. at 833.

The Court conceded that a home could create a view blockage, and that a reasonable condition to protect existing views could pass constitutional muster. But it could find no connection between the burden—view blockage—and the remedy—a linear path. As noted by the Court, the essential nexus required before a public access condition could be imposed was not between the public’s substantial interest in using the shoreline and the request to build on private property, but rather some direct connection between the construction and the problem sought to be cured by the condition. This is a point completely missed by staff when they said that *Nollan* was simply a case of not stating the public interest in using the shoreline strongly enough, and that under their analysis of the case mitigating direct impacts was only one basis for requiring public access.

Reading the *Nollan* case closely, not only what the Court said, but what it did, proves the fallacy of the City position. The public has no right to pursue other public interests, no matter how important, if the construction in question does not directly burden that interest. As the public has

no “right” to access the waters of the state over private property, the mere request to develop property that does not give rise to additional public demand to access the water or deny access previously present means the City is utterly without authority to pursue its public access plan—except through condemnation.

The Court cautioned that particularly where a City was attempting to secure public rights over private lands, the activity is to be viewed with suspicion and that clever wording of the declaration of public interest will not substitute for a substantial connection between activity and condition. As stated:

*We view the Fifth Amendment’s Property Clause to be more than a pleading requirement, and compliance with it to be more than an exercise in cleverness and imagination. As indicated earlier, our cases describe the condition for abridgement of property rights through the police power as a “substantial advanc[ing]” of a legitimate state interest. **We are inclined to be particularly careful about the adjective where the actual conveyance of property is made a condition to the lifting of a land-use restriction, since in that context there is heightened risk that the purpose is avoidance of the compensation requirement, rather than the stated police-power objective.***

481 U.S. at 841, emphasis supplied.

And finally, the language of reversal at the end of the decision is a direct and immediate repudiation of the City of Tacoma’s expressed justification for the proposed plan—that because public documents exist expressing a great and pressing interest in public access, that creates sufficient justification for public access requirements.

“Finally, the Commission notes that there are several existing provisions of pass and repass lateral access benefits already given by past Faria Beach Tract applicants as a result of prior coastal permit decisions. The access required as a condition of this permit is part of a comprehensive program to provide continuous public access along Faria Beach as the lots undergo development or redevelopment.” App. 68.

*That is simply an expression of the Commission’s belief that the public interest will be served by a continuous strip of publicly accessible beach along the coast. The Commission may well be right that it is a good idea, but that does not establish that the Nollans (and other coastal residents) alone can be compelled to contribute to its realization. Rather, California is free to advance its “comprehensive program,” if it wishes, by using its power of eminent domain for this “public purpose,” see U.S. Const., Amdt. 5; but if it wants an easement across the Nollans’ property, **it must pay for it.***

483 U.S. at 841-42, emphasis supplied.

In the final analysis the *Nollan* case stands for precisely the opposite result of that argued by the City. As stated by the Court and transferred to the City fact pattern, if the City of Tacoma wishes to extend the right of public access across private industrial properties, and a proposed development **does not** increase the demand for that type of public access, the City may not condition the permit on a requirement to provide the desired access, “it must pay for it” independent of the strength of the public purpose to be served.

A quick summary of related cases, where a city attempted to secure the dedication or reservation of private lands for public purposes without some direct connection, shows that the courts have continually rejected municipal efforts to acquire public rights in private lands not directly tied to cause and effect resulting from the specific project.

*Dolan v. Tigard*.<sup>2</sup> There was a substantial public purpose in allowing the City to continue its public pathway along Fanno Creek as called out in City plans. But the Court could find no link between the need of additional stormwater and additional parking (both tied to the business expansion) and a requirement to allow the public to use the land along the creek. The Court found no evidence of a connection and emphasized that the burden was on the public agency to prove the connection exists.

*Unlimited v. Kitsap County*,<sup>3</sup> *Burton v. Clark County*<sup>4</sup> and *Benchmark v. Battle Ground*.<sup>5</sup> In each of these cases there is a clear legitimate public purpose in connected streets and safe streets. But in each case the condition imposed was not related to a problem created by the project under review. The condition was imposed simply because the property was there and the government wanted the additional benefit of an amenity not related to the project. In each case, absent a clear connection between the project proposed and the need to use the streets in question, the “substantial public interest” in safe and connected streets could not be advanced by a condition not directly tied to an impact to the project under review.

*Isla Verde v. Camas*.<sup>6</sup> The City had a public interest in providing open space for wildlife. But in *Isla Verde*, the Supreme Court made it clear that merely because there is a general public interest expressed in a particular objective (in this case protecting wildlife), even one embedded in statute or local regulation, the local government must demonstrate the condition is reasonably necessary, in this location, to ameliorate an impact caused by the particular project under review. Failure to specifically demonstrate the necessary connection rendered the condition under review unlawful.

---

<sup>2</sup> *Dolan v. City of Tigard*, 512 U.S. 374, 114 S. Ct. 2309, 129 L. Ed. 2d 304 (1994).

<sup>3</sup> *Unlimited v. Kitsap County*, 50 Wn. App. 723, 750 P.2d 651, review denied, 111 Wn.2d 1008 (1988).

<sup>4</sup> *Burton v. Clark County*, 91 Wn. App. 505, 958 P.2d 343 (1998), review denied, 137 Wn.2d 1015, 978 P.2d 1097 (1999).

<sup>5</sup> *Benchmark Land Co. v. Battle Ground*, 146 Wn.2d 685, 49 P.3d 860 (2002).

<sup>6</sup> *Isla Verde v. City of Camas*, 146 Wn.2d 740, 49 P.3d 867 (2002).

Most recently in *Citizens v. Sims*,<sup>7</sup> our Court of Appeals looked at a claim by King County that it had a substantial public interest in clean water to protect fishlife and for that reason could limit the amount of clearing on rural lands under its jurisdiction. In an “as written” as opposed to an “as applied” decision, the Court absolutely rejected the notion that a substantial public interest, no matter how worthy, justified imposing open space limitations on private property without the “particularized determination” that such conditions were reasonably necessary at the given location.

The City presentation made Wednesday night, boiled to its essence, is that the City has a public access program that mirrors the priorities of the Shoreline Management Act to secure additional public access to the waters of the state. In pursuit of that substantial public interest, therefore, the City may condition the mere use of the waterfront property by a requirement to provide public access. This is precisely the rationale set out in the final paragraphs of the Supreme Court decision and the basis for rejecting the City view—that such activity will be viewed with suspicion and that without a direct connection between the project and the need for specific access, the City goal, noteworthy as it is, may only be achieved through acquisition.<sup>8</sup>

Having listened to the presentation by the Tacoma City Staff, and reviewed the note of the City Attorney, my only conclusion is that the City’s attempt to further a “substantial public interest” by forcing private property owners to dedicate public access merely as a condition for permission to build along the privately owned shores of the City of Tacoma would be doomed to the same fate as what the California Coastal Commission tried on precisely the same rationale—complete failure.

Any community developing a public access program should adopt the following elements in its master program to assure that public access conditions will pass constitutional muster:

- The burden is on the applicant to prove compliance with the shoreline master program, but on the City to prove nexus and proportionality to impacts caused by the specific proposal before any requirement for public access in any form, direct or indirect, is imposed as a condition of the requested permit.
- The decision on any Shoreline permit that does include a requirement for public access in any form must make written findings that the proposed project specifically burdens a protected interest the public may have in that specific waterfront either by creating an additional demand for the specific access proposed to be required or by reducing access that is already present.

---

<sup>7</sup> *Citizens Alliance for Property Rights v. Sims*, 145 Wn. App. 649, 187 P.3d 786 (2008) (cert. denied, 165 Wn.2d 1030, 203 P.3d 378).

<sup>8</sup> I note that the City slide show copied a syllabus at the beginning of the decision as the basis for its presentation to the Planning Commission. Care must always be used in attempting to use a syllabus as a substitute for reading an entire case. As the decision notes:

The syllabus constitutes no part of the opinion of the Court but has been prepared by the Reporter of Decisions for the convenience of the reader.

483 U.S. at 825.



- The decision must make written findings demonstrating how the condition imposed is directly linked to and designed to resolve the interference or increased burden identified as a direct and proximate result of the permit under review.
- The decision must make written findings demonstrating how the condition recommended is reasonably proportional and designed to resolve the problem created by the project and not advance any other unrelated “public objective.”

The City is spending a great deal of time and resources following a public access program that is not consistent with the goals and guidelines of the Shoreline Management Act discussed in my prior paper and should turn its attention to fixing the problem early and not create a “we/they” tension with its important industrial waterfront owners.

Alexander W. (“Sandy”) Mackie  
Perkins Coie LLP, Seattle, Washington  
1/19/11



# **EXHIBIT 13**

# MITIGATION vs. RESTORATION

## Testing the legal limits

# **We Cannot Single Out the Individual to Bear the Burdens of Society**

If the Nollans were being singled out to bear the burden of California's attempt to remedy these problems, although they had not contributed to it more than other coastal landowners, the State's action, even if otherwise valid, might violate either the incorporated Takings Clause or the Equal Protection Clause.

**One of the principal purposes of the Takings Clause is "to bar Government from forcing some people alone to bear public burdens which, in all fairness and justice, should be borne by the public as a whole." [citation omitted].**

*Nollan v. California Coastal Comm.*, 483 U.S. 825, 835-36, 107 S. Ct. 3141, 97 L. Ed. 2d. 677 (1987), emphasis supplied.

# **When Government Moves Onto Private Property to Solve a Public Problem a Heightened Scrutiny is Present**

*Dolan* (encroaching on property for public purpose)—requirements—in addition to nexus

Rough proportionality to project impact

Individualized determination required

Burden of proof on local government

# When Government Moves Onto Private Property to Solve a Public Problem a Heightened Scrutiny is Present

*Isla Verde v. Camas*—dedicated open space for wildlife protection

- Requires particularized determination
- Burden is on the government
- After 2002 local governments "know such requirements are unlawful" for damage purposes under Chapter 64.40 RCW

See *Isla Verde Intern. Holdings, Ltd. v. City of Camas*, 147 Wn. App. 454, 196 P.3d 719 (2008)

# Definitions: Mitigation

## Fix a problem you created

- (1) **Avoiding** the impact altogether by not taking a certain action or parts of an action;
- (2) **Minimizing impacts** by limiting the degree or magnitude of the action and its implementation, by using appropriate technology, or by taking affirmative steps to avoid or reduce impacts;
- (3) **Rectifying** the impact by repairing, rehabilitating, or **restoring the affected environment**;
- (4) **Reducing or eliminating** the impact over time by preservation and maintenance operations during the life of the action;
- (5) **Compensating** for the impact by replacing, enhancing, or providing substitute resources or environments; and/or
- (6) **Monitoring** the impact and taking appropriate corrective measure

WAC 197-11-768



## Definitions: Restoration Fix a problem created by others

“Restore,” “restoration” or “ecological restoration” means the *reestablishment or upgrading of impaired ecological shoreline processes or functions*. This may be accomplished through measures including, but not limited to, revegetation, removal of intrusive shoreline structures and removal or treatment of toxic materials. Restoration does not imply a requirement for returning the shoreline area to aboriginal or pre-European settlement conditions.

WAC 173-26-020(31)

# What is the Base From Which We Measure Change?

Legislation sets the benchmarks for SMA and GMA

SMA—No net loss

Shoreline master programs shall provide a level of protection to critical areas located within shorelines of the state that assures **no net loss of shoreline ecological functions** necessary to sustain shoreline natural resources as defined by department of ecology guidelines adopted pursuant to RCW 90.58.060. RCW 36.70A.480(5)

GMA—"protect" critical area (Not preclude activity, which was in the original GMA bill and changed the next year)

*Swinomish Indian Tribal Community v. WWGMHB*, 161 Wn.2d 415, 166 P.3d 1198 (2007) ("Do no harm" in LTCA lands)

Protection not restoration is the standard

## Working Standards—On Site

- Condition has reasonable connection to problem caused by the project under review—nexus
- Condition is roughly proportional to the problem sought to be solved—proportionality
- Reasonable necessity proven by particularized determination—burden on local governments
  - Applicable to condition to be protected
    - Shade streams where appropriate, but not eelgrass or nearshore
  - Appropriate to the circumstance
    - Buffers require naturally functioning conditions
    - Buffer does not cross the road

# Examples of Regulatory Requirements in Question

## Whatcom County

- All near shore habitat is critical area (to 20 meters or 66 foot depth)
- All marine critical areas require 150-foot buffer
- All buffers require vegetative replanting to native conditions
- Nonconforming use limitations

# Whatcom County—Birch Bay



© 2011 Europa Technologies  
Image © 2011 TerraMetrics  
© 2011 Google  
Image U.S. Geological Survey  
48°59'21.90"N 122°45'46.21"W elev -17 ft  
Eye alt 982m

Imagery Date: 4/30/2009

# Whatcom County



# Restoration Science City of Bainbridge RPZ + Buffer

Because the functions provided by a riparian area are fundamental to maintaining a healthy functioning marine nearshore, it is recommended that the City designate a riparian protection zone (RPZ) with more restricted uses and assign a separate marine shoreline buffer to protect the RPZ.

This would be done to protect such areas that are currently intact, and

*to establish an RPZ where such areas do not currently exist such as when properties re-develop, remodel or otherwise expand development.*

*The RPZ would be treated as a conservation area to preserve the essential relationship between nearshore and shoreline ecological functions.*

Herrera report August 11, 2011 (on SMP update website)

## **Draft Revegetation Requirement For New Development or Redevelopment**

a. Zone 1 shall be planted to obtain 65% native vegetation coverage within 10 years, consisting of a mix of native trees and shrubs or other approved native vegetation ... (50 foot typical along entire shoreline frontage)

For single-family residential property, construction of one pervious surface trail for non-motorized use, provided the trail is no wider than four (4) feet and the vegetation trimming is limited to four (4) feet on either side of the trail;



# Bainbridge RPZ in Practice

## Does it pass the mitigation test?

- New development or redevelopment
  - Naturally functioning conditions do not exist
  - Properties typically developed to the water
  - Assume any new development meets the no net loss test from existing conditions without the buffers
- Look at three examples and see if you see the permit program fostering
  - Mitigation—within allowable rules or
  - Restoration—going beyond mitigation to serve a public purpose

# Bainbridge RPZ

## How does this work in practice?



South  
Shore

© 2011 Google

© 2011 Google

Eye alt: 1160 ft

47°36'08.36" N 122°53'20.18" W elev: 2 ft

Imagery Date: 8/18/2011



# Bainbridge RPZ How does this work in practice?



East  
Shore

©2011 Google  
Eye alt 1306 ft

Imagery Date: 8/19/2011  
47°36'05.97" N 122°09'55.17" W elev 0 ft

Perkins  
Cole

# Bainbridge RPZ

## How does this work in practice?



Port  
Madison

Imagery Date: 8/19/2011  
47°41'56.18" N 122°31'25.61" W elev. 0 ft  
© 2011 Europa Technologies  
© 2011 Google  
Google  
Eye alt 1366 ft

## **Puget Sound Partnership and the Mandate to Restore Puget Sound**

- **Puget Sound Partnership**
- **Created in 2007**
- **Non regulatory**
- **Works through Action Agenda and targets**
- **To restore a healthy Puget Sound by 2020**

## **Puget Sound Partnership Action Agenda and Targets**

2011 in approaching the 2012 update of the Action Agenda set a variety of targets to measure how successful the agency was in achieving its goal of restoration of Puget Sound by 2020

## Local Governments and PSP Restoration Targets

- Estuaries—Add 7,380 acres (~12 square miles)
- Land cover—268 miles of riparian vegetation are restored or restoration projects are underway. ...
- Floodplains
  - No net loss from 2011 baseline
  - Restore 15% of degraded floodplains
- Shellfish beds
  - A net increase 10,800 harvestable shellfish acres
  - Includes 7,000 acres where harvest is currently prohibited
- Eelgrass—Add 10,000 acres (15 square miles)

# Pressure on Local Governments

## Chapter 90.71 RCW

The legislature ... intends that the partnership will

(c) Not have regulatory authority, nor authority to transfer the responsibility for, or implementation of, any state regulatory program, unless otherwise specifically authorized by the legislature 90.71.200 (BUT)



## **Local Governments Called to Implement the Plan**

The legislature intends that all governmental entities within Puget Sound will exercise their existing authorities to implement the applicable provisions of the action agenda RCW 90.71.350(1)

# "Non Regulatory" Regulatory Authority I

## RCW 90.71.350

(3) In the event the council determines that an entity is in substantial noncompliance with the action agenda

- notice of this finding
- meet and confer
- develop a corrective action plan
- hold a public meeting

If, after this process, the council finds that substantial noncompliance continues, recommend to the governor that the entity be ineligible for state financial assistance

# "Non Regulatory" Regulatory Authority II

## Not Just Agency Process

- Substantial non compliance concerns may also involve problems, conflicts, or a substantial lack of progress
  - that citizens or implementing entities bring to the council
- The council may use conflict resolution mechanisms such as but not limited to
  - technical and financial assistance
  - facilitated discussions, and
  - mediation to resolve the conflict

# **"Non Regulatory" Regulatory Authority III**

## **About as Friendly as the IRS**

The council may recommend to the governor that the entity be ineligible for state financial assistance until the substantial noncompliance is remedied.

Instances of noncompliance shall be included in the state of the Sound report required under RCW 90.71.370.

The council shall provide its analysis of the conflict and recommendations resolution to the governor, the legislature, and to those entities with jurisdictional authority to resolve the conflict.

# "Non Regulatory" Regulatory Authority III

## About as Friendly as the IRS

(6) The council may make recommendations to the governor and appropriate committees of the senate and house of representatives for local or state administrative or legislative actions to address barriers it has identified to successfully implementing the action age

(Does anyone remember Chelan County and the "hell no we wont go" phase of its GMA planning—until DCTED recommended a funding cut off?)

Nothing voluntary about it

## Local Governments and PSP Restoration Targets

- Estuaries—Add 7,380 acres (~12 square miles)
- Land cover—268 miles of riparian vegetation are restored or restoration projects are underway. ...
- Floodplains
  - No net loss from 2011 baseline
  - Restore 15% of degraded floodplains
- Shellfish beds
  - A net increase 10,800 harvestable shellfish acres includes 7,000 acres where harvest is currently prohibited
- Eelgrass—Add 10,000 acres (15 square miles)

# Estuaries/Riparian Restoration Nisqually Success Story

~1 square mile  
(640 acres)

Target restoration  
of 7,380 acres or  
11 square miles  
Estuaries  
238 miles riparian  
vegetation



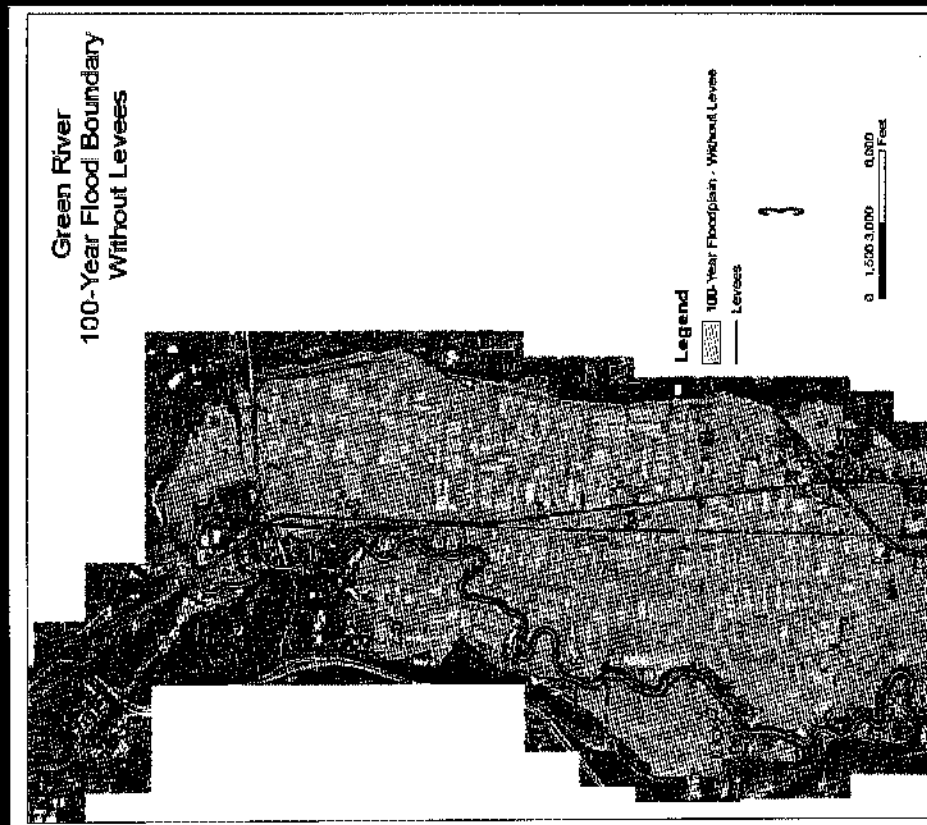
# Let's Look at Problems in the Field Estuaries—Skagit

Target  
7,380  
acres  
Fir Island  
is 9,900  
acres





# Floodplain—no net loss from 2011 baseline—Levee decertification



# Floodplain—no net loss from 2011 baseline—Tacoma/Fife



FLOODPLAIN VS. NEW FLOODPLAIN

# Floodplain—no net loss—Burlington Skagit area—where do we gain 15%?



0 1.1 mi

Includes: materials © Space Imaging LLC

Skagit County iMap

## Central Skagit County

# Riparian Restoration Rivers 278-mile Target

Buffers depend on naturally functioning conditions

Test for validity for local enforcement:

- Nexus-proportionality

- Reasonable necessity

  - Particularized determination

  - Applicable to conditions

  - Appropriate to circumstance

# Buffers Depend on Naturally Functioning Conditions Not Found in Urban Core Areas

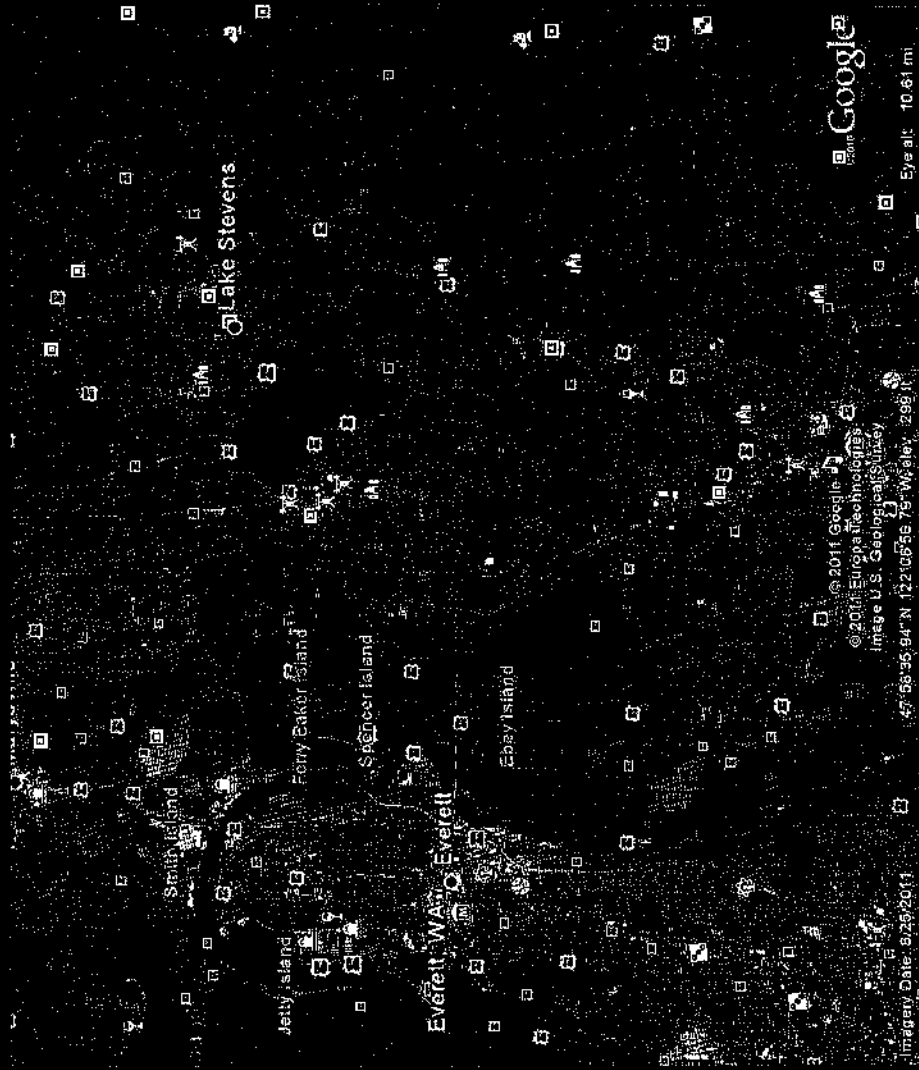


# Buffers Depend on Naturally Functioning Conditions Which Do Not Exist in Many Cities



Redmond  
River

# Buffers Depend on Naturally Functioning Conditions Which Often Conflict With Agricultural Uses



Snohomish  
County River  
system

# Where Do We Find the Areas for Restoration and How Is It Imposed?

"If the local government used the best available science in adopting its critical areas regulations, the permit decisions it bases on those regulations will satisfy the nexus and rough proportionality rules."

*Honesty in Environmental Analysis and Legislation (HEAL) v. Central*, 96 Wn. App. 522, 534; 979 P.2d 864 (1999).

Message: Read HEAL carefully

Best available science when intruding on private property for open space buffers and vegetation restoration

- Naturally functioning conditions present
- Reasonable necessity-particularized determination
  - Applicable to condition
  - Appropriate to the circumstance

Difficult to enforce where project already meets the no net loss test



# Lesson: Mitigation is Within the Proper Realm of Lawful Exaction

## Restoration is Typically Not

- ▣ Restoration beyond
  - ▣ No net loss
  - ▣ Do no harm
  - ▣ Protect, not restore
- ▣ Is a public responsibility beyond the ability of local governments to command from private property owners

## Lesson

- Local governments for their shoreline restoration plans
- Puget Sound Partnership for its Puget Sound restoration targets
  - Cannot rely on local government police power to achieve the desired results
  - Restoration beyond mitigation can only be achieved through public investment and private incentives

# When Choosing to Tell Others How to Behave The First Thing is to Set a Good Example

Puget Sound  
Partnership  
headquarters  
at UW Center for  
Urban Waters  
on Thea Foss  
Waterway



Imagery Date: 6/11/2010

47°15'34.65"N 122°36'08.87"W (Elev: 500)

Presented by  
Alexander W. "Sandy" Mackie  
Perkins Coie LLP  
1201 Third Avenue, Suite 4800  
Seattle, WA 98101-3099  
206-359-8653  
amackie@perkinscoie.com

I am Janey Aiken, my family has lived on Burley Lagoon for 28 years. On the Burley Lagoon we have families who have lived here 80 and 90 years. During this time Western Oyster Company has farmed oysters and clams.

Typically we have had oyster company workers seeding oyster beds and digging clams with buckets and hand tools throughout the year at low tides. We have lived in harmony with Western Oyster Company for many years.

Taylor Shellfish announced in March, 2012, they have leased Western Oyster Company. Applications to expand shellfish farming include 300 acres of Burley Lagoon tidelands. Taylor Shellfish has the potential to destroy the delicate estuary that is Burley Lagoon.

Modern shellfish farming includes clearing the beach of sand dollars, moon shells, ghost shrimp, horse clams, cockles, sea stars, red rock crab. Any species that has been determined by the shellfish industry to be a pest to shellfish is allowed under current regulations to be destroyed.

Where are the regulations protecting our native species?

Herbicides are sprayed on the beaches to eliminate certain eelgrass. A permit application is being considered to spray the herbicide, Imazamox on commercial shellfish beds. This same herbicide has been banned in Europe in order to protect honey bees.

In Willipa Bay the shellfish industry has been allowed to spray herbicides on eel grass beds for years.

Where are the regulations protecting our environment?

With modern shellfish farming acres of plastic clam and oyster bags are laid upon the beach, wire lines and netting are placed on top of them to protect the clams and oysters from additional predators. Shore birds are routinely caught in these nets.

Where are the regulations protecting our shoreline?

I ask that you place the same shoreline protection restrictions on the shellfish industry as you do on me the taxpayer and homeowner.

Sincerely,

Janey Aiken

[www.iamquiltngal@aol.com](mailto:www.iamquiltngal@aol.com)

**Katich, Peter**

---

**From:** Brant Holmberg [doholm@centurytel.net]  
**Sent:** Monday, June 11, 2012 12:34 PM  
**To:** Katich, Peter  
**Cc:** McCarthy, Pat; dhanber@co.pierce.wa.us; vdiamon@co.pierce.wa.us;  
kilmer.derek@leg.wa.gov; seaquist.larry@leg.wa.gov  
**Subject:** A plea for you to see the future of your decisions

Mr. Peter Katich:

I am a waterfront property owner on Burley Lagoon and have major concerns regarding how intensely the shellfish industry is lobbying our local and state officials regarding their freedom to establish unlimited industrial aquaculture in areas you folks say you are trying to protect. Since the recent proposal by Taylor Shellfish company to establish a substantial shellfish operation including oysters, clams, geoducks and mussel rafts in Burley Lagoon I have done a great deal of research on the impact that would have on our beaches and shorelines and what I have found devastates me.

What I anticipate seeing should they be allowed the amount of freedom I see they will have under your proposed Shore Line Management Master Plan, and the restrictions you place on us as property owners is as follows:

- Geoduck plantings with up to 44,000 four to six inch plastic sections of PVC pipe twelve or so inches in length stomped into perhaps 100 or more acres of Burley Lagoon which will be planted with geoducks and individually covered with a net held in place by a plastic band and covered with another layer of netting to keep out predators.
- There will be huge numbers of plastic oyster bags and clam netting clearly visible on the beaches.
- There will be an array of 30 ft X 30 ft mussel barges with lights covering the waters of the lagoon.
- There will be worker activity with associated motorized equipment noise going on all hours of the day and night depending on tides and planting/ harvesting times.
- There will be an impact on an already problematic traffic area at Purdy and across the Wauna Spit.

These operations will:

- Eliminate the aquatic life in the lagoon due to the purging of the beaches to maximize the growth and success of the shellfish farming operation. This in addition to liquefying the beaches during geoduck harvests and turning the waters turbid to the point of no visibility for our Bald Eagles, Osprey, Cormorants and other birds who depend on fish in the lagoon.
- Add tons of PVC tubes, plastic nets, plastic bands, plastic canopy nets, plastic oyster bags and plastic mussel disks that degrade in our lagoon waters and will wash up not only on our shorelines but those of Henderson Bay.
- Devastate the natural beauty of the lagoon and chase out the wildlife that has made the lagoon home far before man ever set foot here.
- Restrict access to beach walking, swimming, boating, kayaking and sailing.
- Permanently convert our shorelines into industrial aquaculture sites where perpetual shellfish farming activities will result in no species recovery not only for sea floor sea life species but also for the salmon runs and other fish species in the lagoon.
- Cause further traffic congestion and problems to an already fragile traffic situation at Purdy and on Wauna Spit.

I along with other concerned citizens have gathered substantial evidence of the enormous physical impact the shellfish industry has on our shoreline areas (especially in populated areas) and we will be happy to share any part, or all, of it with you as you wish.

I am a laryngectomy and am unable to speak to you in your public meeting sessions to express my concerns. I do hope this means of communication will catch your attention and will allow me to establish an ongoing written dialog with you on this matter. I would truly appreciate hearing from you so that I might plead my concerns as matters move forward on this.

Branton K. Holmberg

A very concerned citizen who relies on your sensitivity and informed understanding of the issues we face as your constituency.

June 11, 2012

Peter Katich, Director of Planning  
City of Gig Harbor

Reference: Shoreline Management Update

Subject: Public hearing on June 11, 2012 at Gig Harbor City Hall

Dear Mr. Katich,

This letter is to dispute the proposed allowed unlimited industrial aquatic development on Henderson Bay. My wife and I live at 12706 Burnham on the east shoreline of Henderson Bay, approximately 300 yards north of McCormick Creek. Our home is one of the specific areas that would be affected by this travesty.

Allowing the proposed use on a pristine waterfront is an egregious disregard of ecological, economic, recreational, scenic, and safety factors. Additionally, it further ignores private property owner rights. It appears there is some political advantage as the only asset of the proposal.

McCormick Creek is a thriving salmon spawning creek and the entire eco system of this area would be adversely affected by this proposal as indicated by numerous scientific studies that dispute the pro studies.

Economically, the property values of the shoreline homes would likely decrease should this proposal be allowed, reducing taxable income to the various agencies involved. What economic advantage to the citizens would accrue from allowing this "farming"? I suspect not as much as the loss of property tax dollars.

Recreational use of the waterfront is currently enjoyed by the public as well as the affected property owners. Allowing this use will be a disruption of the beauty and common use of beach front for recreational clamming and other "low tide" activities, including educational sojourns of the tidal basin.

I wind surf, kayak, SUP, and swim in this area. I have seen the projections (tubing above the surface, reinforcing bars to hold down netting, and other abortive



systems for aquaculture) at other areas of our State that allow aquaculture. This presents a viable safety hazard to anyone near the shoreline. Many times I have to walk my windsurfing gear home along the shoreline due to a shift in the wind. I Could not navigate across these projections without being scraped or even impaled.

The current Shoreline Act mandates that nothing be developed at least 50' from the shoreline without a special use permit as a means of saving the environment. I requested permission to construct a wood deck near our shoreline 3 years ago. This deck would have been 7' above the mean higher high water line. I was refused as a statement of protecting the environment. Now there is a proposal to flagrantly disregard the environment with this proposal. This lack of consistency betrays any reasonable decision making rational.

Needless to say, I am unequivocally opposed to this proposal.

Very truly yours,

Donald L Hansen, PE  
12706 Burnham Dr NW  
Gig harbor, WA 98332  
253-279-7340

TO: Gig Harbor City Council  
FROM: Delores Brown  
12622 Burnham Dr. NW  
Gig Harbor, WA 98332  
RE: Comments on Shoreline Master Program Update – Draft

On 11-18-2010, I submitted a letter to the Gig Harbor Planning Commission regarding Aquaculture, View Corridors and Vegetation. Today, I am addressing only Aquaculture.

I am adamantly opposed to the expansion of commercial aquaculture activity, as currently practiced by the industry. My primary objection to aquaculture is based on environmental issues.

I own 100 feet of shoreline on the northern side of Henderson Bay, between McCormick creek and Purdy, which I purchased in 1992. I think my little piece of beachfront is absolutely lovely, still in its natural state, much as it was back in the 1930's and 1940's, with the old highway running close to the water still visible – in fact, you can still see part of the old painted lane marking on the pavement. My home was built around 1950; my private water well is close to the beach and the water supply (which I have tested annually) is good. The old power pole near the old highway, which brought power up the hill to the home, is still present and covered with ivy, providing a nice habitat for birds. I have been an 'organic' gardener since before we even knew the term and rarely ever use any herbicides or insecticides. This may seem like a lot of extraneous information, but I want you to understand something about me and my property as you read my letter.

**Erosion Problems.** I am concerned over the amount of erosion that has occurred on my beach since the winter of 2000-2001, after a commercial manila clam operation was permitted on 600 feet of beach property, 160 feet to the south of me (the old Hogberg property, now owned by the Cannon's) and large expanses of netting (similar to bird netting used over fruit trees) were laid on the beach. Most of the netting deteriorated over the next couple of years and was carried out into the bay, while other portions remained in place. This caused accretion on the beach where the netting was placed and erosion on my beach and other surrounding properties. In 2006, the erosion effect was extremely pronounced when a severe winter storm caused hundreds, if not thousands, of manila clams (and dozens of oysters and other creatures) from my beach to be displaced/killed and washed up onto the bank and the old highway. Since 2001, I have lost approximately three feet of my shoreline bank to erosion. This is excessive, when you consider how long that old highway has been in place and undisturbed by erosion. I am also concerned over the possible contamination of my well by saltwater if more aquaculture activities are allowed and cause further erosion. I question who will be held responsible for damages to our private properties caused by aquaculture.

**Accretion Problems.** There is a fairly large expanse of beach in Henderson Bay, a bit south of McCormick creek, with a fair population of native geoducks. Per a naturalist at the state department of natural resources I spoke with, geoducks can be killed by just an inch or so of accretion on the beach surface. If commercial geoduck operations were allowed in or close to that area, the native geoducks would most likely be destroyed. This would not be important to the commercial aquaculture operators, as they do not prize the larger, older geoducks. It would be a huge loss for us private citizens who do prize the larger geoducks and buy state shellfish licenses specifically to be allowed to hand-dig geoducks.

Aquaculture Debris. Since 2000-2001, we shoreline owners along Henderson Bay have frequently found equipment from aquaculture operations upon our beaches. It is garbage at that point and many of us have tried to dispose of it, in an effort to avoid more litter and garbage going into our bay. In the fall of 2006, a few neighbors and I spent a few days trying to find out how to resolve the problem of a derelict boat in Henderson Bay, loaded with deteriorated plastic bags containing unsecured geoduck pvc tubing and emitting a foul order as though from rotting animal life. I was able to find someone at the Pierce County Sheriff's office (a Sgt. Lawrence), who explained a lawsuit had been filed by the state ecology dept. against the owner but the sheriff dept. was not allowed to move or go aboard the boat to do any clean-up. He also said the sheriff dept. has had divers inspect the bottom of the bay and there are thousands of geoduck tubes littering the bottom of the bay which, to the best of my knowledge, are still down there deteriorating and contaminating Henderson Bay. I've explained this in some detail simply to give you an idea of the debris/garbage problems created by the commercial aquaculture activities. In just the past month or so, I found seven black plastic woven type boxes, lined with fine mesh netting, on my beach and have been told they are used in oyster farming – there is no id on them, and I am unaware of any oyster farms close to me so I have no idea where they came from. Each box is two feet square and weighs about eight pounds. I deeply resent that the burden of debris/garbage clean-up is being placed upon us private property owners but that is what has been happening, both here in Pierce County and Thurston County. The aquaculture operators are presently using far greater amounts of man-made equipment/structures than they did in the past; if they are unable to adequately secure their equipment, they should not be allowed to use it.

In closing, I would like to pose a question to all the decision makers at the state, county and city level: would you grant a permit to a private company to operate on a site next to your home, allowing them to cause erosion and damage to your land, kill living creatures that you care for, and dump their debris/garbage on your land? You should contemplate this as you consider your decision regarding commercial aquaculture permits.

Graciously,

*Delores Brown*

June 10, 2012  
Re: City of Gig Harbor and Pierce  
County Public Hearings - Proposed  
Shoreline Regulations

To Whom It May Concern:

In our little corner of America the Beautiful we need to take the long view of our responsibility to protect the environment from the desecration proposed by businesses to enhance their bottomline.

If it means they will have to practice a bit of austerity in their rapaciousness, so be it. Since we live in a republic that has its foundations in democracy, the will of the majority should prevail. Residential areas are not suited for industrialization. Surely there are non-residential areas, perhaps less easily accessible, available for their exploitation. This would only require more effort on their part and no destruction

of the a neighborhood.

Sincerely yours,  
Rebecca G. Rogers  
12614 Burnham Dr. N.W  
#12  
Bellevue, WA 98002



**SIERRA  
CLUB**  
FOUNDED 1892

**Washington State Chapter**

180 Nickerson St, Ste 202  
Seattle, WA 98109  
Phone: (206) 378-0114  
Fax: (206) 378-0034  
[www.cascade.sierraclub.org](http://www.cascade.sierraclub.org)

June 11, 2012

Mr. Peter Katich  
City of Gig Harbor  
3510 Grandview Street  
Gig Harbor, Washington 98335

Dear Peter,

The Sierra Club appreciates the opportunity to provide comments on the City of Gig Harbor Shoreline Master Program (SMP) update. While we support upland protections that will protect Puget Sound "ecological functions," it is not consistent to adopt new regulations that allow industrial aquaculture such as geoduck developments, high densities of oysters using plastic devices and mussel barges to degrade "ecological functions." The scientific evidence, the industry's own literature, the extensive citizen's observations/ pictures clearly document degraded "ecological functions" with a net loss of native plant and animal species. In addition, these proposed aquaculture regulations violate the rights of citizens to responsibly enjoy the shorelines of our state.

We completely agree with the following City of Gig Harbor SMP update stated goals:  
"(2) To promote the public health, safety, and general welfare of the community by providing long range, comprehensive policies and effective, reasonable regulations for development and use of Gig Harbor's shorelines; and  
(3) To ensure, at a minimum, no net loss of shoreline ecological functions and processes and to plan for restoring shorelines of the state that have been impaired or degraded by adopting and fostering the following policy contained in RCW 90.58.020, Legislative Findings:"

According to the Shoreline Management Act: Aquaculture is a water-dependent use and is a preferred use of the shoreline per WAC 173-26-241(3)(b) when consistent with: 1) Control of pollution; 2) The no net loss requirements of Title 18S PCC; and 3) The prevention of damage to the environment and to Federal and State listed species and their associated habitats.

As shown on the attached Unsustainable Shellfish Aquaculture and Summary of Citizen's Litigation, the following 401 Water Quality legal appeal clearly outlines that geoduck aquaculture violates the Clean Water Act, creates pollution and cannot be considered a preferred use of the shorelines: [http://www.caseinlet.org/uploads/8977\\_nws-2010-7238\\_hitchcock.pdf](http://www.caseinlet.org/uploads/8977_nws-2010-7238_hitchcock.pdf)

Both Henderson Bay and Burley Lagoon have unique aquatic life with abundant populations of both plants and animals. Henderson Bay is fortunate to be experiencing extensive eelgrass

beds, record herring spawn, a restored McCormick Creek which now enjoys active salmon spawning, crabs and large populations of migratory waterfowl. Burley Lagoon is known for their diverse bird populations, forage fish spawning habitat, salmon spawning creek, eelgrass beds and beach life. In addition, Burley Lagoon has PCB contaminated sediments that should not be disturbed by intensive industrial aquaculture operations. Up to this point, Burley Lagoon oyster operations have been handled in a sustainable manner for both wildlife and residents.

### **Videos of Totten Inlet—The Shellfish Industry Vision of the Future of our Shorelines**

On June 13, 2012, citizens sponsored boat trips of Totten Inlet where over 92% of the shorelines have been converted to industrial aquaculture. Over the last 14 years, the majority of Totten Inlet shorelines have been changed from sustainable oysters grown on a beach to geoduck aquaculture and oyster bags. If you look closely at the following videos, you can see the rows of squirting geoducks where the PVC tubes have been removed. A monoculture has replaced the natural "ecological functions" as the shorelines are cleared of natural debris, crabs, starfish and purged of all marketable shellfish, sand dollars, etc. Tubes are then stomped in and covered with small plastic nets, plastic bands and canopy nets. Harvesting liquefies the sediments 3-4 feet down and most of the benthic organisms are eliminated.

While the industry and SeaGrant talk of recovery, the normal geoduck development is a forever aquaculture site, perpetual cycle and replanted within weeks with minimal time for species recovery. Oyster bags smother the tideland benthic organisms and clam beds are now being covered with canopy nets. Cumulative effects of industrial aquaculture include: reduction of food sources/food web, elimination of aquatic vegetation, depletion of zooplankton consumed by unnaturally high densities of shellfish, reduction in flatfish (confirmed by 2009 Seagrass geoduck research-page 4), plastic marine debris/microplastics, sediment composition changes and silt that have not been studied to determine the long term impacts on forage fish spawning habitat and ESA listed species. WDF&W have confirmed that the forage fish populations in Totten Inlet have dramatically declined.

### **Totten Inlet Shorelines as of June 13, 2012—Unsustainable Industrial Aquaculture**

Expansion--Youtubes

Geoduck Developments, Oyster

<http://youtu.be/76e9s0ZcxFM>

<http://youtu.be/INHXeRDHsXU>

Mussel Barges in Totten Inlet

<http://youtu.be/9I3dGDIFkfU>

<http://youtu.be/dhRNsyu5Zgc>

<http://youtu.be/8D31uaWvuVE>

You will also notice that shellfish workers are basically the only citizens you see on the beach as the beaches have become privatized.

### **Information and Studies That Prove Conclusive Evidence of Alteration of “Ecological Function” and “Net Loss”**

#### **1. The Fate of our Aquatic Life—Shellfish Industry “Pest Management” Plan**

<http://washington.sierraclub.org/tatoosh/Aquaculture/OR-WAbivalvePMSP.pdf>

The list of plant and animal species on page 27 are being eliminated from our shorelines by shellfish growers on a routine basis and clearly is a “net loss of ecological function.” The map of South Puget Sound aquaculture locations indicated by red dots illustrates the number of sites where the existing aquatic life has been replaced by shellfish commodities.

## **2. SeaGrant Geoduck Research 2011 Interim Report**

<http://www.wsg.washington.edu/research/pdfs/reports/GeoduckReport2011.pdf>

Harvest and Structure Disturbances, and Macrofaunal and Infaunal Responses  
SeaGrant has only evaluated a one time harvesting at several sites. Their analysis does not include the entire clearing of the nearshore to the harvesting cycle and has not examined the long term effects—just one harvest. There have been valid questions raised by Dr. Gary Ritchie who stated in the attachment: “I contend that Dr. VanBlaricom found no significant harvesting effects because his experimental design simply lacked the statistical power needed to find any effects among all of the natural variation in his study populations.”

Even if the statistical conclusions are accurate, they are based on the assumption that the sites are left undisturbed after harvesting. Since this is not consistent with the industry practice of replanting within a several weeks, the plant and animal species do not have time to recover and this is a “net loss” of important components of the food web.

### **Degradation of Eelgrass**

On page 16 of this report, the results show that eelgrass is destroyed in the geoduck aquaculture site and degraded on the adjacent area. With Henderson Bay having significant areas of eelgrass throughout the bay and record herring spawning, industrial aquaculture will result in “net loss.” The importance of eelgrass and forage fish populations has recently been gaining more headlines as scientists try to save our salmon and whales.

## **3. Loss of Biodiversity**

The following study documents the importance of biodiversity. The standard practices adhered to by industrial shellfish growers reduces biodiversity that is essential for the health of our shorelines and threatens the ability of our aquatic species to survive.

### **New Study----Ecosystem Effects of Biodiversity Loss Could Rival Impacts of Climate Change, Pollution**

<http://www.sciencedaily.com/releases/2012/05/120502133106.htm>

## **4. Recreation in Henderson Bay**

It is well documented that Henderson Bay is widely used by citizens for windsurfing, sailing, swimming and kayaking. Not only are the materials that are used by the shellfish industry a safety issue, the privatization of beaches by placing tubes, nets, rebar, plastic grow bags and clam netting restrict the ability for citizens to utilize the beaches for recreation. While the public trust doctrine has not been tested in the State of Washington on this specific issue, there is no question that citizens at least have the right to use the public waters whether there is one inch or 100 ft of water. It is now common to see No Trespassing to Low Tide or industry workers telling citizens that they are trespassing as they try to use our public waters.

The mussel barges that are included in the SMP should not be allowed in Henderson Bay or Burley Lagoon for the following reasons: Restricts navigation, windsurfing, sailing,



kayaking, alters the natural beauty of the shoreline, results in massive lighting the size of football fields at night in a high density residential area, fouls the bottom of the bay with shellfish waste that destroys the native aquatic life, creates plastic pollution that is found as far away as Henderson Bay from Totten Inlet and results in a "net loss of ecological function."

**5. Past Problems from The Only Two Permitted Aquaculture Sites in Henderson Bay**  
Citizens have already reported safety issues and "net loss of ecological function" in Henderson Bay as shown below:

**Pierce County vs Washington Shellfish**

**<http://protectourshoreline.org/articles/Washington%20Courts.htm>**

"Members of the public also testified at the hearing, including: John Petrich, who lives next to the DeMolay property; Larry and Nanci Wakefield, who reside near the Olson and Pierce County properties on Purdy Spit; and Robert Paradise, a recreational windsurfer, who testified on behalf of himself and members of the Boeing Windsurfing Club, the Northwest Board Sailors Association, Columbia Gorge Windsurfing Association, and Northwest Women of Wind.<sup>7</sup> These witnesses testified that they saw (1) heavy rope- like netting laid out, long metal stakes, and loose PVC pipes enmeshed in the nets over WSF's geoduck beds; (2) PVC pipes sticking out of the water and pipes placed into the ground for planting or cemented into five-gallon cement cans to serve as dive markers; and (3) several hundred feet of nylon rope that would entangle with other objects in the water or injure windsurfers. According to one witness, WSF used multiple boats, some large enough to drag buoys."

"In these ways, WSF's activities prevented the general public from using certain areas of the water: (1) WSF's geoduck planting and harvesting equipment posed a safety risk to the public; and (2) WSF's activities and fixed objects occupied shoreline water, thereby excluding others. The testimony and exhibits provided substantial evidence to support the hearing examiner's finding that WSF's geoduck activities interfered with the normal public use of the surface water.<sup>12</sup> Therefore, under PCC 20.76.030, WSF engaged in 'development' when it harvested and planted geoducks on the leased properties."

"Dr. Thom works primarily on eelgrass and eelgrass ecology for Battelle, one of nine U.S. Department of Energy marine sciences laboratories. He testified that (1) there were eelgrass beds on shorelines WSF had leased from the County, Olson, Ryan, and Detienne; (2) WSF had planted geoduck seeds with PVC pipes in existing eelgrass beds on the County property; and (3) the entire property WSF leased from the County is inshore below 18 feet."

While industry makes the excuse that this was just "one bad apple," the practices and materials used are the same as in every geoduck location. With industry demanding to work 24/7 with workers on the beaches in the middle of the night, the noise and lights significantly disturb aquatic life, citizens and users of our shorelines.

**Seattle Shellfish Clam Operation Adjacent to McCormick Creek**

Pierce County was contacted by several adjacent landowners to this clam operation where the large canopy nets drifted onto other property owner's property smothering their beaches and causing a safety issue. In addition, the pictures that were provided to Pierce County documented that the drifting nets changed the flow of McCormick Creek, an active ESA

listed salmon spawning creek. The County told the residents to contact Seattle Shellfish who stated that they could not prove that the nets were his responsibility. Now several years later, the nets remain and once again Pierce County is not prepared to rectify the damage that has been done.

## **6. More Science and Leading Scientists Opinions of Adverse Impacts of Industrial Geoduck Aquaculture—A “Net Loss”**

We have attached fact sheets on the following issues that are important to review on this issue: Shellfish Deplete Zooplankton, Industrial Aquaculture Marine Plastic Pollution, Shellfish Industry Degrades Water Quality, Impacts of Industrial Aquaculture, Minimal Nitrogen Reduction by Shellfish, Shellfish Industry Eradication of Eelgrass

**To See Pictures and View Information on Industrial Aquaculture coming to our County, visit:**

<http://www.caseinlet.org/Photos.php>

[protectourshorelinenews.blogspot.com](http://protectourshorelinenews.blogspot.com)

<http://washington.sierraclub.org/tatoosh/Aquaculture/index.asp>

**View one of the several Youtubes created by South Sound citizens which shows the aquaculture coming our way:**

<http://www.youtube.com/watch?v=NzigC1ReNRE&feature=relmfu>

<http://www.youtube.com/watch?v=inHHrwSe34M&feature=related>

<http://www.youtube.com/watch?v=crsiWqypsDE&feature=relmfu>

### **Summary**

Based on the extensive amount of documentation on this issue, oysters placed on the beach is an appropriate use of Henderson Bay—not industrial aquaculture. Low intensity/sustainable aquaculture should continue to be required in Burley Lagoon to protect the aquatic life and the community that have utilized the shorelines for generations. Neither geoduck developments, high density oyster operations or mussel rafts fit the definition of “no net loss of ecological function,” or public safety. The connection between Burley Lagoon and Henderson Bay wildlife is apparent and will be a loss to all if industrial aquaculture is allowed. In addition, the burden of shoreline owner’s continually collecting shellfish industry marine plastic debris before it washes into deeper waters does not solve the problem.

While we understand that the Washington Department of Ecology has been instructed by Governor Gregoire to facilitate the expansion of aquaculture, the existing laws that protect aquatic life and citizen’s rights cannot be ignored as a result of shellfish industry corporate lobbying. Citizens must depend in this case for the City of Gig Harbor to stand up for our aquatic resources and support the citizens who are trying to protect them.

If you have any questions, please feel free to contact me.

Sincerely,

Laura Hendricks, Chair

Sierra Club-Marine Ecosystem Campaign-Washington State

Sierra Club National Marine Team Northwest Representative

(253) 509-4987

**Unsustainable Shellfish Aquaculture**  
Washington Citizens Initiating Litigation to Protect  
Our Shorelines and Native Species

With unrelenting shellfish industry expansion promoted by Washington officials to meet export demand, citizens have no choice but to head to state and ultimately federal courts to protect our Washington natural aquatic resources.

**A. Geoduck**

The recent legal actions resulting from intertidal geoduck operations include: degradation of water quality, damaging sediment plumes, adding "point source" tons of toxic PVC & plastic nets/ bands, adverse impacts to forage fish habitat, permanent alterations to the intertidal ecosystem & substrate, obstructions of recreational uses and lack of a shellfish aquaculture cumulative impact analysis.

With news reports that continued wild geoduck poaching threatens the long term viability of wild geoduck stocks, it is even more important that our natural intertidal resources be preserved. Regulators should be examining the option of planting geoduck in subtidal tracts on state lands to produce geoducks that would supplement tax revenue as is done in Canada.

**Shellfish Sustainability-March 2012**

PCC is the largest consumer-owned natural food retail co-operative in the United States with over 45,000 members. Their March newsletter provides an informative overview of the sustainable shellfish issue and supports citizen's environmental concerns:

[http://www.pccnaturalmarkets.com/sc/1204/shellfish\\_initiative.html](http://www.pccnaturalmarkets.com/sc/1204/shellfish_initiative.html)

**1. Citizen Appeal the first four 401 Geoduck Water Quality Certifications by Dept of Ecology--April 2012**

Violations of the Clean Water Act are outlined in these appeals by the two law firms: Stephan Volker of Oakland, California and Bricklin & Newman of Seattle, Washington. These four appeals also request a stay from Ecology issuing any further Clean Water Act section 401 certifications, pending Ecology's compliance with the Clean Water Act.

Mr. Volker, a well recognized environmental attorney who is known for his major environmental cases throughout the United States, has been retained to handle the Clean Water Act/ESA litigation:

[http://www.volkerlaw.com/About\\_Stephan\\_Volker.html](http://www.volkerlaw.com/About_Stephan_Volker.html)

The legal appeal and Ecology permit are shown in the following application links:

[http://www.caseinlet.org/uploads/8977\\_nws-2010-7238\\_hitchcock.pdf](http://www.caseinlet.org/uploads/8977_nws-2010-7238_hitchcock.pdf)

[http://www.caseinlet.org/uploads/9005\\_nws-2011-131\\_scott.pdf](http://www.caseinlet.org/uploads/9005_nws-2011-131_scott.pdf)

[http://www.caseinlet.org/uploads/9012\\_nws-2011-44\\_taylor.pdf](http://www.caseinlet.org/uploads/9012_nws-2011-44_taylor.pdf)

[http://www.caseinlet.org/uploads/Volker--401\\_Case\\_Inlet\\_Appeal--SULLIVAN-4\\_6-12.pdf](http://www.caseinlet.org/uploads/Volker--401_Case_Inlet_Appeal--SULLIVAN-4_6-12.pdf)

## **2. Longbranch Geoduck Aquaculture Shorelines Hearings Board Post Hearings Brief--March 2012**

Citizens retained Bricklin & Newman to appeal the Pierce County Hearings Examiner decision to allow geoduck aquaculture to expand in designated critical salmon habitat and documented forage fish habitat without adequate protections for native ESA listed and non listed species:

[http://www.caseinlet.org/uploads/SHB\\_11-019\\_Petitioners\\_Closing\\_Brief.pdf](http://www.caseinlet.org/uploads/SHB_11-019_Petitioners_Closing_Brief.pdf)

## **3. Citizen Petition to Governor for Denial of Geoduck Ecology WAC--March, April 2012**

The Department of Ecology has issued a new WAC that exempts from review as a "substantial development" the primary method of geoduck aquaculture-PVC tubes and netting within the intertidal substrate. Citizens retained Bricklin & Newman to legally petition Ecology, the Governor, the Legislative Committee and thru the courts to modify the new Ecology geoduck WAC to be consistent with the Shoreline Management Act. See details below:

Governor's Denial of Petition

[http://www.caseinlet.org/uploads/Response\\_letter.pdf](http://www.caseinlet.org/uploads/Response_letter.pdf)

Citizens Appeal To Governor

[http://www.caseinlet.org/uploads/Appeal\\_to\\_DOE\\_Denial\\_of\\_Rule\\_Making.pdf](http://www.caseinlet.org/uploads/Appeal_to_DOE_Denial_of_Rule_Making.pdf)

Ecology's Denial of Citizen Petition

[http://www.caseinlet.org/uploads/Ecology\\_Response\\_to\\_Geoduck\\_Rule\\_Petition\\_2-3-12.pdf](http://www.caseinlet.org/uploads/Ecology_Response_to_Geoduck_Rule_Petition_2-3-12.pdf)

## **B. High Intensity Mussel Rafts In Totten Inlet adjacent to recent Capitol Land Trust Estuarine Habitat Acquisition--Hearing February 2012**

Citizens retained Gendler and Mann to challenge a proposal for an additional 58 mussel raft system in Totten Inlet. According to the legal brief: "Indeed, Taylor's project will significantly impact critical water quality and critical forage fish habitat through at least:(1) the mussels' ingestion of necessary nutrients and fish larvae; (2) the project's direct impact on the substrate and benthic water column; and (3) the project's significant impacts on critical dissolved oxygen levels."

When asked whether the (nitrogen) reduction would have a significant difference on the health of Totten Inlet, Mr. Rensel (Taylor's scientist) responded squarely: "not measurably." For more information on this issue visit:

<http://www.co.thurston.wa.us/permitting/devactivity/totten/hearing/APHETI.closing.argument.pdf>

### **C. Eelgrass Preservation**

#### **Shellfish Industry Eradication of Washington Eelgrasses in Willapa Bay, Grays Harbor and Puget Sound**

The shellfish industry lobbied WDF&W to delist Japanese eelgrass as a protected species and has now requested the Department of Ecology for a permit to spray Japanese eelgrass in Willapa Bay, Grays Harbor and Puget Sound. Citizens retained Landye Bennett, Blumstein in March 2012 to protect Washington native eelgrass as well as Japanese eelgrass. Spraying Imazamox threatens native eelgrass and will eradicate Japanese eelgrass which is considered beneficial to various aquatic species. This would be in addition to the carbaryl, glyphosate and imazapyr already being sprayed in Willapa Bay.

[http://www.caseinlet.org/uploads/Japanese\\_Eelgrass--Landye\\_Bennett\\_Comments-March\\_9-2012.pdf](http://www.caseinlet.org/uploads/Japanese_Eelgrass--Landye_Bennett_Comments-March_9-2012.pdf)

#### **Well Recognized Scientists Speak Out To Protect Aquatic Resources**

##### **1. Dan Penttila--Conservation of Forage Fish--March 2012**

Dan Penttila is the most recognized forage fish expert in Washington with over 39 years working for WDF&W. Mr. Penttila has testified in several hearings regarding impacts from geoduck aquaculture as summarized in the following document to the Army Corps:

[http://www.caseinlet.org/uploads/Penttila--Summary\\_of\\_Aquaculture\\_Impacts\\_Relative\\_to\\_Forage\\_Fish-March\\_27\\_2012.docx](http://www.caseinlet.org/uploads/Penttila--Summary_of_Aquaculture_Impacts_Relative_to_Forage_Fish-March_27_2012.docx)

##### **2. Captain Charles Moore--Impacts On Aquatic Species of Tons of Toxic PVC & Plastic nets/bands in Puget Sound--March 2012--**

Captain Charles Moore, a world renowned marine plastic pollution expert, testified before the Pierce County Hearings Examiner and the Washington Shorelines Hearings Board. His statement is as follows: "To summarize, the introduction of plastics into the marine environment poses hazards of three main types, ingestion, entanglement and the transport of exotic species. (Barnes) PVC is especially toxic and poses hazards to environmental health at every stage of its existence. Other plastics may eliminate some, but not all of these problems, therefore, it does not appear possible to introduce any plastic into the marine environment without harmful consequences."

[http://www.caseinlet.org/uploads/Geoduck\\_2012-02\\_01\\_12\\_Moore\\_SHB\\_Revised.pdf](http://www.caseinlet.org/uploads/Geoduck_2012-02_01_12_Moore_SHB_Revised.pdf)

To view Captain Moore's Seattle Townhall 2012 presentation visit the following link:  
<http://www.edmaysproductions.net/webvideo/moore.wmv>

Please visit the following Toxipedia link for information on PVC toxicity in marine waters and the concerns for aquatic life:

<http://toxipedia.org/display/toxipedia/PVC>

### **3. Jim Johannessen--Geoduck Modification of Natural Intertidal Substrate in Puget Sound--March 2012**

Jim Johannessen is a well recognized geomorphologist and Puget Sound restoration expert. The following power point used for the Longbranch geoduck site is a representative example of geoduck aquaculture impacts noted during his testimony before the Pierce County Hearings Examiner and the Shoreline Hearings Board. A summary of the impacts can be found on page 21.

[http://www.caseinlet.org/uploads/Johannessen\\_PowerPoint\\_SHB\\_11-019.pdf](http://www.caseinlet.org/uploads/Johannessen_PowerPoint_SHB_11-019.pdf)

The Sierra Club actively works on this issue, supports citizen's efforts and are grateful for these scientist's as they protect our irreplaceable natural aquatic resources. Please visit our Sierra Club Sustainable Marine Ecosystem and Aquaculture Activist Websites that are being developed or Washington Chapter website at:

<http://washington.sierraclub.org/tatoosh/Aquaculture/index.asp>

*Comments on:*

*“Ecological Consequences of Geoduck Aquaculture: Harvest and Structure Disturbances, and Macrofaunal and Infaunal Responses”*

*by Glenn VanBlericom and Sean McDonald, presented at Washington Sea Grant Geoduck Research Symposium, Alderbrook, WA, March 6, 2012*

You may have seen the headline in the March 10 **Kitsap Sun** that read: “*Commercial geoduck farms in Puget Sound are not dramatically altering intertidal habitat for other species...*”. This story followed on the heels of a recent Washington Sea Grant Geoduck Research Symposium held at Alderbrook. It referred mainly to a paper by Dr. Glenn VanBlericom, a researcher with the University of Washington School of Aquatic and Fishery Sciences. His paper described a study in which the effects of geoduck harvesting on benthic fauna were evaluated at only three sites on Puget Sound. The study was conducted by a UW Masters Degree candidate working under Dr. VanBlericom’s direction. He reported that they found no statistically significant effects of geoduck harvesting on benthic communities.

I contend that Dr. VanBlericom found no significant harvesting effects because his experimental design simply lacked the statistical power needed to find any effects among all of the natural variation in his study populations. Hence the study was fatally flawed and, consequently, his conclusion was not supported by the study results.

In the normal course of experimental science, a first step is to decide what magnitude of differences you are trying to detect between study populations, in this case, populations of benthic organisms inside and outside of a geoduck harvest zone. For example, you may be trying to detect, say, a 5% difference, or a 25% difference, or a 100% difference. Once that has been decided then the study is designed so that it is powerful enough to detect a difference of this magnitude.

Detecting very small differences requires robust sample sizes (i.e., more statistical power) than trying to find very large differences, which would require only modest sample sizes. If the study populations are highly variable, as were Dr. VanBlericom’s, this calls for even greater statistical power in order to detect the “signal” from among the “noise”. Appropriate sample size is determined based on population variability as well as the size of the differences to be detected using a statistical procedure called “power analysis”.

Dr. VanBlericom apparently did not take this first step. His study included only three comparisons of un-harvested vs. harvested populations – one on each of the three sites. In statistical terms, this gave his study design only 2 degrees of freedom, which would be considered a bare minimum in experimental research. For this design to detect any differences at all, such differences would have to be huge. So the reason he found no significant differences between the harvested and un-harvested populations is not that they weren't there, but that he did not employ enough statistical power to find them.

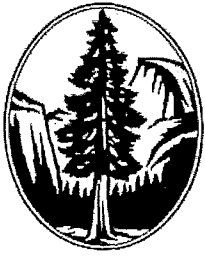
Think about it this way. Suppose you want to determine if humans had ever been on the moon. So you study the moon surface using a pair of binoculars. Seeing no footprints nor other evidence of human presence through the binoculars, you conclude that humans have not been there. You are wrong, of course - wrong because your binoculars are simply not sufficiently powerful to find evidence of humans even if it were there. In Dr. VanBlericom's case, his statistical design, analogous to your binoculars, was not sufficiently powerful to detect any treatment differences, even if they had been there.

I confronted him with this concern during the Q & A session that followed his paper. To his credit, he agreed with me, saying that my "point was well taken" and that they were aware of this problem with the study and were working to improve their designs for future studies.

So, media accounts of the Sea Grant Symposium indicating that geoduck aquaculture has no significant effect on intertidal organisms and habitat cannot be considered final or conclusive until the underlying studies have been fully vetted by external peer review. Such peer review must carefully evaluate the experimental design as it affects the statistical power of the study and interpretation of results.

-----  
Gary A. Ritchie, Ph.D.  
Consultant in Environmental and Forest Sciences  
March 27, 2012





**SIERRA  
CLUB**  
FOUNDED 1892

**Washington State Chapter**  
180 Nickerson St, Ste 202  
Seattle, WA 98109  
Phone: (206) 378-0114  
Fax: (206) 378-0034  
[www.cascade.sierraclub.org](http://www.cascade.sierraclub.org)

---

**Washington State  
Unnatural High Densities of Shellfish Aquaculture in Priority  
Intertidal Habitats Deplete Fisheries Resources Essential to  
Salmon and Whales**

**Section 1-Shellfish Ingestion of Fish Eggs and Larvae-(Fisheries Resources)**

Peer reviewed studies listed on pages 2-3 clearly document that shellfish routinely ingest zooplankton which includes fish eggs, fish larvae, crab zoes and larvae of other important aquatic species important to Puget Sound biodiversity. Industry has for years stated that the high densities of shellfish they have added to the shorelines are "cleaning the water." Based on the studies, these unnatural high densities are certainly clearing the water column at unprecedented rates of eggs, larvae and crab zoes especially when in or adjacent to high ecological value forage fish spawning habitat or Critical Salmon Habitat.

**Aquaculture Expansion Reducing Biodiversity in the Intertidal Nurseries**

For the last 10 years, the shellfish industry have been allowed to expand in the intertidal areas with unnatural high densities of non-native Manila clams, non-native triploid Pacific oysters and geoduck developments where Puget Sound forage fish, crabs, flatfish and other important species have historically been depositing their eggs. High densities of non-native Manila clams are now planted from +7 to +3 tide and non-native Pacific oysters are planted from a +3 to 0 tide. The historical records show that in the intertidal area there were low densities of native clams and the native Olympia were primarily found at zero tide in some inlets.

Documents show that geoducks are considered mainly a subtidal animal and are also now being grown from the +3 to -4.5 tide in extremely high densities that range from 80,000 to 120,000 per acre. "The average South Sound subtidal wild geoduck density is .19 per sq.ft which equals 8,276 geoducks per acre (per DNR SEIS.

**Dan Penttila's Concerns for the Environmental Effects on Forage Fish**

Dan Penttila has been the recognized forage fish expert in Washington writing numerous reports for the Washington Department of Fish and Wildlife for over 38 years. In addition to his numerous reports, Mr. Penttila wrote the following guidance document for the Nearshore Partnership for forage fish as well as many other reports.

[http://www.pugetsoundnearshore.org/technical\\_papers/marine\\_fish.pdf](http://www.pugetsoundnearshore.org/technical_papers/marine_fish.pdf)

Mr. Penttila testified at a March 2011 Pierce County Geoduck EIS Hearing expressing his concerns that an EIS should be required and recommended specific science studies be

conducted to learn more about shellfish ingesting fish eggs and larvae prior to further expansion. Details of Mr. Penttila's scientific concerns regarding significant impacts on forage fish from aquaculture can be found in the following links:

Mr. Penttila's Expert Report

[http://www.caseinlet.org/uploads/Dan\\_Penttila\\_testimony\\_020111\\_1\\_.pdf](http://www.caseinlet.org/uploads/Dan_Penttila_testimony_020111_1_.pdf)

Mr. Penttila's Pierce County Testimony

[http://www.caseinlet.org/uploads/Longbranch--Penttila--Moore\\_Hearing\\_Testimony.pdf](http://www.caseinlet.org/uploads/Longbranch--Penttila--Moore_Hearing_Testimony.pdf)

Anecdotal evidence as mentioned by Dan Penttila in the EIS hearing suggested that forage fish may be declining or may be disappearing from Totten Inlet at the same time that shellfish aquaculture has expanded to over 90% of the Totten Inlet shorelines. Egg and larvae ingestion from artificially large densities of farmed bivalves in the intertidal area of Totten Inlet could easily be the reason why..

## **Science Studies on Bivalve Ingestion**

### **A. Independent Studies on the Impact of Bivalves Ingesting Fish Eggs, Crab Zoes, Copepods, Amphipods and Larvae**

#### **1. The CSAS (Canadian Science Advisory), Review of the effects of shellfish aquaculture on fish habitat, 2006, pages 33-34 (25-26).**

[http://www.dfo-mpo.gc.ca/CSAS/Csas/DocREC/2006/RES2006\\_011\\_e.pdf](http://www.dfo-mpo.gc.ca/CSAS/Csas/DocREC/2006/RES2006_011_e.pdf)

"Field studies reported in the same study found that mussels consumed (based on stomach content analysis) copepods (<1.5 mm), crab zoeas (2mm), fish eggs (1-2mm), and even amphipods (5-6mm). Subsequent to this, Lehane and Davenport (Lehane and Davenport 2002) showed that mussels consumed organisms up to 3mm in length and that cockles (*Cerastoderma edule*) and scallops (*Aequipecten opercularis*) are also capable of consuming considerable quantities of zooplankton, both when suspended in the water column and when on the bottom. The size classes of organisms consumed in these studies suggest that the larvae of most commercial species may be at risk from this type of predation."

#### **2. Ingestion of mesozooplankton by three species of bivalve**

Lehane/Davenport, 2002-2006, Journal of Marine Biology Association of United Kingdom

[http://www.caseinlet.org/uploads/Lehane\\_davenport.pdf](http://www.caseinlet.org/uploads/Lehane_davenport.pdf)

"All species examined had zooplankters in their stomachs." p617

"Numbers of organisms ingested by suspended and field (scallops) were not significantly different." p617

"Clearly bivalves, in particular (mussels), are not strict herbivores and non-algal food sources are readily ingested by them. As expected, the numbers of individual zooplankters or 'prey' ingested increased with mussel size." p618

"It is likely that extensive beds of bivalves can also control zooplankton densities and sizes. From the results presented here, and from interpretation of other studies, it is clear that a wide variety of bivalves do routinely ingest zooplankton."

“Phytoplankton is not an all year round source of food (Landry, 1981), so zooplankton may be relatively more important in the bivalve diet when the seston is phytoplankton-poor.”  
p619

### **3. The Trophic Linkage between zooplankton and benthic suspension feeders: direct evidence from analyses of bivalve faecal pellets**

Wai Hing Wong, Jeffrey S. Levinton, 2006, Marine Biology Research Article  
[http://www.caseinlet.org/uploads/Wong\\_Levinton\\_zooplankon.pdf](http://www.caseinlet.org/uploads/Wong_Levinton_zooplankon.pdf)

“Large zooplankton have been found in the digestive tracts of bivalve mollusks, e.g. American oysters (*Virginica*).” P 799

“Individuals (mussels) supplied with the mixture of phytoplankton and zooplankton demonstrated the best growth performance...”

“The classic model of bivalve filtering of phytoplankton may be inadequate to describe the trophic effects of bivalves on planktonic ecosystems.”

### **4. Larviphagy in native bivalves and an introduced oyster**

Karen Troost, Pauline Kamermans, Winn J. Wolff, 2008, Journal of Sea Research.  
[http://www.caseinlet.org/uploads/larviphagy\\_in\\_bivalves\\_Troost.pdf](http://www.caseinlet.org/uploads/larviphagy_in_bivalves_Troost.pdf)

“Once filtered, bivalve larvae are either ingested or rejected in pseudofeces. If ingested, almost all larvae die in the digestion process or in the feces.”

“Rejection in pseudofeces generally also leads to death.”

## **Section 2-Siltation of Spawning Habitats**

### **Jim Johannessen—Geomorphologist Pierce County Hearing Expert Opinion**

Jim Johannessen is noted for his 27 years as a geomorphologist specializing in Puget Sound restoration. He pointed out that sediment transport processes can direct the distribution of forage fish larvae in the water column over the farmed shellfish beds and the increased sediment transport and deposition on forage fish spawning beaches could smother forage fish eggs (Expert Report-Page 4). His recommendation for an EIS and specific studies can be seen in the following links:

Jim Johannessen Expert Report and Hearing Testimony

[http://www.caseinlet.org/uploads/Jim\\_Johannesen\\_testimony\\_020111\\_1\\_.pdf](http://www.caseinlet.org/uploads/Jim_Johannesen_testimony_020111_1_.pdf)

[http://www.caseinlet.org/uploads/Longbranch--Gilbert\\_and\\_Johannessen\\_Testimony.pdf](http://www.caseinlet.org/uploads/Longbranch--Gilbert_and_Johannessen_Testimony.pdf)

### **Effects of Suspended Sediment on Eggs and Larvae of Lingcod, Pacific Herring and Surf Smelt**

[http://www.caseinlet.org/uploads/Canadian\\_Report\\_Sediment\\_Eggs\\_and\\_Larvae.pdf](http://www.caseinlet.org/uploads/Canadian_Report_Sediment_Eggs_and_Larvae.pdf)

## **Section 3-Combined Threats to Forage Fish Spawning Habitats**

Sand lance and surf smelt survival is clearly at risk by the following 6 threats from aquaculture operations that are significant on an individual impact basis and especially on a combined impact basis:

1. spawning area substrate being changed by silt generated from aquaculture operations making it unsuitable for their spawning requirements
2. eggs being smothered from the silt generated from aquaculture operations
3. eggs/larvae being consumed by planted shellfish as they float in the water column
4. fish food sources being depleted by high densities of planted clams, oysters and geoducks as they filter the water. It is well documented that planted geoduck grow up to 2 pounds in the intertidal zone within 4-6 years while wild geoduck take decades to reach this weight in the subtidal areas. The intertidal zones are considered "nurseries" which would provide substantial zooplankton (A-65, 66) to fatten up planted shellfish especially in the winter months when phytoplankton grows more slowly
5. natural burrowing behavior (sand lance) being interrupted by geoduck tube placement and harvesting that alters their habitat and threatens their survival
6. known spawning times being impacted by the intertidal geoduck dive harvesting operations in less than -18 ft as industry fills their holiday orders

## Summary

### Oceans and Coasts Shellfish Reefs at Risk: Report Findings

<http://conserveonline.org/library/shellfish-reefs-at-risk-report/@@view.html>

"Shellfish reefs and beds are essential to the health of marine ecosystems, yet they are almost always solely managed as fisheries. There are many obstacles to successful management, but the greatest include the perceptions that a problem does not exist or that it is a local problem only and that non-native shellfish can replace wild native species. These problems are exacerbated because of bay by bay management that does not recognize regional, national or global problems and solutions. Native oysters must be recognized for the reef habitat they provide across bays, regions and globally."

Decision makers in Puget Sound have been managing shellfish beds as fisheries for commercial purposes, not as habitat that is part of a healthy ecosystem. We agree with the following statement made by the Puget Sound Partnership. The issue of zooplankton depletion needs to be addressed before we lose more of our Puget Sound ESA and non-listed species:

"Because nine of the ten Puget Sound species identified as endangered or threatened rely on nearshore environments, the declines are at least in part, likely related to problems in nearshore ecosystems in Puget Sound." (PSP--Coastal Habitats--Page 3).

If high densities of planted bivalves are depleting valuable fisheries resources, then the adverse ecological effects from bivalve aquaculture violates the Endangered Species Act (ESA), the Magnuson Stevens Act (MSA), and the Washington Shoreline Management Act (SMA), because forage fish are such a large percentage of the diets of listed Puget Sound Chinook adults and juveniles. Given the scientific acknowledgement that farmed bivalves essentially filter everything in the water column, it should not be a surprise that these farmed bivalves are ingesting and destroying public fisheries resources.

Federal, state and local laws should be coordinated to protect high value forage fish spawning habitats, Critical Salmon Habitat, eelgrass/macroalgae beds and shorelines with high Ecological Management Unit scores (EMU) by not allowing industrial operations to diminish these valuable resources.



**SIERRA  
CLUB**  
FOUNDED 1892

## **Washington State Chapter**

180 Nickerson St, Ste 202

Seattle, WA 98109

Phone: (206) 378-0114

Fax: (206) 378-0034

[www.cascade.sierraclub.org](http://www.cascade.sierraclub.org)

### **Shellfish Industry Increases Marine Plastic Pollution by Placing Tons of Plastics in Washington Waters**

Marine plastic pollution is a serious threat facing marine life around the globe. As worldwide efforts continue to reduce the introduction of plastics into marine waters, Puget Sound is being filled with millions of pieces of plastic pollution by the shellfish industry. Industry began these unsustainable practices over 12 years ago and continue to place over 120,000 pieces of plastic into **each acre** for intertidal geoduck operations (42,560 PVC tubes, small net caps, plastic bands/zip ties, canopy nets) as well as using thousands of oyster bags and nets over manila clam beds in Puget Sound intertidal areas.

According to the Shoreline Management Act: Aquaculture is a water-dependent use and is a preferred use of the shoreline per WAC 173-26-241(3)(b) when consistent with: 1) Control of pollution; 2) The no net loss requirements of Title 18S PCC; and 3) The prevention of damage to the environment and to Federal and State listed species and their associated habitats.

The following information documents why industrial aquaculture that increases plastic pollution in our marine waters does not qualify as a preferred use and violates the Shoreline Management Act.

#### **Two Marine Plastic Experts Point Out Serious Impacts Caused by Shellfish Industry Plastics Used in Puget Sound**

**Curtis Ebbesmeyer, PhD**, an oceanographer and marine plastic expert stated:

“Such plastic poses one of the grave threats to the health of Puget Sound. The particulate plastic from such PVC tubes enters the food web and does untold harm to all the creatures in Puget Sound, including us. It is not healthy to eat geoducks raised in such a fashion.”

“One thousand miles of PVC tubing= 4 million pounds=two thousand tons of PVC” are estimated to be in Puget Sound waters from these intertidal geoduck operations.

See Plastic Marine Debris Report:

<http://washington.sierraclub.org/tatoosh/Aquaculture/PVC%20Report--June%2028,%202010.pdf>

Please visit the following Toxipedia link for information on PVC toxicity in marine waters and the concerns for aquatic life:

<http://toxipedia.org/display/toxipedia/PVC>

**Charles Moore**, the founder of the Algalita Foundation and a world renowned marine plastic debris expert stated the following at a Pierce County hearing in March 2011 and later at a presentation in Olympia sponsored by the Sierra Club:

“When windstorms and waves dislodge the (PVC) tubes, screens and UV resistant bands that hold them, they will share different but similar fates. The tubes, being heavier than water will sink and roll into Marine canyons, where they will pollute the benthos. These canyons are where soft sediments accumulate that are used for foraging by migrating gray whales. Will they then join golf balls and this list of items found in the gray that washed ashore on a west Seattle beach last year? ... A pair of sweatpants, golf balls, 20 plastic bags, small towels, duct tape, and surgical gloves?”

“To summarize, the introduction of plastics into the marine environment poses hazards of three main types, ingestion, entanglement and the transport of exotic species. (Barnes) PVC is especially toxic and poses hazards to environmental health at every stage of its existence. Other plastics may eliminate some, but not all of these problems, therefore, it does not appear possible to introduce any plastic into the marine environment without harmful consequences.”

**For More Information on Captain Moore’s testimony at the Shorelines Hearings Board and Pierce County on behalf of citizens:**

Captain Moore’s Shoreline Hearings Board Presentation

[http://www.caseinlet.org/uploads/Geoduck\\_2012-02\\_01\\_12\\_Moore\\_SHB\\_Revised.pdf](http://www.caseinlet.org/uploads/Geoduck_2012-02_01_12_Moore_SHB_Revised.pdf)

To view Captain Moore’s Seattle Townhall 2012 presentation visit the following link:  
<http://www.edmaysproductions.net/webvideo/moore.wmv>

For more on Captain Moore’s Pierce County Testimony:

[http://www.caseinlet.org/uploads/Charles\\_Moore\\_testimony\\_020211\\_1\\_1\\_.pdf](http://www.caseinlet.org/uploads/Charles_Moore_testimony_020211_1_1_.pdf)

[http://www.caseinlet.org/uploads/Longbranch--Penttila--Moore\\_Hearing\\_Testimony.pdf](http://www.caseinlet.org/uploads/Longbranch--Penttila--Moore_Hearing_Testimony.pdf)

[http://www.caseinlet.org/uploads/Longbranch-Moore\\_Rebuttal.pdf](http://www.caseinlet.org/uploads/Longbranch-Moore_Rebuttal.pdf)

Charles Moore’s response to the Pacific Shellfish Growers President who questioned the 2005 Wayne Palsson WDF&W report that over 80,000 pieces of aquaculture plastic debris was found at the Tacoma Narrows Bridge:

“You know, there is a range there, but it’s a substantial amount of aquaculture debris. If it’s 12 dump trucks full, 17 percent of 72 dump trucks, that’s a substantial amount of debris and it traveled from the area of the aquaculture operations to the Tacoma Narrows Bridge area, which is a substantial distance away. So the plastic is mobile. And being of different types, it will occupy different areas in the water column and do different things.”

**Additional Documentation of PVC Degrading in Marine Environment**

1. Question to Rita Schenck, shellfish industry expert, by Pierce County Hearing Examiner Causseaux: “People bring in the (PVC) tubes, the tubes wear out? What happens?”

Dr. Schenck Response:

“I don’t have an opinion. Most tubes set up on beach by waves. Could be eaten by aquatic organisms. Small fraction of plastic go into benthos.”

2. Per Rita Schenck Expert Pierce County Report 2/15/11: “After 16-24 months, the (PVC) pipes are removed and re-used. They can be reused for a decade or more.”

While PVC pipe is no longer usable in the marine waters after a decade or more, PVC life expectancy when used as designed is as follows: "The study concluded that PVC pipe can be expected to last over 100 years."

<http://www.uni-bell.org/resources/php?c=21>

### **Picture Documentation--Shellfish Industry Marine Plastic Debris**

The following power point provides pictures of the massive amounts of plastics that are being placed in Puget Sound by the shellfish industry. For years, citizens have reported to state agencies that this plastic marine debris is polluting our shorelines and deeper waters miles away from aquaculture sites.

[http://www.caseinlet.org/uploads/Longbranch\\_DNS.pdf](http://www.caseinlet.org/uploads/Longbranch_DNS.pdf)

### **The Law on Plastic Pollution**

A. Governor Gregoire signed the following West Coast Governors Agreement on Ocean Health that has a task force specifically dedicated to deal with the marine plastic debris issue: [http://www.westcoastoceans.gov/Docs/Marine\\_Debris\\_Final\\_Work\\_Plan.pdf](http://www.westcoastoceans.gov/Docs/Marine_Debris_Final_Work_Plan.pdf)

"Marine debris was identified as an important component of Priority Area 1: Clean Coastal Waters and Beaches. Action 1.4 asserts that the three states will:

*Establish baseline estimates of marine debris and derelict gear off the West Coast and set reduction goals. Support state and federal policies for achieving marine debris reduction goals, including debris prevention through expanded recycling, improved trash maintenance, and enforcement of litter laws."*

B. As the Growth Management Hearings Board observed:

"The Board finds that the Record demonstrates that the PVC pipes used for intertidal shellfish farming sometimes break, become dislodged, or are simply abandoned by farmers. Once broken and/or dislodged, these PVC pipes are carried by the tides to other areas, thereby littering not just adjacent shorelines but the benthic community of the nearshore and pelagic environment on even distant shorelines. These broken pipes, along with associated nets and ropes, could create hazards for fish and wildlife as well as other users of the waters."

*Seattle Shellfish LLC v. Pierce County*, 2010 WL 3984673 (FDO) at 17 (footnotes omitted).

C. The following RCW was enacted because marine plastic debris is a significant adverse impact that each grower contributes to as they all use the same voluntary codes of practice which do not prevent the pollution:

### **RCW 79.145.010**

• "The legislation finds that the public health and safety is threatened by an increase in the amount of plastic garbage being deposited in the waters and on the shores of the state. To address this growing problem, the commissioner appointed the marine plastic debris task force which presented a state action plan in October 1988. It is necessary for the state of Washington to implement the action plan in order to:

- Cleanup and **prevent further pollution** of the state's waters and aquatic lands
- Increase public awareness;
- Coordinate federal, state, local, and private efforts;
- Foster the stewardship of the aquatic lands of the state.

### **Actions Taken to Reduce Plastics in Washington**

Bans on the use of Styrofoam have been enacted for docks and piers. Legislation has been passed banning plastic sacks and Styrofoam in several communities and continues to be

proposed for other communities.

### **Action Needed**

County, state and federal officials should enforce the existing laws and not allow the shellfish industry to place plastics into Puget Sound that threaten the health and the native species that are public resources. According to the Shoreline Management Act, aquaculture is not a preferred use of the shorelines if it increases pollution.

### **Relevant Marine Plastic Pollution Science Provided by Charles Moore**

1. Fatal ingestion of floating net debris by two sperm whales  
Jeff K. Jacobsen, Liam Massey, Frances Gulland
2. Transport and release of chemicals from plastics to the environment and to wildlife  
Emma L. Teuten, Jevita M. Saquing, Detlef R. U. Knappe, Morton A. Barlaz  
<http://mc.manuscriptcentral.com/issue-ptrsb>  
[http://www.caseinlet.org/uploads/Moore-PlasticChemTransportWildlife\\_1\\_.pdf](http://www.caseinlet.org/uploads/Moore-PlasticChemTransportWildlife_1_.pdf)
3. Invasion by marine life on plastic debris  
Nature/Vol 416/25 April 2002/www.nature.com  
[http://www.caseinlet.org/uploads/Moore-Invasion\\_of\\_Debris-Barnes\\_article\\_1\\_.pdf](http://www.caseinlet.org/uploads/Moore-Invasion_of_Debris-Barnes_article_1_.pdf)
4. Plastic Ingestion by planktivorous fishes in the North Pacific Central Gyre  
Christiana M. Boerger, Gwendolyn L. Lattin, Shelly L. Moore, Charles J. Moore; Marine Pollution Bulletin  
[http://www.caseinlet.org/uploads/Plastic\\_ingestion\\_by\\_fish\\_1\\_.pdf](http://www.caseinlet.org/uploads/Plastic_ingestion_by_fish_1_.pdf)
5. Plastic resin pellets as a transport medium for toxic chemicals in the marine environment  
Yukie Mato, Tomohiko Isobe, Hideshige Takada, Haruyuki Kanehiro, Chiyoko Ohtake and Tsuguchika Kaminuma  
[http://www.caseinlet.org/uploads/Moore-Plastic\\_Resin\\_1\\_.pdf](http://www.caseinlet.org/uploads/Moore-Plastic_Resin_1_.pdf)
6. Quantification of persistent organic pollutants absorbed on plastic debris from the Northern Pacific Gyre's "eastern garbage patch," Lorena M. Rios, Patrick R. Jones, Charles Moore and Urja V. Narayan; The Royal Society of Chemistry 2010  
[http://www.caseinlet.org/uploads/Moore-Rios\\_et\\_al\\_2010\\_1\\_.pdf](http://www.caseinlet.org/uploads/Moore-Rios_et_al_2010_1_.pdf)
7. Synthetic polymers in the marine environment: a rapidly increasing long-term threat—  
Charles James Moore, Fernanda E. Possatto, Mario Barletta, Monica F. Costa, Juliana A. Ivar do Sul, David V. Dantas; Marine Pollution Bulletin Envir. Res. Plastic Oceans 2008  
[http://www.caseinlet.org/uploads/Moore--\\_Env\\_Res\\_Plastic\\_Oceans\\_2008\\_1\\_.pdf](http://www.caseinlet.org/uploads/Moore--_Env_Res_Plastic_Oceans_2008_1_.pdf)
8. The Pollution of the Marine Environment by Plastic Debris: a review  
Jose G.B. Derraik; Marine Pollution Bulletin  
[http://www.caseinlet.org/uploads/Moore--Derraik\\_1\\_.pdf](http://www.caseinlet.org/uploads/Moore--Derraik_1_.pdf)
9. Biological Performance Bio Plastic: Mirel  
Barry E. DiGregorio; Chemistry and Biology 16, January 30, 2009  
[http://www.caseinlet.org/uploads/Moore-Biobased\\_Performance\\_Bioplactic\\_-\\_Mirel\\_1\\_.pdf](http://www.caseinlet.org/uploads/Moore-Biobased_Performance_Bioplactic_-_Mirel_1_.pdf)
10. Plastic debris ingestion by marine catfish: An unprecedented fisheries impact  
Fernanda E. Possatto, Mario Barletta, Monica F. Costa, Juliana A. Ivar do Sul, David V. Dantas, Marine Pollution Bulletin, 2011  
[http://www.caseinlet.org/uploads/Plastic\\_debris\\_ingestion\\_by\\_marine\\_catfish\\_An\\_unexpected\\_fisheries\\_impact\\_1\\_.pdf](http://www.caseinlet.org/uploads/Plastic_debris_ingestion_by_marine_catfish_An_unexpected_fisheries_impact_1_.pdf)





**SIERRA  
CLUB**  
FOUNDED 1892

**Washington State Chapter**

180 Nickerson St, Ste 202

Seattle, WA 98109

Phone: (206) 378-0114

Fax: (206) 378-0034

[www.cascade.sierraclub.org](http://www.cascade.sierraclub.org)

---

**Industrial Shellfish Aquaculture Practices Degrade Water Quality Standards  
Essential for a Healthy Puget Sound and Salmon Recovery**

**Section 1—Examples of Water Quality Degradation from Industrial Aquaculture**

**A. Intertidal Geoduck Aquaculture**

- Eliminating native animals and vegetation to prepare shorelines “like a pasture”  
See Shellfish Industry “Pest Management Plan”  
<http://wa.sierraclub.org/tatoosh/Aquaculture/OR-WAbivalvePMSP.pdf>
- Placing tons of marine plastic pollution (PVC, nets, plastic bands, zipties) into Puget Sound that degrades on site and when lost in deeper waters  
[http://wa.sierraclub.org/tatoosh/Aquaculture/Sierra\\_Club\\_Plastic\\_Pollution-2\[1\].pdf](http://wa.sierraclub.org/tatoosh/Aquaculture/Sierra_Club_Plastic_Pollution-2[1].pdf)
- Using high pressure water hoses for harvesting at low tides that create significant sediment plumes for perpetual operations with cumulative impacts from multiple locations
- Conducting dive harvesting in the intertidal zones. DNR does not allow dive harvesting for commercial wild geoduck harvesting on state lands below -18 ft MLLW to protect juvenile salmon and eelgrass from adverse impacts according to Charles Simenstad’s scientific research-Page 82-83 of DNR SEIS  
[www.dnr.wa.gov/Publications/aqr\\_geo\\_lowres2001\\_final\\_Seis.pdf](http://www.dnr.wa.gov/Publications/aqr_geo_lowres2001_final_Seis.pdf)
- Depleting zooplankton (crab, fish eggs and larvae) in intertidal nursery  
[http://wa.sierraclub.org/tatoosh/Aquaculture/Sierra\\_Club\\_Zooplankton\\_depletion\\_2\\_\[1\].pdf](http://wa.sierraclub.org/tatoosh/Aquaculture/Sierra_Club_Zooplankton_depletion_2_[1].pdf)
- Degrading habitat and prey resources for ESA salmon and other native species-Page 4  
<http://www.wsg.washington.edu/research/pdfs/reports/GeoduckReport2010.pdf>

**B. Industrial Oyster Operations**

- Using plastic grow bags in high densities that blacktop tidelands smothering organisms that are prey for native species, especially salmon
- Scraping tidelands by barge using metal construction bucket that eliminate all natural aquatic animal and plant life

**C. Mussel Rafts in Large Scale Operations**

- Reducing dissolved oxygen essential for healthy fish populations  
[http://www.caseinlet.org/uploads/Mussel--Taylor\\_EIS-Water\\_Column\\_study\\_Oct\\_08\\_1\\_.pdf](http://www.caseinlet.org/uploads/Mussel--Taylor_EIS-Water_Column_study_Oct_08_1_.pdf)
- Creating beggiatoa bacteria under rafts creating “dead zone” for native species

**Picture documentation is provided on our following Sierra Club website:**

<http://wa.sierraclub.org/tatoosh/Aquaculture/OR-WAbivalvePMSP.pdf>

## **Section 2--The Law—RCW 90.48**

Under RCW 90.48, the Water Pollution Act, Washington Department of Ecology is tasked with the duty of controlling and preventing the pollution of Washington State's waters – both surface and ground (RCW 90.48.030). The declared policy of the Water Pollution Act is:

<http://apps.leg.wa.gov/RCW/default.aspx?cite=90.48.010>

- “to maintain the highest possible standards to insure the purity of all waters of the state consistent with public health and public enjoyment thereof, the propagation and protection of wildlife, birds, game, fish, and other aquatic life, and the industrial development of the state, and to that end require the use of all known available and reasonable methods by industries and others to prevent and control the pollution of the waters of the state of Washington” (RCW 90.48.010).
- By definition, the State's waters include “salt waters” (RCW 90.48.020).
- The word “pollution” encompasses both contamination or “other alteration of the physical, chemical, or biological properties, of any waters of the state, ... as will or is likely to create a nuisance or render such waters harmful, detrimental or injurious to ... wild animals, birds, fish or other aquatic life” (RCW 90.48.020). This language opens a broad door to addressing water quality issues based on geoduck operations.
- In addition, RCW 69.30, the Sanitary Shellfish Act, states that all water pollution laws/rules are applicable in the control of pollution of shellfish growing areas. RCW 69.30.130. The intent there may be to keep pollution out of the growing areas (e.g. sewage), but it isn't worded like that – it just applies all the laws/rules.

## **Section 3--The Law—WAC 173-201A**

Pursuant to the duty articulated in RCW 90.48, Ecology has promulgated water quality standards which, for surface waters, is found at WAC 173-210A.

<http://apps.leg.wa.gov/WAC/default.aspx?cite=173-201A>

- The purpose of the rules are to protect surface waters by numeric and narrative criteria, designated uses, and an anti-degradation policy. WAC 173-201A-010(1)(a). Like RCW 90.48, salt water is included within these rules and there are established standards specific to marine waters. WAC 173-210A-020; 173-210A-210. It should also be noted that a definition of “wildlife habitat” means “waters of the state used by, or that directly or indirectly provide food support to, fish, other aquatic life, and wildlife for any life history stage or activity.” WAC 173-210A-020.
- Under the Marine Water section, WAC 173-210A-210, the first thing the rules do is list “uses” that are “designated for protection” with the first one listed being Aquatic Life Uses and a requirement for “all indigenous fish and non-fish aquatic species [to] be protected” WAC 173-210A-210(1). Note it is the indigenous/native species that get protected – not cultivated species. This same rule then establishes categories of quality – from Fair Quality to Extraordinary Quality. WAC 173-210A-210(1)(a). Fair Water Quality works for migration but Extraordinary Water Quality is needed for rearing and spawning of fish, shellfish, and crustaceans. See map of marine water quality:  
[http://www.ecy.wa.gov/programs/wq/swqs/reference\\_files/MarineWQSMa.pdf](http://www.ecy.wa.gov/programs/wq/swqs/reference_files/MarineWQSMa.pdf)
- Specific criteria is listed by each category for temperature, dissolved oxygen, turbidity, and pH. WAC 173-210A-210 Tables (1)(c)-(1)(f). There are also specific criteria for shellfish harvesting, including bacteria. WAC 173-210A-210(2). Both the Aquatic Life criteria and the Shellfish Harvesting criteria apply WAC 173-201A-260 – Natural conditions and other water quality criteria and applications.

- One of the criteria is “aesthetics” which provides “aesthetic values must not be impaired by the presence of materials or their effects, excluding those of natural origin, which offend the senses of sight, smell, touch, or taste.” WAC 173-210A-260(2)(b).
- Doesn't acre after acre of PVC pipes offend the sense of sight for recreational users and residents? The answer is Yes.

#### **Section 4--Cumulative Impacts Must Be Addressed by Decision Makers**

Another criteria speaks to Toxic material concentrations and the requirement that those be below a level having:

- “the potential, either singularly or cumulatively, to adversely affect characteristic water uses, cause acute or chronic conditions to the most sensitive biota dependent upon those waters ...” WAC 173-210A-260(2)(a). This is especially relevant as to juvenile fish which could be termed sensitive. WAC 173-210A-612, Table 612 lists uses, by body of water, for marine waters. As for water quality in regards to aquatic life, only an area of Commencement Bay is in fair condition. Miscellaneous uses, including Wildlife Habitat, are listed for all marine waters.

#### **Section 5--Anti-degradation Policy**

In addition, there is an “Anti-degradation Policy” which creates a three tier level of protection but also states, as one of its purposes, that:

- “all human activities that are likely to contribute to a lowering of water quality, at a minimum, apply all known, available, and reasonable methods of prevention, control, and treatment”. WAC 173-210A-300(1)(d). As to the tiers, the goal appears to be either to bring waters back to compliant quality standards or to prevent further degrading--WAC 173-210A-310 to -330. Activities are not to be permitted if it would allow degradation that significantly interferes with or becomes injurious to existing or designated water uses or causes long-term harm to the environment--WAC 173-210A-410(1)(c).
- If aquatic life and wildlife habitat is an existing/designated use – does the year-in-year-out cultivation of geoduck result in that long-term harm? The Answer is Yes.

#### **Section 6—The EPA**

The EPA assessed a total of 375.9 square miles of Ocean and Near Coastal waters. Of those waters, 175.7 were listed as good (46.7%) with 200.2 being listed as impaired waters. Impairment was based on Fecal Coliform, Dissolved Oxygen, Invasive Exotic Species, Sediment Bioassay, PCBs, various metals (e.g. zinc, copper, mercury), various toxic organics, fish habitat alterations, dioxins, and various pesticides. Of the Impaired Waters, approximately 121 square miles still needed TMDLs (this is 2008 figure).

#### **Section 7—Other Laws**

Lastly, there are other laws speaking to water quality such as WAC 173-204 Sediment Management Standards which applies to marine waters and to sediment exposed by human activity.

10/3/11

## **Protecting America's Water Campaign**

### **Industrial Shellfish Aquaculture Adverse Impacts To Be Considered by Regulators When Determining Compliance With The Clean Water Act, Magnuson Stevens Act, Endangered Species Act and Shoreline Management Act**

#### **Introduction**

The introduction of intertidal geoduck aquaculture and the use of massive quantities of plastics to grow shellfish began degrading the natural ecology of the habitat rich intertidal zone in the late 1990's. Oysters typically spread on the tidelands were replaced by using plastic grow bags smothering the substrate. At the same time, large scale mussel raft installations appeared in the subtidal areas of Totten Inlet with significant plans for expansion. These industrial practices have changed the face of shellfish aquaculture and the expansion of these unsustainable practices is a threat to the health of Puget Sound native species, especially salmon.

No Environmental Impact Statement has been conducted on individual and cumulative impacts in the intertidal zone as this industry has expanded without restriction in the most sensitive Designated Critical Salmon Habitat and Documented Forage Fish Spawning Habitats. Intertidal geoduck operations and thousands of acres of oysters and clams are altering the natural South Sound ecology as shown by the red dots on the following link:

[http://www.caseinlet.org/uploads/Aquaculture-South\\_PugetSound\\_1\\_.pdf](http://www.caseinlet.org/uploads/Aquaculture-South_PugetSound_1_.pdf)

The ecological benefits of natural shellfish densities and restoration of native species are not relevant to this discussion when examining industrial aquaculture practices combined with the placement of unnaturally high densities of shellfish high in the intertidal zone where they do not naturally grow.

#### **Sierra Club Industrial Shellfish Aquaculture Power Point and Website**

<http://washington.sierraclub.org/tatoosh/Aquaculture/SierraClub-Aquaculture-2010-Jul-R08-final.pdf>

<http://washington.sierraclub.org/tatoosh/Aquaculture/index.asp>

## **Section A. Changing from a Conservation Estuary to an Aquaculture Production Estuary**

The concept of changing the ecology from conservation estuaries to shellfish production estuaries is described in the science report named "The Ecological Role of Bivalve Shellfish Aquaculture in the Estuarine Environment": (Dumbauld, Ruesink, Rumrill, 2009)—page 215:

<http://washington.sierraclub.org/tatoosh/Aquaculture/Aquaculture--dumbauld%20et%20al.pdf>

*“From a manager or land use planner’s perspective, the first consideration in evaluating shellfish aquaculture in a given estuary should be an answer to the question: What are we and/or should we be managing for? Estuaries have a wide range of potential functions, have been and will continue to be influenced by many human activities, and similarly are influenced by many natural disturbances in addition to shellfish aquaculture. While the current paradigm for most managers is whole “ecosystem based” management (Grumbine, 1997), in reality managers have only progressed to varying degrees down this path, especially for marine systems. Thus the answer to “what are we managing for?” is driven by a wide variety of stakeholders and societal values (social historical, political, moral and aesthetic as well as economic; Leslie and McLeod, 2007; Weinstein, 2007; Ruckelshaus et al, 2008). Although these values are outside the purview of our intended review, we found it instructive to at least classify West Coast estuaries by the current level of aquaculture and other anthropogenic disturbance as Weinstein (2007) propose. Willapa Bay and Humboldt Bay might therefore be considered “production” estuaries with greater than 10% of the area occupied by shellfish aquaculture, while numerous other smaller estuaries with little aquaculture could be classified as other types.”*

It is important to note that this report discusses disturbances and recovery times as follows:

*“While bivalve aquaculture might be viewed as a press disturbance over the long term in a given area, the individual activities act as pulse disturbances and *Z. marina* in U.S. West Coast estuaries can recover to pre-disturbance levels relatively rapidly (within a period of 2 years in some systems).”* Page 215.

Puget Sound is not just a bay, but an estuary of national significance. It is in trouble as evidenced by the most endangered species listed in the country and a \$50 million restoration budget. Since the majority of aquaculture areas are continually turned over with a new season of clearing, planting, maintaining and harvesting, there is virtually little “recovery “ time where these areas will provide the same ecological functions to those species who rely on these critical Nearshore mid intertidal areas for feeding, rearing or migration. The comparison to periodic disturbances, boat wakes and earthquakes is not a realistic comparison to a permanent conversion to a “crop” operation. Our dwindling native species clearly do not have the luxury of waiting for their habitat and food resources to recover for minimal periods between clearing, planting, maintenance and harvesting.

## **Section B. Oceans and Coasts Shellfish Reefs at Risk: Report Findings**

<http://conserveonline.org/library/shellfish-reefs-at-risk-report/@@view.html>

“Shellfish reefs and beds are essential to the health of marine ecosystems, yet they are almost always solely managed as fisheries. There are many obstacles to successful management, but the greatest include the perceptions that a problem does not exist or that it is a local problem only and that non-native shellfish can replace wild native species. These problems are exacerbated because of bay by bay management that does not recognize regional, national or global problems and solutions. Native oysters must be recognized for the reef habitat that they provide across bays, regions and globally.”

Decision makers in Puget Sound have been managing shellfish beds as fisheries for commercial purposes, not as habitat that is part of a healthy ecosystem. Federal funds designed to protect fisheries should not be used to promote commercial fisheries that benefit a few large companies at the expense of public resources.

## **Section C. SeaGrant Preliminary Geoduck Research**

SeaGrant is conducting research on primarily three limited issues: Benthic effects of harvesting, eelgrass effects and genetics/parasites/disease. It is important to note that this research does not take into account that the industry practice is a perpetual production cycle of preparing the beach, planting, netting, harvesting. This cycle is repeated again within a few weeks which results in a minimal “recovery” period for aquatic plants and animals.

The preliminary research results published by Washington SeaGrant can be reviewed on the following link:

### **SeaGrant Interim Progress Report—Geoduck Aquaculture Research—2010**

<http://www.wsg.washington.edu/research/pdfs/reports/GeoduckReport2010.pdf>

#### **Ecological Effects-Page 7**

“Nevertheless, declining trends in a few taxa coincident with harvest disturbances were observed at some sites, including reduced abundance of some worms and small crustaceans within the harvest area and adjacent areas. There is evidence of recovery of these populations within six months. Continued analysis of the data are required to determine whether response of important taxa differs from the general community.”

#### **Eelgrass Effects-Page 14**

“After harvest, a range of effects on ecologically relevant aspects of Fish Bar was detected.

Within the farming area, *Z. marina* exhibited an immediate and significant reduction in shoot density, rate of flowering, and in the size of above ground structures, and a

delayed and significant reduction in below ground branching activity.”

“Preliminary analysis indicates some “spillover” effects of geoduck aquaculture on the adjacent eelgrass meadow. Possible effects include smaller, more densely packed *Z. marina* shoots and increased organic content of sediment nearer the farm.”

#### **Parasites and Disease-Page 11**

“Researchers observed a parasite, previously unknown to geoduck: a Steinhausia-like microsporidian parasite within geoduck eggs (ova).”

#### **Cultured Wild Interactions—Backup Report-2010**

[http://www.wsg.washington.edu/research/pdfs/reports/Friedman\\_RGD2\\_2010.pdf](http://www.wsg.washington.edu/research/pdfs/reports/Friedman_RGD2_2010.pdf)

“The microsporidian-like parasite resembling Steinhausia sp. is illustrated in Figure 2. The biology of Steinhausia-like parasites are poorly understood but its presence may impact reproductive success if present at high infection intensity. Although microsporidia have been reported in oysters, mussels and cockles in Europe, Australasia, California and the eastern United States, no molluscan microsporidia have been reported from Canada or Puget Sound.” Page 9.

#### **Geoduck Aquaculture Research Program, Progress Report, 2009**

<http://www.wsg.washington.edu/research/pdfs/reports/GeoduckIntProReport.pdf>

#### **Ecological Effects-**

“Diver surveys conducted at planted sites suggest that the addition of structures associated with geoduck aquaculture may change the community of mobile organisms visiting the site during high tides. Populations of structure-associated rock crabs, sea stars and other animals may increase, while populations of flatfish and other sandy-bottom species may decrease when nets and tubes are added to intertidal beaches.”

### **Section D-The Eleven Impacts of Industrial Aquaculture that SeaGrant Research Does Not Address**

#### **Impact #1--Bivalve Ingestion of Fish Eggs and Larvae**

Dan Penttila, the most recognized forage fish expert in Washington State, has pointed out in reports and testimony that the adverse impacts of shellfish aquaculture on forage fish need to be examined in an EIS prior to further expansion. The following four studies clearly document that all types of shellfish consume fisheries resources and even if not ingested are destroyed.

For more detailed information on Mr. Pentilla's statements and reports, see the following link: [http://wa.sierraclub.org/tatoosh/Aquaculture/SierraClub\\_Zooplankton\\_depletion\\_2\(1\).pdf](http://wa.sierraclub.org/tatoosh/Aquaculture/SierraClub_Zooplankton_depletion_2(1).pdf)

**The Four Independent Studies on the Impact of Bivalves Ingesting Fish Eggs, Crab Zoes, Copepods, Amphipods and Larvae Are Listed Below:**

**A. The CSAS (Canadian Science Advisory), review of the effects of shellfish aquaculture on fish habitat, 2006, pages 33-34 (25-26) [http://www.dfo-mpo.gc.ca/csas/Csas/DocREC/2006/RES2006\\_011\\_e.pdf](http://www.dfo-mpo.gc.ca/csas/Csas/DocREC/2006/RES2006_011_e.pdf)**

“Field studies reported in the same study found that mussels consumed (based on stomach content analysis) copepods (<1.5 mm), crab zoeas (2mm), fish eggs (1-2mm), and even amphipods (5-6mm). Subsequent to this, Lehane and Davenport (Lehane and Davenport 2002) showed that mussels consumed organisms up to 3mm in length and that cockles (*Cerastoderma edule*) and scallops (*Aequipecten opercularis*) are also capable of consuming considerable quantities of zooplankton, both when suspended in the water column and when on the bottom. The size classes of organisms consumed in these studies suggest that the larvae of most commercial species may be at risk from this type of predation.”

**B. Ingestion of mesozooplankton by three species of bivalve.** Lehane/Davenport, 2002-2006, Journal of Marine Biology Association of the United Kingdom. [http://www.caseinlet.org/uploads/Lehane\\_davenport.pdf](http://www.caseinlet.org/uploads/Lehane_davenport.pdf)

- “All species examined had zooplankters in their stomachs.” P 617
- “Numbers of organisms ingested by suspended and field (scallops) were not significantly different.” P 617
- “Clearly bivalves, in particular (mussels), are not strict herbivores and non-algal food sources are readily ingested by them. As expected, the numbers of individual zooplankters or ‘prey’ ingested increased with mussel size.” P 618
- “It is likely that extensive beds of bivalves can also control zooplankton densities and sizes. From the results presented here, and from interpretation of other studies, it is clear that a wide variety of bivalves do routinely ingest zooplankton.”
- “Phytoplankton is not an all year round source of food (Landry, 1981), so zooplankton may be relatively more important in the bivalve diet when the seston is phytoplankton-poor.” P 619



**C. The Trophic Linkage between zooplankton and benthic suspension feeders: direct evidence from analyses of bivalve faecal pellets—Wai Hing Wong, Jeffrey S. Levinton, 2006, Marine Biology Research Article.**

[http://www.caseinlet.org/uploads/Wong\\_Levinton\\_zooplankon.pdf](http://www.caseinlet.org/uploads/Wong_Levinton_zooplankon.pdf)

- “Large zooplankton have been found in the digestive tracts of bivalve mollusks, e.g. American oysters (*Virginica*).” P 799
- “Individuals (mussels) supplied with the mixture of phytoplankton and zooplankton demonstrated the best growth performance..”
- “The classic model of bivalve filtering of phytoplankton may be inadequate to describe the trophic effects of bivalves on planktonic ecosystems.”

**D. Larviphagy in native bivalves and an introduced oyster—**

Karen Troost, Pauline Kamermans, Winn J. Wolff, 2008, Journal of Sea Research.

[http://www.caseinlet.org/uploads/larviphagy\\_in\\_bivalves\\_Troost.pdf](http://www.caseinlet.org/uploads/larviphagy_in_bivalves_Troost.pdf)

- “Once filtered, bivalve larvae are either ingested or rejected in pseudofeces. If ingested, almost all larvae die in the digestion process or in the feces.”
- “Rejection in pseudofeces generally also leads to death.”

**E. DNR-SEPA Determination of Significance Wild Geoduck Harvesting- Documents Evidence of Sand Lance Eggs in Water Column and DNR Separation of Dive Harvesting from Sand Lance Habitat**

**Blake Island, Washington Study Results**

[http://www.caseinlet.org/uploads/DNR\\_SEPA\\_Blake\\_Island\\_Geoduck\\_Harvest.pdf](http://www.caseinlet.org/uploads/DNR_SEPA_Blake_Island_Geoduck_Harvest.pdf)

“After deposition, sand lance eggs may be scattered over a wider range of the intertidal zone by wave action. The incubation period is about four weeks. Upon hatching, the larval sand lance measures about 5 mm, and are virtually transparent. Like other forage fish, larvae and juvenile sand lance are subject to predation. As larvae they are at the mercy of the local currents and tides until they are about 22 mm in length. They then "school up", adopt their adult coloration and can be found in bays and inlets throughout Puget Sound. Sand lances are somewhat unique in their generalized diurnal behavior pattern, feeding in the open water during the day and burrowing into the sand at night to avoid predation (source: <http://wdfw.wa.gov/fish/forage/lance.htm>). There is substantial vertical separation between sand lance spawning (+5 ft. MLL W to mean higher high water) and proposed water depths of geoduck harvest activity on this tract (-22 ft. to -70

ft., MLLW). Exhibit A, pages 5-6.

### **Port Gamble, Washington Study Results**

[http://www.caseinlet.org/uploads/DNR\\_SEPA\\_Port\\_Gamble\\_Geoduck\\_Harvest.pdf](http://www.caseinlet.org/uploads/DNR_SEPA_Port_Gamble_Geoduck_Harvest.pdf)

“Sand lances are an important part of the trophic link between zooplanktons and larger predators in the local marine food webs. Like all forage fish, sand lances are a significant component in the diet of many economically important resources in Washington. On average, 35 percent of juvenile salmon diets are comprised of sand lance. Sand lances are particularly important to juvenile Chinook salmon, where 60 percent of their diet is comprised of sand lance. Other economically important species, such as Pacific cod (*Gadus macrocephalus*), Pacific hake (*Merluccius productus*) and dogfish (*Squalus acanthias*) feed heavily on juvenile and adult sand lance. There is substantial vertical separation between sand lance spawning (+5 feet to mean higher high water) and geoduck harvest activity (-25 ft. to -70 ft., MLLW). Geoduck fishing on the Port Gamble tract should have no detrimental impacts on sand lance spawning.” Exhibit A, page 6.

### **Impact #2—Sand lance lose documented forage fish habitat to burrow in sediments where geoduck tubes are inserted every square foot and industry harvesting threatens their survival**

According to the documented life history, sand lance burrows in the lower intertidal sediments. Loss of this forage fish habitat and prey resource for ESA listed species violates the Endangered Species Act (ESA), the Magnuson Stevens Act (MSA), and the Shoreline Management Act (SMA).

### **Impact #3--Shellfish industry introduction of marine plastic pollution from plastic tubes, nets, bands, zipties and oyster bags**

#### **The Issue**

The shellfish industry places over 120,000 pieces of plastic into **each acre** of geoduck farms as well as using thousands of plastic oyster bags and plastic canopy nets over manila clam beds in Puget Sound intertidal areas. According to the Department of Ecology, there are 247 intertidal geoduck sites in over 360 acres throughout our South Sound inlets. Many of these sites are located in the limited number of Designated Critical Salmon Habitat and/or Documented Forage Fish Spawning Habitat.

#### **Two Well Known Marine Plastic Debris Experts Speak Out on This Issue**

**Curtis Ebbesmeyer, Phd**, an oceanographer and marine plastic expert stated:

“Such plastic poses one of the grave threats to the health of Puget Sound. The particulate plastic from such PVC tubes enters the food web and does untold harm to all the creatures in Puget Sound, including us. It is not healthy to each geoducks raised in such a fashion.”

**Charles Moore**, a world renowned marine plastic marine debris expert, stated the following at the Pierce County Hearing on March 15, 2011:

“To summarize, the introduction of plastics into the marine environment poses hazards of three main types: ingestion, entanglement, and the transport of exotic species (Barnes). PVC is especially toxic and poses hazards to environment, health and every state of its existence. Other plastics may eliminate some, but not all of these problems. Therefore, it does not appear possible to introduce any plastics into the marine environment without harmful consequences.”

For more detailed information on the adverse impacts of geoduck aquaculture marine plastic pollution, visit the following link:

[http://wa.sierraclub.org/tatoosh/Aquaculture/SierraClub\\_Plastic\\_Pollution-2\(1\).pdf](http://wa.sierraclub.org/tatoosh/Aquaculture/SierraClub_Plastic_Pollution-2(1).pdf)

**Impact #4--Destruction of macroalgae beds and sand dollar beds that are considered essential fish habitat for both ESA listed species and non-listed species.**

The following documentation clearly shows that the shellfish industry destroys marine vegetation (A, B,C), why marine vegetation is critical to both ESA listed and non-listed species (D,E) and the laws that regulators are required to enforce to protect Washington’s marine vegetation.

**A. Shellfish Industry Routinely Removes Native Vegetation and Species Essential to Nearshore Ecological Functions**

<http://washington.sierraclub.org/tatoosh/Aquaculture/Shellfish%20Industry%20Routinely%20Removes%20Native%20Flora%20and%20Faun.pdf>

**B. Aquaculture—Destruction of Eelgrass by the Shellfish Industry-Marine Forage Fish Report-Dan Penttila-Page 16**

[http://www.pugetsoundnearshore.org/technical\\_papers/marine\\_fish.pdf](http://www.pugetsoundnearshore.org/technical_papers/marine_fish.pdf)

“Standard aquaculture practices may have profound effects on the benthic ecology of Washington State’s tidelands and the conservation of forage fish spawning areas, especially for herring. In many areas, herring spawning grounds are now coincident with shellfish culture areas, particularly on tide flats occupied by beds of the native eelgrass. Pacific oyster (*Crassostrea gigas*) beds intended for the ground-culture and dredge harvest of oysters commonly become devoid of native eelgrass, either due to the

cumulative effects of periodic dredging activities over time or by intentional destruction of the eelgrass beds before the start of culture activities (West 1997). Dredging operations routinely take place on or near tide flat areas containing herring spawn (WDFW unpublished data). Currently, the Washington Department of Agriculture (WDA) has regulatory authority over aquaculture activities that occur in intertidal areas of state waters. The Washington Department of Natural Resources (WDNR) has authority over state aquatic bottomlands and marine vegetation management. These agencies together with WDFW should seek a coordinated approach to the management of the growing aquaculture industry, with an eye toward modification of habitat-damaging culture practices and the mitigation of existing habitat degradation for which the industry has been responsible.”

**C. Geoduck Aquaculture as Perturbations to Eelgrass-SeaGrant Video  
Ruesink and Powell**

“Eelgrass density was depressed in summer by space competition with geoducks.”  
When geoducks were harvested at the end of the experiment, eelgrass shoot density dropped by more than 70 percent.”

**D. The Role of Seagrasses and Kelps in Marine Fish Support  
Derrick Blackmon, Tina Wyllie-Echeverria and Deborah J Shafer**  
<http://el.erdc.usace.army.mil/elpubs/pdf/tnwrap06-1.pdf>

”**Background:** The U.S. Army Corps of Engineers (USACE) has been involved in regulating certain activities in the nation's waters since 1890. Until 1968, the primary focus of USACE’s regulatory program was the construction and maintenance of navigation infrastructure. Since then, the program has evolved to one that reflects national concerns for both protection and utilization of important resources. Activities that involve construction, excavation, fill, and certain other modifications of the “waters of the U.S.” are regulated by USACE under the authority of Section 10 of the Rivers and Harbors Act of 1899, Section 404 of the Clean Water Act, and other regulatory policies. In estuarine waters, some of these regulated activities have the potential to impact sensitive aquatic resources such as seagrasses and kelps that provide important habitat for many commercially and recreationally important fish species.”

“Many of these estuarine-dependent species are vulnerable to over-fishing, degradation of water quality, and loss of critical habitats. The 1996 Sustainable Fisheries Act amendments to the Magnuson-Stevens Act focus on essential fish habitats. The Act mandates identification and description of estuarine habitats used by managed species for spawning, feeding, breeding or growth, and identification of anthropogenic threats to these habitats (Rader and Davis 1997), and specifically targets managed species.”

“This evidence highlights the need for detailed examination of seagrasses at a regional level to determine their role as habitat for ecologically and economically important species. Density, growth, survival, and movement need to be evaluated to determine the importance of a particular area/habitat as a nursery (Beck et al. 2001).”

“*Forage fishes.* Forages fishes are mentioned in this review due to their ecological role in the life histories of commercially important species such as salmon and rockfish. Surf smelt and sand lance spawn in the upper intertidal on sandy or sand/gravel beaches throughout Puget Sound (Lemberg et al. 1998, Pentilla 2000). Pacific herring spend most of their adult life in offshore waters. However, they spawn inshore, primarily on vegetated habitats, including red and brown algae, eelgrass, and rock kelp (Hay 1985) and feed on pelagic prey (Simenstad et al. 1988).”

#### **E. WDF&W, Preferential Use of Nearshore Kelp Habitats by Juvenile Salmon and Forage Fish, Anne Shaffer**

[http://www.caseinlet.org/uploads/SalmonKelp\\_Shaffer\\_1\\_.pdf](http://www.caseinlet.org/uploads/SalmonKelp_Shaffer_1_.pdf)

“In summary, this study indicates that kelp bed habitats are important for, and preferentially used by, both juvenile salmon and surf smelt. Salmon appear to preferentially select the middle kelp bed areas, possibly due to optimal feeding and refuge conditions this area of the kelp bed may offer. Combined, these results indicate habitat partitioning between three juvenile fish species. Further quantification of fish uses of kelp habitats, including radio tagging of fish, and defining juvenile salmonid and forage fish trophic relationship to kelp habitats, are compelling next steps in defining the relationship between juvenile salmon, forage fish, and their use of Nearshore kelp habitats. Such habitat and trophic information is a critical element for the success of future habitat and resource management of Nearshore habitat and the salmon and forage fish resources that depend on them (Stephenson 1996).

#### **F. Magnuson-Stevens Act—Essential Fish Habitat—Algae Beds and Sand dollar Beds**

These important resources are considered “essential fish habitat” in the EFH technical guidelines as shown below:

“Plan and design mining activities to avoid significant areas (such as consolidated sand ledges, sand dollar beds, or algae beds).”

#### **Impact #5—Intentional Elimination of Puget Sound and Willapa Bay Aquatic Native Animal and Plant Species by the Shellfish Industry—Documented in the “Pest Management Integrated Plan for Bivalves in Oregon and Washington”**

<http://washington.sierraclub.org/tatoosh/Aquaculture/OR-WAbivalvePMSP.pdf>

It is astonishing that local, state and federal agencies continue to allow the shellfish industry to eliminate the long list of native aquatic plant and animal species shown on page 27. It is troubling to Washington citizens to see aquatic sea life routinely eliminated by the shellfish industry as “unwanted pests” as this industry expands along Washington shorelines.

The shellfish industry expands into habitats rich with native species, then adds “feed” in the form of cultured oysters, clams and geoducks. Growers eliminate the species that were there as well as the species that move in to feed as they are now “predators.” There is no doubt that this is a “net loss” of native species and a degradation of the food web essential to a healthy Puget Sound.

Contrary to industry statements, the following email dated April 6, 2009, documents there are no Washington State protections that prevent the aquaculture industry from eliminating our native species.

“The primary rule is RCW 77.12.047(3). This exempts private commercial aquaculture from just about everything the WDFW does. The link is below. Let me know if you have any other questions.” Russell

<http://apps.leg.wa.gov/RCW/default.aspx?cite=77.12.047>

After citizens started reporting industry destroying sand dollar beds, it is ironical that the WDF&W then passed a WAC 220-56-130 to “prevent the recreational take” of beach life---just for citizens

“Below is the WAC governing the take of unclassified marine invertebrates and fish for personal use fisheries. WAC 220-56... governs personal use (recreational) fisheries only. The intent of this law is to prevent the recreational take of marine organisms that are not actively managed and/or monitored by the department.”

**Impact #6—Shellfish growers dive harvest in the intertidal zone (shallower than -18ft MLLW) even though DNR prohibits this practice to protect juvenile salmon, their prey and eelgrass according to DNR SEIS (pages 82-83) and May 8, 1999 letter from Charles Simenstad**

[http://www.dnr.wa.gov/Publications/aqr\\_geo\\_lowres2001\\_final\\_SEIS.pdf](http://www.dnr.wa.gov/Publications/aqr_geo_lowres2001_final_SEIS.pdf)

Charles Simenstad, a highly respected nearshore scientist with the University of Washington School of Fisheries, made the following recommendation regarding the DNR subtidal wild geoduck harvesting in 1999:

“You have obviously taken considerable time, effort and thought to evaluate the potential impacts from all aspects of geoduck harvesting, and I believe have incorporated this

information into best management practices regulating leasing and harvesting criteria. Most of your considerations encompass mechanisms of impact to juvenile salmon during their initial stages of estuarine residence. Depending upon the methods, practices, and extent of geoduck harvesting, juvenile salmon migrating along Puget Sound and associated shorelines are potentially vulnerable to a variety of effects that could be associated with geoduck harvesting, including: (a) direct impact to salmon exposed to sediment plume, (b) alteration of migratory behavior when encountering the sediment plume generated by water jet removal of the clams, (c) sedimentation of intertidal habitat (e.g. eelgrass, *Zostera marina*) important to juvenile salmon, (d), cumulative loss of primary production due to turbidity shading by sediment plume, and (e) attraction or aggregation of potential predators on juvenile salmon.....I am restricting my evaluation of impacts to juveniles of ocean-type salmon (e.g. chum, Chinook and to some degree pink because during their early marine life history when migrating as fry (30-80mm FL) they are confined to estuarine and Nearshore shallow water habitats. As such, they are susceptible to Nearshore impacts that alter this behavioral mandate or reduce critical habitat attributes such as the composition and production of their prey resources and refugia from predation (e.g. vegetative structure provided by eelgrass, etc.).

**The exclusionary principle of not allowing leasing/harvesting in shallower water than -18 ft. MLLW or 200 ft. distance from shore (MHW), 2 ft vertically from elevation of lower eelgrass margin, and within any region of documented herring or forage fish spawning should under most conditions remove the influences of harvest-induced sediment plumes from migrating salmon. As the available information indicates that sediment plumes do not (or are not allowed to?) enter the Nearshore zone, impacts to juvenile salmon habitat and prey resources should also be protected from impact by these policies if effectively regulated.”**

Dan Penttila stated in his expert report during the 2011 Pierce County Longbranch geoduck EIS hearing:

“The disparate policies of siting subtidal wild-geoduck harvest leases on bottomlands no shallower than -18 feet in tidal elevation for the benefit of juvenile salmonids (Simenstad, 1999) while allowing conceivably even more impacting geoduck farm operations to occur within this very important nearshore migratory habitat zone needs to be explained and justified, through an EIS.”

#### **Impact #7--Industrial Aquaculture Direct Impacts to Nearshore Habitat That Adversely Affects Wild Salmon and Whale Recovery in Washington**

Puget Sound now has the unfortunate distinction of having the most listed endangered species in the United States. As documented in the following

information, the nearshore and especially the mid intertidal area is the most critical to species and yet regulators are allowing it to be converted to high density aquaculture. Many of the following Washington Department of Fish and Wildlife list of species of concern depend on the mid intertidal nearshore area for survival that is now being converted to aquaculture. The following groundfish and rockfish management plans are further evidence of the efforts to save those dwindling populations that also use these same high value habitat areas that industrial aquaculture practices alter to grow geoducks, oysters and clams.

**A. Documentation of Aquaculture Impacts on Fish Habitat**

[http://washington.sierraclub.org/tatoosh/Aquaculture/Fish\\_Habitat\\_Impacts--Overview-- Forage fish, eelgrass, salmon-May\\_31.pdf](http://washington.sierraclub.org/tatoosh/Aquaculture/Fish_Habitat_Impacts--Overview--Forage_fish,_eelgrass,_salmon-May_31.pdf)

**B. National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Opinions**

[http://www.coalitiontoprotectpugetsoundhabitat.com/uploads/090904-3-NWP\\_48\\_04-28-2009.pdf](http://www.coalitiontoprotectpugetsoundhabitat.com/uploads/090904-3-NWP_48_04-28-2009.pdf)

Page 3 of the NMFS BO states: *"The proposed issuance of NWP 48 does not authorize or cover the effects of new operations"*. Therefore, the BO does not cover any other pending or future proposals or applications per the NMFS.

Page 25 of the NMFS BO states: *"The proposed action is likely to adversely affect CH (critical habitat) designated for PS (Puget Sound) Chinook salmon and Hood Canal summer-run Chum salmon"*. The NMFS thus acknowledges that the addition of new, intertidal shellfish aquaculture operations will result in additional or cumulative adverse impacts to critical habitat for endangered salmon.

The NMFS opinion is in general agreement with the findings published by the South Puget Sound Salmon Recovery Group fisheries scientists, which states on page 45:

*"Shellfish aquaculture in South Sound alters plant and animal assemblages and results in the loss of shallow nearshore habitat and habitat diversity important to salmon resources. These impacts may be potentially positive or negative depending on the type of aquaculture practice. We hypothesize that shellfish aquaculture reduces productivity, abundance, spatial structure, and diversity of salmon populations."*

Also on page 72 of the NMFS BO it is stated: *"Review of the literature during consultation revealed divergent findings on many relevant issues such that there remains some uncertainty regarding the likelihood of the effects of these activities on the environment and whether or not likely effects would bear on EFH (essential fish habitat) and managed fish."* This uncertainty lends itself to the requirement for the issuance of an EIS.



[http://www.fws.gov/westwafwo/publications/Biological\\_Opinions/2008\\_F\\_0461\\_BO.pdf](http://www.fws.gov/westwafwo/publications/Biological_Opinions/2008_F_0461_BO.pdf)

The U.S. Fish and Wildlife Biological Opinion (USFW BO) states on page 2: “*The NWP does not authorize new operations or the expansion of the project area for an existing commercial shellfish aquaculture activity.*” And on page 10: “*The NWP 48 only covers existing operations; it does not authorize new operations....*” The USFW opinion only addresses two specific species that may be present in Puget Sound under the Endangered Species Act (ESA): bull trout, and marbled murrelet. The BO does not address forage fish, flatfish, sand dollars, or any other species or their habitats.

**C.**

**Link:** [XXXXXXXXXXXXXXXXXXXXXXXXXXXX](#)

Bendel-Young, 2006

“The intertidal regions that had been used for (shellfish) farming for 3 and 5 years had lower species richness..as compared to the intertidal regions where no active farming occurred.” “..studies are needed to determine the scale to which intensive use of the foreshore for shellfish purposes alone is feasible without undue harm to the environment.”

**D. Threats to Species, Biodiversity and Food Web Status in Puget Sound- Documented Threats to Abundance, Productivity, Spatial Distribution of Key Species-Puget Sound Partnership, July, 2008**

**Link:** [XXXXXXXXXXXXXXXXXXXXXXXXXXXX](#)

“A recent review of the ecosystem-level effects of shellfish aquaculture determined that while more study was needed, the available literature indicates that intensive shellfish aquaculture may divert materials to benthic food webs, alter-coastal nutrient dynamics, and have cascading effects on estuarine and coastal food webs. In particular, the effects of geoduck aquaculture on the benthic environment and fauna, the food webs, water quality, and aesthetics are a current concern but very few studies have been conducted to examine them.” “In addition, many species grown for aquaculture in Puget Sound are invasive species, such as Manila clams, Mediterranean mussels, Pacific oysters and Atlantic salmon.” “Intertidal invertebrate communities can suffer from the effects of clam harvesting and trampling.”

**E. WDF&W—List of Species of Concern**

<http://wdfw.wa.gov/conservation/endangered/lists/search.php?searchby=StateStatus&search=SE&orderby=A nimalType,%20CommonName>

**F. DEIS-Puget Sound Rockfish Conservation Plan**

[http://www.caseinlet.org/uploads/draft\\_rockfish\\_plan\\_19oct09.pdf](http://www.caseinlet.org/uploads/draft_rockfish_plan_19oct09.pdf)

**G. Puget Sound Ground Fish Management Plan-Palsson, Northrup, Barker, 1998 Revised**

[www.docstore.com/docs/37660304/WDFW-Puget-Sound-Groundfish-Management-Plan](http://www.docstore.com/docs/37660304/WDFW-Puget-Sound-Groundfish-Management-Plan)

### **Salmon Diet and Prey Studies—Critical Issues for ESA listed species**

The following studies document that the main sources of prey for Chinook salmon are insects, epibenthic crustaceans and polychaete annelids with juvenile Chinook salmon diets relying heavily on polychaetes and sand lance.

These sources of prey for both ESA listed and non-listed species are being put at risk by shellfish aquaculture operations that have been freely allowed to site their operations in Designated Critical Salmon Habitat, Documented Forage Fish Spawning areas and in or adjacent to eelgrass beds.

#### **A. Juvenile Chinook Salmon Distribution, Diet and Prey Resources Below the Locks Charles Simenstad, Kurt Fresh**

[http://www.seattle.gov/util/stellent/groups/public/@spu/@ssw/documents/webcontent/spu01\\_002667.pdf](http://www.seattle.gov/util/stellent/groups/public/@spu/@ssw/documents/webcontent/spu01_002667.pdf)

“Diet composition of juvenile salmon indicated a strong influence of discharge from the Lake Washington system in the form of freshwater zooplankton (i.e., *Daphnia* spp.), and to a lesser degree pelagic marine/estuarine zooplankton. Insects and epibenthic crustaceans and polychaete annelids were more prominent in the diets of juvenile salmon in the outer Shilshole Bay and adjoining nearshore sites, and slightly more in unmarked than marked chinook salmon. Potential epibenthic prey (harpacticoid copepods, gammarid amphipods) are considerably more abundant at the outer Shilshole Bay sites than at the inner Bay sites.”

Page 1.

“Foraging of most salmon is focused on either pelagic zooplankton, most of which originates from allochthonous freshwater production in the Lake Washington/Ship Canal system, and to a lesser degree drift/neustonic insects; autochthonous littoral production of epibenthic prey, and potentially input of riparian insects, do not appear to play a large role in supporting juvenile salmonids in the inner Bay, although these sources may be more important in the outer Bay and adjoining Nearshore.” Page 2

#### **B. Juvenile Salmonid Composition, Timing, Distribution, and Diet in Marine Nearshore Waters of Central Puget Sound in 2001-2002, dated August 2004.**

<http://your.kingcounty.gov/dnrp/library/2004/kcr1658/nearshore-part1.pdf>

#### **Salmonid Diet –page –iii**

Stomach contents of 819 Chinook salmon, 89 coho salmon, and 56 cutthroat trout were

analyzed to determine diet composition. Chinook diet samples were analyzed from 410 individual in 2001 and 409 from 2002 at 16 different sites. In both years, terrestrial insects numerically dominated Chinook diets. Gravimetric (weight) composition was similar between years in all ecological categories (benthic/epibenthic, planktonic/neritic, terrestrial/riparian) and varied by size fish and season. For juvenile Chinook salmon in the smallest size classes (90-149 mmFL) had dietary components that were more evenly distributed in the three ecological categories and insects became a more dominant prey item with increasing size, along with benthic and epibenthic prey. The largest size classes of salmonids fed on planktonic and neritic organisms. There were also distinct seasonal patterns in diet composition. Polychaete worms dominated the <90 and 90-149 mm size classes of juvenile Chinook prey early in sampling season (i.e. May), but were replaced by other prey organisms later in the season. For example, in September, insects made up over 50% of the prey weight in Chinook from 90-149 mm size class and over 980% of the >150 mm size classes. Diets were also similar between geographic locations, but some differences were detected. There was also a great deal of similarity between diets of juvenile Chinook classified as hatchery and "wild."

Stomach contents from a total of 56 cutthroat trout from 12 beaches were analyzed for diet composition, including 47 individuals from 2001 and 9 from 2002. Fish ranged in size from 130-441 mm (FL). Cutthroat trout diets were dominated by fish (mostly non-salmonids) in both years. Other taxa found in significant numbers included insects, crab larvae, amphipods, copepods and isopods.

"The overall results presented here point to three general habitat types—terrestrial/riparian, shallow benthic/epibenthic, and pelagic—as the most important prey production/foraging areas for juvenile Chinook salmon in shallow marine nearshore areas of Puget Sound." P 4-7.

#### **C. Per Washington Department of Ecology Website**

<http://www.ecy.wa.gov/programs/sea/pugetsound/species/sandlance.html>

"The sand lance, also known locally as the "candlefish," is an ecologically important forage fish throughout Puget Sound. Sand lances are important food for young salmon; 35% of juvenile salmon diets are composed of sand lance. Juvenile chinook salmon depend on sand lance for 60% of their diet. Minke whales, other marine mammals, and many species of seabirds also prey on sand lance."

**D. Salmon Behavior—Predator Avoidance in the Intertidal Benthic Habitats Acoustically derived fine-scale behaviors of juvenile Chinook salmon (*Oncorhynchus tshawytscha*) associated with intertidal benthic habitats in an estuary- Brice Xavier Semmens, September 4, 2008**

[http://www.caseinlet.org/uploads/semmens\\_CJFAS\\_chinook\\_estuary\\_habitat.pdf](http://www.caseinlet.org/uploads/semmens_CJFAS_chinook_estuary_habitat.pdf)

**“Abstract:** Given the presumed important of benthic and epibenthic estuarine habitats in Chinook salmon (*Oncorhynchus tshawytscha*) smolt growth and survival, resource managers would be well served by an improved understanding of how smolts use such habitats.....

Model results indicated that smolts had a strong preference for remaining in native eelgrass (*Zostera marina*). Conversely, no such preference existed for other structured benthic habitats such as oyster (*Crassostrea gigas*) beds, non-native eelgrass (*Zostera japonica*), and non-native smooth cordgrass (*Spartina alterniflora*). There was a positive relationship between individual survivorship in the enclosure and the strength of behavioral preference for native eelgrass, suggesting that predator avoidance may be the evolutionary mechanism driving behavioral responses of smolts to benthic habitats.” Page 1

### **Impact #8--Restriction, disturbance and harassment of marine birds by the shellfish aquaculture industry**

The shellfish aquaculture industry has expanded into areas which were historically feeding grounds for marine birds. The following statements taken from the “Pest Management Integrated Plan for Bivalves in Oregon and Washington—July 2010” documents how industry is trying to reduce our bird populations:

“Management of Seagulls, Crows, Ravens and Waterfowl

- Passive measures include substrate cover, fencing, and nets on Manila clams, geoducks and mussels (suspended culture)
- Hazing (harassing to disturb the animal’s sense of security so it leaves) is used with some degree of success
- Timing farming activities when birds are most likely to be present has proven effective in scaring them away from the sites
- As a last alternative, hunting has been utilized when deprecation permits can be obtained. At this time, Scoter populations are depressed; therefore deprecation permits are not available.”

It is also well documented in South Puget Sound, that large numbers of marine ducks have been massacred as they come into the inlets by hunters whose boats originated from shellfish industry docks. In fact, the massacre of ducks in Eld Inlet (2009) and Henderson Inlet (2010) resulted in citizens requesting that Thurston County Commissioners institute a no shooting zone ordinance. That ordinance is now being drafted after several public meetings.

“Some startling facts according to the Puget Sound Partnership—

## Marine Birds

[http://www.psparchives.com/our\\_work/species/marine\\_birds.htm](http://www.psparchives.com/our_work/species/marine_birds.htm):"

- 19 of the 30 most common marine bird species in northern Puget Sound decreased by 20 percent or more between 1978 and 2004.
- Since 1979, the total number of marine birds in the Puget Sound region has dropped 47 percent.
- Western grebe populations have declined by 95 percent over the last 20 years.

“Scientists do not fully know what is driving this decline but some likely factors include decreases in forage fish populations, including herring spawn at Cherry Point and Discovery Bay, changing migration patterns, predation, habitat loss, hunting, by-catch from fishing operations (including derelict fishing gear), and harm to breeding grounds in the Arctic.”

### **Three Studies of Shellfish Aquaculture Noting Adverse Impacts on Marine Birds**

#### **A. Heffernan, et al., A Review of the Ecological Implications of Mariculture and Intertidal Harvesting in Ireland (1999)**

[http://protectourshoreline.org/studies/Review\\_Mariculture\\_Ireland.pdf](http://protectourshoreline.org/studies/Review_Mariculture_Ireland.pdf)

Some excerpts from this review:

#### 1.3.4 Competition for space

Areas which would normally be available for birds and other animals may be occupied by shellfish culture. For intertidal culture, loss of habitat can arise from the presence of structures used for growing shellfish on intertidal feeding ground. These structures include frames used for holding small spat, bags held on trestles, and areas under netting. The farming operations are generally quite small in terms of area covered (1-2 ha.). However, the cumulative reduction of feeding grounds arising from the increasing number of operations can be substantial (O'Brian, 1993).

#### 1.3.5 Disturbance to birds

Disturbance can be defined as any situation in which a bird behaves differently from its preferred behavior. Any overall reduction in birds feeding, as a result of this change in behavior, may increase energy requirements, and hence adversely affect survival (Davidson and Rothwell, 1993). The main cause of disturbance will be the service and maintenance of the culture structures.

#### **B. Effects of Aquaculture on Habitat Use by Wintering Shorebirds in Tamales Bay, California—**

John Kelly, Jules Evens, Richard Stallcup and David Wimpfheimer “Our results suggest a net decrease in total shorebirds in the areas developed for aquaculture.”  
[http://www.caseinlet.org/uploads/0096-Kelly\\_et\\_al\\_1996\\_aquaculture\\_1.pdf](http://www.caseinlet.org/uploads/0096-Kelly_et_al_1996_aquaculture_1.pdf)

### **C. Nearshore Birds in Puget Sound**

[http://www.pugetsoundnearshore.org/technical\\_papers/shorebirds.pdf](http://www.pugetsoundnearshore.org/technical_papers/shorebirds.pdf)

“Is Surf Scoter food availability influenced by exclusion from commercial shellfish operations?”

Page 10.

### **Impact #9--Genetics, Disease and Parasites**

Potential Impacts of Subtidal Geoduck Aquaculture on the Conservation of Wild Geoduck Populations.

[http://www.dfo-mpo.gc.ca/CSAS/Csas/DocREC/2004/RES2004\\_131\\_e.pdf](http://www.dfo-mpo.gc.ca/CSAS/Csas/DocREC/2004/RES2004_131_e.pdf)

- “However, there are several ways in which geoduck aquaculture could negatively impact natural stocks and the commercial fishery although none have been directly assessed. Potential impacts include genetic fitness, transmission of disease, increased number of predators, competition for food, and habitat impacts. Because of these unknowns, and to accommodate the risk and uncertainty related to the stock status of natural geoduck populations, aquaculture development should be controlled and fully integrated in the geoduck stock assessment and management frameworks. Geoduck are long lived animals and negative impacts on populations may be slow to detect.” Page 15
- “If predator abundance increases after the seeding of an aquaculture tenure, there could be significant impacts on naturally recruited juveniles (geoduck) in the vicinity.” Page 11
- “The possibility of loss of genetic fitness of wild stocks through interactions with hatchery-produced animals is of considerable concern, and highlights the importance of sound genetic protocols for broodstock collection and the management of the lineage of outplanted geoduck. Studies to investigate the range of larvae drift and therefore the range of potential genetic impacts should be a high priority.” Page 10
- French May Bid Adieu to Oysters

<http://www.dw-world.de/dw/article/0,,6174169,00.html>

“Natural oyster producers believe that the main cause of the rampant spread of the virus was the introduction of laboratory manipulated and reproduced triploid oysters.” Until peer reviewed studies are completed and made available for review, it is irresponsible for decision makers to allow expansion and put our wild stocks of geoducks at risk that are a vital part of the ecosystem in Puget Sound. Considering the

preliminary findings in the SeaGrant report regarding parasites and now unforeseen problems with the non-native triploid oyster, a precautionary approach should be required.

## **Impact #10--Ecosystem Effects and Assessment of Non-Native Invasive Species Used in High Density Aquaculture**

### **A. Introduction of Non-Native Oysters: Ecosystem Effects and Restoration Implications**

Jennifer Ruesink, Hunter Lenihan, Alan C. Trimble, Kimberly Heiman, Fiorenza Micheli, James E. Byers, and Matthew C. Kay, September 9, 2005

[http://www.caseinlet.org/uploads/07-04-EnvironmentalStudyOfIntroduced\\_Oysters\\_1\\_.pdf](http://www.caseinlet.org/uploads/07-04-EnvironmentalStudyOfIntroduced_Oysters_1_.pdf)

“Ecological risk assessments associated with oyster introductions should place greater emphasis on ecosystem-level effects. Oyster introductions require that we advance our understanding of the functions and services provided by different marine species and assemblages. Major gaps in knowledge include how native and introduced species influence nutrient cycling, hydrodynamics, and sediment budgets; whether other native species use them as habitat and food, and the spatial and temporal extent of direct and indirect ecological effects within invaded and adjacent communities and ecosystems. Lack of information on community-level and ecosystem-level consequences of oyster introductions is surprising (but we see Escapa et al 2004), given that these introductions have occurred worldwide for more than a century. Studies that compare the ecosystem functions and services provided by native and introduced oysters are important research priorities, and they provide the framework for recent research projects, such as that supported by the NOAA-Chesapeake Bay Program to examine *C. ariakensis* and *C. gigas*.”

### **B. Assessing the Global threat of invasive species to marine biodiversity**

Jennifer L. Molnar, Rebecca L. Gamboa, Carmen Revenga and Mark D. Spalding, 2008

[http://www.caseinlet.org/uploads/InvSpc-MarBdv2008\\_1\\_.pdf](http://www.caseinlet.org/uploads/InvSpc-MarBdv2008_1_.pdf)

“Our assessment data can also be used by policy makers in specific regions (Table 1). For example, in the two eco-regions that extend along the coastlines of Oregon and Washington State, including the Puget Sound, aquaculture has been the most common pathway for introduction (71% of non-native marine species documented in these eco-regions were introduced by aquaculture). Most of these introductions probably occurred accidentally, through oyster farming (with introduced species hitchhiking on shells or equipment). Of the 33 species known to be associated with oyster farming, 55% are harmful, and most are difficult if not impossible to remove or control (26 of 28 species scored for management difficulty received a score of 3 or 4). In this region, policy makers, conservation practitioners, and the aquaculture industry should continue to work

together to prevent any future invasions, by improving practices and perhaps limiting new operations.” Page 491

“Our impact scores offer guidance on the merits of these intentional introductions. For example, oysters have been deliberately introduced into coastal waters worldwide, to be cultured for food. One species in particular, *Crassostrea gigas*, has been introduced in at least 45 eco-regions (Figure 4). Its high ecological impact score (3) should cause decision makers and regulators to reconsider plans for introduction of this oyster into new areas. While its harvest brings economic gains, the ecological impact of introductions of this species are potentially dramatic. Oysters play a role in many estuarine ecosystem processes; altering their abundance or distribution causes complex changes. Furthermore, when oyster populations are supplemented with alien oysters, other alien species can piggyback on their shells (Ruesink *et al.* 2005). Global information about distribution and impacts could inform risk assessments and decisions about whether, and how, species should be introduced in the future.” Page 491

It is a major concern that South Puget Sound residents are reporting to the WDF&W of invasive tunicates “hitchhiking” to distant shorelines by plastic mussel discs and PVC tubes.

## **Impact #11--Pesticide and Herbicide Use in Willapa Bay, Washington**

### **A. Carbaryl and Imidacloprid**

Up to three tons of Carbaryl (Sevin insecticide) has been sprayed annually by shellfish growers in Washington State (Willapa Bay) on up to 800 acres of tidal flats to exterminate ghost shrimp. Since Carbaryl must be phased out by 2012, the shellfish industry is looking to replace Carbaryl with Imidacloprid. The use of Imidacloprid has raised concerns because of its possible impact on bee populations. The Sierra Club is concerned about the significant impacts on the ecological functions and affected native species of allowing pesticides to be used in our estuaries.

### **Neurobehavioral Effects of the Carbamate Insecticide, Carbaryl, on Salmonids**

*Jay Davis\**, U.S. Fish & Wildlife Service - Western WA  
Office David Baldwin, Jana Labenia, Barbara French,  
Nathaniel Scholz NOAA Fisheries - Northwest Fisheries  
Science Center

Keywords: carbaryl, cutthroat trout, salmonid, carbamate pesticide, acetylcholinesterase inhibition, neurobehavioral effects Willapa Bay is a coastal estuary in Washington State that provides habitat for cutthroat trout (*Onchorhynchus*



clarki clarki) as well as other salmonids. Cutthroat trout forage throughout the estuary in the summer months when carbaryl, a carbamate insecticide, is applied to oyster beds at low tide to control burrowing shrimp populations. On the day of spray, carbaryl has been measured in the estuarine water column at concentrations >1,000 ppb. Carbaryl is a neurotoxicant that inhibits acetylcholinesterase, an enzyme that hydrolyzes the transmitter acetylcholine at neuronal and neuromuscular synapses. Previous studies determined that cutthroat trout do not show an olfactory response to carbaryl, do not avoid carbaryl-containing water, and that short-term (6 hour) carbaryl exposure rapidly (< 2 hrs) depresses brain and muscle acetylcholinesterase activity in a dose-dependent manner (IC50s of 213 ppb and 185 ppb, respectively) for approximately two days. The goals of this study were to determine the impacts of carbaryl exposure on the swimming behavior of cutthroat trout as well as their vulnerability to predation.

Results indicate that salmonids' swimming performance and ability to avoid predation are significantly affected at carbaryl concentrations  $\geq 750$  ppb and  $\geq 500$  ppb, respectively.

#### **B. Glyphosate and Imazapyr Use In Washington Estuaries**

Glyphosate and Imazapyr are sprayed in Washington State by growers directly in estuaries and on mudflats to kill Spartina, a form of cord grass. If it is necessary to remove spartina, pulling or mowing this grass should be the method used, not the spraying of herbicides in our estuaries.

### **The Need For Compliance With Federal Regulations**

#### **Section E-Water Quality Degradation**

Industrial shellfish aquaculture degrades water quality as documented in the various sections of this report. The Army Corp of Engineers and the Department of Ecology are responsible for enforcing water quality standards and the counties must comply with local, state and federal law. For more detailed information, see:

#### **Section F- National Environmental Policy Act (NEPA) Analysis Should Be Required When Permitting New Aquaculture Expansion—Applies to Army Corp and NOAA**

NEPA regulations apply to both policy and program activities. A review of program actions under a policy is definitely within the guidelines of the NEPA Act. It is clear from reviewing information from our Chapters in Sierra Club around the country, that there are unique regional habitat and native species requirements in the Northeast, the Pacific Northwest (Puget Sound and the Straits of Juan de Fuca), The Gulf of Mexico and Hawaii. It is critical that there is meaningful public input from each region, that the

smaller projects are reviewed for cumulative impacts, and that the scientists who are working on these projects are fully informed of the documented and potential impacts related to the projects. The documentation we have provided clearly demonstrates that there are significant impacts from shellfish aquaculture. Much of the science we have provided is peer reviewed. It is also very important that all of the steps taken by NOAA and the Army Corps be transparent in order to build public confidence. To be specific, the relevant NEPA requirements are described in the following excerpts from the CEQ document titled "NEPA's Forty Most Asked Question's":

Question #24a. Environmental Impact Statements on Policies, Plans or Programs. When are EISs required on policies, plans or programs?

A. An EIS must be prepared if an agency proposes to implement a specific policy, to adopt a plan for a group of related actions, or to implement a specific statutory program or executive directive. Section 1508.18. In addition, the adoption of official policy in the form of rules, regulations and interpretations pursuant to the Administrative Procedure Act, treaties, conventions, or other formal documents establishing governmental or agency policy which will substantially alter agency programs, could require an EIS. Section 1508.18. In all cases, the policy, plan, or program must have the potential for significantly affecting the quality of the human environment in order to require an EIS. It should be noted that a proposal "may exist in fact as well as by agency declaration that one exists." Section 1508.23.

Question #24b. When is an area-wide or overview EIS appropriate?

A. The preparation of an area-wide or overview EIS may be particularly useful when similar actions, viewed with other reasonably foreseeable or proposed agency actions, share common timing or geography. For example, when a variety of energy projects may be located in a single watershed, or when a series of new energy technologies may be developed through federal funding, the overview or area-wide EIS would serve as a valuable and necessary analysis of the affected environment and the potential cumulative impacts of the reasonably foreseeable actions under that program or within that geographical area.

Question #24c. What is the function of tiering in such cases?

A. Tiering is a procedure which allows an agency to avoid duplication of paperwork through the incorporation by reference of the general discussions and relevant specific discussions from an environmental impact statement of broader scope into one of lesser scope or vice versa. In the example given in Question 24b, this would mean that an overview EIS would be prepared for all of the energy activities reasonably foreseeable in

a particular geographic area or resulting from a particular development program. This impact statement would be followed by site-specific or project-specific EISs. The tiering process would make each EIS of greater use and meaning to the public as the plan or program develops, without duplication of the analysis prepared for the previous impact statement.

(b) NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken. The information must be of high quality. Accurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA. Most important, NEPA documents must concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail.

(c) Ultimately, of course, it is not better documents but better decisions that count. NEPA's purpose is not to generate paperwork--even excellent paperwork--but to foster excellent action. The NEPA process is intended to help public officials make decisions that are based on understanding of environmental consequences, and take actions that protect, restore, and enhance the environment. These regulations provide the direction to achieve this purpose. (Source: NEPA Section 1500.1 Purpose)

### **Section G. Dan Penttila-Forage Fish Relevant Research (see Impact #1)**

1. Penttila, D., 1978. Studies of the surf smelt (*Hypomesus pretiosus*) in Puget Sound. WDF Technical Report #42, p. 47
2. Penttila, D. 1995a. The WDFW's Puget Sound intertidal baitfish spawning beach survey project. Proceedings of the Puget Sound Research-95 Conference, PSWQA, Olympia, WA, vol 1, p. 235-241.
3. Penttila, D. 1995b. Investigations of the spawning habitat of the Pacific sand lance (*Ammodytes hexapterus*) in Puget Sound. Proceedings of the Puget Sound Research-95 Conference, PSWQA, Olympia, WA, Vol. 2, p. 855-859.
4. Penttila, D., 2007. Marine Forage Fishes in Puget Sound. Puget Sound Nearshore Partnership Tech. Rep. 2007-03. Seattle District, ACOE, 22 p. potential impacts of aquaculture practices within the text. [www.pugetsoundnearshore.org](http://www.pugetsoundnearshore.org)
5. Moulton, L. and D. Penttila. 2001, rev. 2006. Field manual for sampling forage fish spawn in intertidal shore regions. San Juan County Forage Fish Assessment Project. P. 23.
6. WDFW Salmonscape Forage Fish database charts showing the currently documented surf smelt and sand lance spawning habitat polygons in the Longbranch project area.
7. Penttila, D., 1995. Known spawning beaches of the surf smelt (*Hypomesus*),

- and the sand lance (*Ammodytes*) in southern Puget Sound, WA (Pierce, Thurston and Mason Counties), as of March 1995. WDFW unpub. report, 50+ p.
8. Penttila, D. 11/23/92. "S. Carr Inlet-Drayton Pass". WDF Forage Fish Unit field/lab report (13 p.) of first-ever survey through the Longbranch project area, at which time surf smelt spawn was found near the project site.
  9. Penttila, D., 1/5/96. "S. Case Inlet-W. Nisqually Reach" WDF Forage Fish Unit field lab report (11 p.) of forage fish spawning habitat survey conducted through the project area at which time sand lance spawn was found on the project site.
  10. Penttila, D., 1/19/07. "Drayton Passage, Pierce Co.", WDFW Puget Sound Action Team Forage Fish Project field/lab report (11 p.) documenting a forage fish spawning habitat survey conducted through the project area, in which surf smelt spawn was again documented near the project area.
  11. Penttila, D. 2000. Grain-size analyses of spawning substrates of the surf smelt (*Hypomesus*) and Pacific sand lance (*Ammodytes*) on Puget Sound spawning beaches. WDFW unpublished report.

**Section H. Charles Moore Marine Plastic Debris Relevant Research (See Impact #3)**

1. Fatal ingestion of floating net debris by two sperm whales. Jeff K. Jacobsen, Liam Massey, Frances Gulland
2. Transport and release of chemicals from plastics to the environment and to wildlife.  
Emma L. Teuten, Jevita M. Saquing, Detlef R. U. Knappe, Morton A. Barlaz <http://mc.manuscriptcentral.com/issue-ptrsb>  
[http://www.caseinlet.org/uploads/Moore-PlasticChemTransportWildlife\\_1\\_.pdf](http://www.caseinlet.org/uploads/Moore-PlasticChemTransportWildlife_1_.pdf)
3. Invasion by marine life on plastic debris. Nature/Vol 416/25 April 2002/[www.nature.com](http://www.nature.com) [http://www.caseinlet.org/uploads/Moore-Invasion\\_of\\_Debris-Barnes\\_article\\_1\\_.pdf](http://www.caseinlet.org/uploads/Moore-Invasion_of_Debris-Barnes_article_1_.pdf)
4. Plastic Ingestion by planktivorous fishes in the North Pacific Central Gyre. Christiana M. Boerger, Gwendolyn L. Lattin, Shelly L. Moore, Charles J. Moore; Marine Pollution Bulletin  
[http://www.caseinlet.org/uploads/Plastic\\_ingestion\\_by\\_fish\\_1\\_.pdf](http://www.caseinlet.org/uploads/Plastic_ingestion_by_fish_1_.pdf)
5. Plastic resin pellets as a transport medium for toxic chemicals in the marine environment. Yukie Mato, Tomohiko Isobe, Hideshige Takada, Haruyuki Kanehiro, Chiyoko Ohtake and Tsuguchika Kaminuma  
[http://www.caseinlet.org/uploads/Moore-Plastic\\_Resin\\_1\\_.pdf](http://www.caseinlet.org/uploads/Moore-Plastic_Resin_1_.pdf)
6. Quantification of persistent organic pollutants absorbed on plastic debris from the Northern Pacific Gyre's "eastern garbage patch," Lorena M. Rios, Patrick R. Jones,

Charles Moore and Urja V. Narayan; The Royal Society of Chemistry 2010 [http://www.caseinlet.org/uploads/Moore-Rios\\_et\\_al\\_2010\\_1\\_.pdf](http://www.caseinlet.org/uploads/Moore-Rios_et_al_2010_1_.pdf)

7. Synthetic polymers in the marine environment: a rapidly increasing long-term threat. Charles James Moore, Fernanda E. Possatto, Mario Barletta, Monica F. Costa, Juliana A.

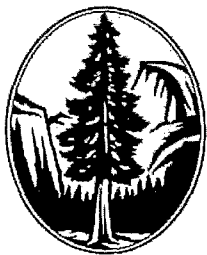
Ivar do Sul, David V. Dantas; Marine Pollution Bulletin Envir. Res. Plastic Oceans 2008 [http://www.caseinlet.org/uploads/Moore--\\_Env\\_Res\\_Plastic\\_Oceans\\_2008\\_1\\_.pdf](http://www.caseinlet.org/uploads/Moore--_Env_Res_Plastic_Oceans_2008_1_.pdf)

8. The Pollution of the Marine Environment by Plastic Debris: a review. Jose G.B. Derraik; Marine Pollution Bulletin [http://www.caseinlet.org/uploads/Moore--Derraik\\_1\\_.pdf](http://www.caseinlet.org/uploads/Moore--Derraik_1_.pdf)

9. Biological Performance Bio Plastic: Mirel. Barry E. DiGregorio; Chemistry and Biology 16, January 30, 2009

[http://www.caseinlet.org/uploads/Moore-Biobased\\_Performance\\_Bioplastic\\_-\\_Mirel\\_1\\_.pdf](http://www.caseinlet.org/uploads/Moore-Biobased_Performance_Bioplastic_-_Mirel_1_.pdf)

10. Plastic debris ingestion by marine catfish: An unprecedented fisheries impact. Fernanda E. Possatto, Mario Barletta, Monica F. Costa, Juliana A. Ivar do Sul, David V. Dantas, Marine Pollution Bulletin, 2011 [http://www.caseinlet.org/uploads/Plastic\\_debris\\_ingestion\\_by\\_marine\\_catfish\\_An\\_unexpected\\_fish\\_eries\\_impact\\_1\\_.pdf](http://www.caseinlet.org/uploads/Plastic_debris_ingestion_by_marine_catfish_An_unexpected_fish_eries_impact_1_.pdf)



**SIERRA  
CLUB**  
FOUNDED 1892

## **Washington State Chapter**

180 Nickerson St, Ste 202

Seattle, WA 98109

Phone: (206) 378-0114

Fax: (206) 378-0034

[www.cascade.sierraclub.org](http://www.cascade.sierraclub.org)

---

### **Nitrogen Removal by Shellfish Aquaculture**

#### **Nitrogen Removal Is Minimal, Must be Taken in its Entirety and More Research Is Needed To Determine Meaningful Marine Applications**

The shellfish industry has recently been making the claim that adding millions of shellfish in Puget Sound will significantly reduce nitrogen. Upon reviewing the limited scientific research available on this issue, the following documentation proves that this industry claim has been inflated and that the nitrogen removal is in fact minimal. Deep sea upwelling and benthic flux are major factors which are not fully understood and yet have a far greater impact. Without a great deal more peer reviewed research on this issue that incorporates both benefits and impacts, nitrogen reduction from shellfish aquaculture should not be a deciding factor for wastewater treatment decisions or the approval process for additional shellfish aquaculture densities or sites.

For years, Washington decision makers have allowed unlimited expansion of shellfish aquaculture based on the unfounded shellfish industry claim that they “cleaned the water.” Scientists are now pointing out that there is no scientific evidence in Puget Sound that shellfish aquaculture “clean the water,” but that shellfish do strip the water of Fisheries Resources such as fish eggs/larvae, crab zoes and other important components of the food web. Litigation brought by citizens is now pending that documents that aquaculture operations such as geoduck installations in fact degrade water quality essential for the life cycles of other aquatic life. Whether the industry claim is “cleaning the water” or “nitrogen reduction,” the Shoreline Management Act clearly states “no net loss of ecological functions.” If an activity results in loss of standing stocks of fisheries, then there’s a net loss of ecological function associated with that activity as defined in the following link:  
<http://apps.leg.wa.gov/wac/default.aspx?cite=173-26-241>

**Section 1—Hood Canal Nitrogen Research-Interesting Findings-October 2010**  
**The Influence of Watershed Characteristics on Nitrogen Export to and Marine Fate in Hood Canal, Washington, USA,** Peter D. Steinberg, Michael T. Brett, J. Scott Bechtold, Jeffrey E. Richey, Lauren M. Porensky, Suzanne N. Smith, October 21, 2010

[http://www.caseinlet.org/uploads/Steinberg\\_et\\_al.\\_2011.pdf](http://www.caseinlet.org/uploads/Steinberg_et_al._2011.pdf)

“Hood Canal, Washington, USA, is a poorly ventilated fjord-like sub-basin of Puget Sound that commonly experiences hypoxia. This study examined the influence of watershed soils, vegetation, physical features, and population density on nitrogen (N) export to Hood Canal from 43 tributaries....Domestic wastewater discharges and red alders appear to be a very important N source for many streams, but a minor nutrient source for the estuary as a whole.”

**Section 2— Nitrogen Removal with Shellfish Harvest in Oakland Bay and Puget Sound  
Herrera Consulting, February 5, 2010**

[http://www.caseinlet.org/uploads/Herrera\\_Hammersley\\_Inlet\\_NitrogenCyclingReport.pdf](http://www.caseinlet.org/uploads/Herrera_Hammersley_Inlet_NitrogenCyclingReport.pdf)

“Shellfish harvest removes more of the nitrogen input to Oakland Bay than Puget Sound, but it removes no more than 1 percent of the dissolved nitrogen load in either location. In Oakland Bay, shellfish harvest was 5.0 percent of the load from terrestrial sources, excluding the marine nitrogen load. Shellfish harvest represents a larger proportion of dissolved nitrogen load to Oakland Bay than Puget Sound because the average depth is lower in Oakland Bay and, thus, the shellfish harvest rate per volume of water is greater in Oakland Bay.

In part, shellfish nitrogen removals appear small because marine nitrogen loads in both Puget Sound and Oakland Bay are relatively high. Waters outside of the Strait of Juan de Fuca exhibit a strong correlation between salinity and nitrate concentrations, i.e., the nitrate concentration increases with depth. Upwelling of these deep waters off the Strait of Juan de Fuca is the largest nitrogen source to Puget Sound (Mackas and Harrison 1997). Within Puget Sound, areas having relatively uniform salinities with depth experience vertical mixing and overturning circulation that contributes additional nitrogen loads to surface waters.

Importantly, this set of calculations does not include shellfish impacts on water quality, other than through harvest. For example, shellfish may reduce the release of ammonium resulting from sediment diagenetic processes and also favor the conversion of ammonium to nitrate, an essential step before denitrification (Cercio and Noel 2005). These difficult-to-quantify higher order water quality effects are neglected in looking only at nitrogen removal through harvest. A deterministic shellfish and water quality modeling study in the northern Adriatic Sea found nitrogen loss to sediment processes could be a flux twice as large a nitrogen removal from harvest (Brigolin et al. 2009). If this pattern were realized in Puget Sound, the combined nitrogen removal due to aquaculture and harvest would be closer to 3 percent of the total input nitrogen load.”

The following study is important to review along with the Herrera comments provided above:

**Ecosystem Influences of Natural and Cultivated Populations of Suspension-Feeding Bivalve Molluscs—A review, Dr. Roger Newell, 2004**

<http://www.hpl.umces.edu/faculty/newell/ecobivalve2.pdf>

“Environmental conditions at bivalve aquaculture sites should be carefully monitored, however, because biodeposition at very high bivalve densities may be so intense that the resulting microbial respiration reduces the oxygen content of the surrounding sediments. Reductions in sediment oxygen content can inhibit coupled nitrification-denitrification, cause

P to become unbound and released to the water column, and the resulting buildup of H<sub>2</sub>S can be toxic to the benthos.” Abstract

### **Section 3—Mussel Rafts—Examination of Data Regarding Removal of Nitrogen**

Taylor Shellfish has proposed additional 48-58 rafts with mussels on grow out lines that would be placed in water depths of 15-70 ft MLLW in 16+ acres of public waters.

The Taylor Shellfish Mussel Raft Environmental Impact Statement included numerous studies. While there is a great deal of information presented on the issue of nitrogen, these studies show the nitrogen removal number varies widely, there are various factors that change the net nitrogen removal statistic, some of the data is based on a Hood Canal study that is a different water body and the discharge of nitrogen back into the inlets from the shellfish waste handled upland is not included in the analysis. What is important from all of these reports, is that Newfield's and Rensel's numbers are not correct nor are they inclusive of all nitrogen inputs into Totten Inlet.

The data from these studies was presented at the Taylor Totten Inlet Mussel Raft hearing before the Thurston County Hearing Examiner in February 2012. According to the APHETI Closing Brief: “When asked whether the (nitrogen) reduction would have a significant difference on the health of Totten Inlet, Mr. Rensel (Taylor's scientist) responded squarely: "not measurably." This information is contained in the following APHETI closing brief: <http://www.co.thurston.wa.us/permitting/devactivity/totten/hearing/APHETI.closing.argument.pdf>

In later testimony, Rensel then reversed his statement and said it would be meaningful, but also said it would not be useful because it did not include marine water sources. Example:

### **An Assessment of Potential Water Column Impacts on Mussel Raft Culture in Totten Inlet, Newfields, November 2009**

<http://www.co.thurston.wa.us/permitting/devactivity/totten/eis-report/Final%20Technical%20Reports/9-NewFields-2009-AssessmtOfPotentialWaterColumnImpacts.pdf>

*The amount of nitrogen removed by harvest is estimated to be 4,549 kg N/yr, based on the total estimated harvest of 399,074 kg whole body wet weight and a total nitrogen content of 1.14% (includes both soft tissue and nitrogen sequestered in the shell; Haamer 1996). Page 43*

Since low dissolved oxygen is a serious threat to fish populations in Puget Sound, the following low dissolved oxygen impact of mussel rafts should be noted: “Our review of existing data and application of predictive modeling indicates that although DO may be significantly reduced within the raft, it will generally remain above the biological stress concentration of 5.0 mg/L. At periods of low ambient DO (late August and early September), dissolved oxygen concentrations below 5.0 mg/L would be expected to persist some distance downstream from the raft edge. However, once the water exits the raft, it will likely recover to ambient DO concentrations within 70 m to 200 m, due to entrainment of surrounding waters and from increased turbulence arising from the presence of the raft structure. Page 90



Mussel Raft Example: In order to raise the level of nitrogen removal to a significant level (say >5%, or 114 tons), an additional 67 tons of nitrogen would have to be harvested. This is an additional 6,700 tons of shellfish. If each mussel raft produces 20,000 pounds, it would require an additional 670 rafts to be added to Puget Sound inlets.

### **Section 5—Shellfish Industry Scientist Washington State Legislative Testimony**

Jonathan Davis testified January 18, 2012 before the Senate Environment Committee on a proposal to implement a Nitrogen “cap and trade” program and stated a “general figure of around 1%” of the harvested weight would be how much Nitrogen could be used to determine how much Nitrogen would be removed.

#### **Summary**

At this time, nitrogen reduction claims by the shellfish aquaculture industry relevant to Washington State are not supported by scientific evidence. Further research is needed to determine whether a “nitrogen credit” program is viable. It should also be pointed out that the wild geoducks are not replanted so their nitrogen removal component is removed from the system.

There are proven ways other than adding millions of shellfish to reduce nitrogen without negatively impacting public fisheries resources. Improvements in reducing nitrogen sources from fertilizers and septic systems in addition to re-forestation along the shoreline with native firs should be encouraged for the overall health of our Washington waters.

The following information provides an opportunity to use published data to provide a general example of the increased tons of shellfish it would take to make a minimal change in Nitrogen without taking into consideration the other factors and impacts:

#### South Sound Dissolved Oxygen Study Data—Page 3

(It is important to note that the following figures do not include deep sea upwelling; benthic flux. It is also not clear whether on-site septic systems along the shorelines are included.)

DIN load from rivers: 6,000 pounds per day

DIN load from WWTP: 6,500 pound per day

Total from rivers/wwtp: 12,500 pounds per day

River and Waste Water Treatment Plant Annual DIN: 2,281 Tons DIN/yr

(12,500\*365/2000)

2% = 45 Tons DIN

In order to remove this 2% DIN figure (45T) you would need to harvest 4,500 tons of shellfish (assumes 1% nitrogen).

2008 South Puget Sound WDFW--Shellfish harvest records of oysters, clams, and mussels south of Tacoma: 3,970 tons

Wild geoduck: 750 tons (assumes 1/2 of estimated 3 million pounds are from SPS)

Total reported: 4,720 Tons of shellfish harvested

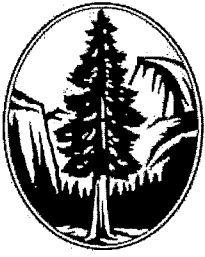
Nitrogen removed: 47 Tons/N = 2% (Example does not include all factors or impacts)

**Ecosystem influence of natural and cultivated populations of suspension-feeding bivalve mollusks: a review— <http://www.hpl.umces.edu/faculty/newell/ecobivalve2.pdf>**

According to this study by Roger Newell of Horne Point Laboratories in Chesapeake Bay, unnaturally high densities of bivalves can become toxic to the benthos:

“Environmental conditions at bivalve aquaculture sites should be carefully monitored, however, bivalve biodeposition at very high bivalve densities may be so intense that the resulting microbial respiration reduced the oxygen content of the surrounding sediments. Reduction in sediment oxygen content can inhibit coupled nitrification-denitrification, cause P to become unbound and release to the water column, and the resulting buildup of H<sub>2</sub>S can be toxic to the benthos.”

. May 15, 2012



**SIERRA  
CLUB**  
FOUNDED 1892

## Washington State Chapter

180 Nickerson St, Ste 202

Seattle, WA 98109

Phone: (206) 378-0114

Fax: (206) 378-0034

[www.cascade.sierraclub.org](http://www.cascade.sierraclub.org)

## Shellfish Industry Plans to Eradicate Japonica Eelgrass in Washington Also Threatens Native Eelgrass

Both Native eelgrass (*Zostera marina*) and Japanese eelgrass (*Zostera japonica*) have been considered important fish habitat by scientists and protected by the Washington Department of Fish and Wildlife. On March 11, 2011, the protection for Japonica eelgrass was deleted by the Department of Fish and Wildlife, at the request of Rep. Brian Blake, Chairman of the House Natural Resources Committee on behalf of the shellfish industry.

Link: Letter from Fish and Wildlife to Rep Blake

<http://www.caseinlet.org/uploads/Blake2.8.11Zosterajaponica.pdf>

### History

The shellfish industry decided that Japonica eelgrass should be eradicated in Willapa Bay and Puget Sound because "In general, (Kim) Patten said that it appears there is more oyster growth without japonica present and that the presence of the grass may inhibit softshell production by 44 percent" (Chinook Observer).

At the request of the shellfish industry, The State Noxious Weed Board listed japonica as a Class C Noxious weed in November 2011. Now industry is trying to obtain approval to eradicate japonica in Willapa Bay and Puget Sound by applying the herbicide imazamox and the chemicals imazapyr, imazapic and glyphosate have also been mentioned. In addition to destroying habitat for birds and fish, interested parties should be concerned about the impact of herbicides being applied in marine waters and the threat to adjacent native eelgrass.

For more information on the industry plan to eliminate both aquatic animals and eelgrass, see the following link (list of animals page 27, eelgrass pages 48-51):

"Integrated Pest Management Plan for Bivalves in Oregon and Washington"

<http://washington.sierraclub.org/tatoosh/Aquaculture/OR-WAbivalvePMSP.pdf>

"Weeds-Algae, Grasses, Japanese Eelgrass, Native Eelgrass" Paage 27

### Science Studies

**1. Expansion of seagrass habitat by the exotic *Zostera japonica*, and its use by dabbling ducks and brant in Boundary Bay, British Columbia,** John R. Baldwin, James R. Lovvorn, January 6, 1994

<http://www.int-res.com/articles/meps/103/m103p119.pdf>

"This introduced species provides an important feeding habitat for many migratory waterfowl."

Page 119

"Numerical densities of decapods, gammarid amphipods, cumaceans and a variety of other invertebrates are also higher in *Z. japonica* than on unvegetated flats (Dinnel et al 1986, Simenstad et

al 1988, authors' unpubl. data)." "These invertebrates are important foods of both fish and waterbirds in this region." Page 125

## 2. Padilla Bay

<http://www.padillabay.gov/researchselectedHannam.asp>

## 3. Distribtuon and potential effects of a non-native seagrass in Washington State

[http://www.dnr.wa.gov/Publications/aqr\\_zostera\\_study.pdf](http://www.dnr.wa.gov/Publications/aqr_zostera_study.pdf)

According to scientists, this is an important issue that agencies and environmental groups should weigh in on. Eelgrass, including *Zostera japonica*, has been considered a critical habitat and resource. Spraying these herbicides in the intertidal area could also eradicate native species (*Z. marina*) as the two eelgrass species do inter-mix across the tideflats. Native eelgrass is critical for all our anadromous salmon species, all our marine forage fish and many rockfish species, and for a functioning Puget Sound ecosystem.

According to Anne Shaffer, a former WDF&W biologist, "Z. japonica has no negative impact to environment or other species and provides more caloric resource-both from the plant itself and invertebrates that colonize it--to fish and wildlife than the native eelgrass species. There is NO reason to remove it."

Using the argument that japonica should be eradicated because it is non-native when the shellfish industry is expanding non-native Manila clams and Pacific oysters must be carefully examined using a transparent process.

### Documentation for Review

1. The following summary from LookChem, completely contradicts the information in the Ecology Freshwater EIS and industry information:

<http://www.pesticide.org/get-the-facts/pesticide-factsheets/factsheets/imazapic>

#### 16. OTHER INFORMATION-Imazamox

[http://www.lookchem.com/msds/2011-06%2f1%2f34227\(114311-32-9\).pdf](http://www.lookchem.com/msds/2011-06%2f1%2f34227(114311-32-9).pdf)

Text of H-code(s) and R-phrase(s) mentioned in Section 3

Aquatic Acute

Aquatic Chronic

H410

N

R50/53

Acute aquatic toxicity

Chronic aquatic toxicity

Very toxic to aquatic life with long lasting effects.

Dangerous for the environment

Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

## 2. Imidazolinone Herbicide Family-Fact Sheet-Chemical Family Impacts

<http://www.pesticide.org/get-the-facts/pesticide-factsheets/factsheets/imazapic>

"Imazapic is in the imidazolinone herbicide family, "some of the most potent herbicides on the market." Imidazolinone herbicides have the same mode of action as another potent herbicide family, the sulfonylureas.

### 3. Shellfish Industry Slideshow-Kim Patten

<http://longbeach.wsu.edu/spartina/documents/pcsogaeelgrasstalk2008.pdf>

"Control Options--Chemical-no data, marine registrations problematic, potential impacts to native eelgrass"

### 4. Ecology Freshwater EIS-for Penorsulam, **Imazamox**, Bispyribac-sodium, Flumioxazin, & Carfentrazone-ethyl

[http://www.ecy.wa.gov/programs/wq/pesticides/final\\_pesticide\\_permits/noxious/docs/eis100511.pdf](http://www.ecy.wa.gov/programs/wq/pesticides/final_pesticide_permits/noxious/docs/eis100511.pdf)

"Ecology currently does not have resources to develop independent risk assessments for new active ingredients for aquatic use in Washington. Therefore, it intends to rely on the Environmental Protection Agency (EPA) risk assessment evaluations of new aquatic pesticide products and any other risk assessments (e.g., Canadian, European, New York State, etc.) and information sources that may be available for these active ingredients when writing this SEIS." page vii

#### Non-target plants

"Although imazamox applied as an in-lake application to control submersed or floating leaved vegetation could potentially have an impact on native emergent wetland communities, Ecology considers this unlikely. Emergent plant species are not particularly susceptible to water column treatments. Elevated concentrations of imazamox should not persist in well-lighted and aerobic shorelines. However, improperly applied foliar applications could impact non-targeted emergent plants. Applicators are required to follow all label and water quality permit conditions that reduce non-target impacts." Page 34

"Because of possible sub-lethal impacts to juvenile salmon, Ecology imposed timing restrictions on the use of some chemicals. However, because of low fish toxicities and low use rates of imazamox, Ecology does not plan to require timing windows for fish (salmon, bull trout, or steelhead) in its water quality permits for the use of imazamox." Page 37

"Perhaps the most serious environmental impact from the use of imazamox could occur to rare floating or submersed plant species." Page 37

**For more information on the importance of eelgrass and kelp in Puget Sound**, the following links have been included for your convenience:

#### Kelp and Eelgrass in Puget Sound

[http://www.pugetsoundnearshore.org/technical\\_papers/kelp.pdf](http://www.pugetsoundnearshore.org/technical_papers/kelp.pdf)

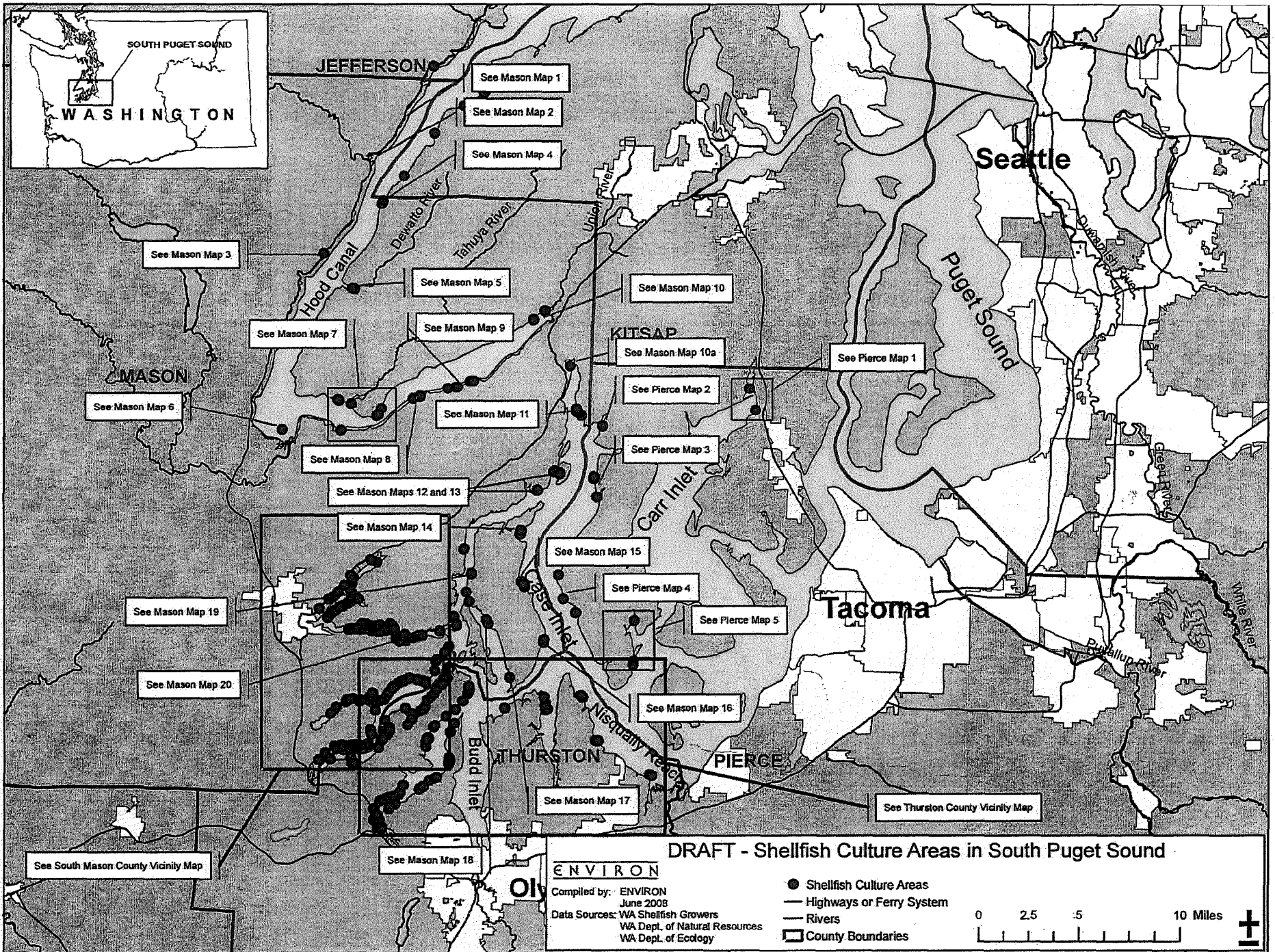
#### The Role of Seagrasses and Kelps in Marine Fish Support

<http://el.erdc.usace.army.mil/elpubs/pdf/tnwrap06-1.pdf>

#### Eelgrass Conservation for the B C Coast (Includes the Pacific Northwest)

<http://www.stewardshipcentre.bc.ca/static/eelgrass/discussionpaper.pdf>

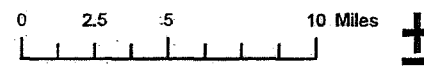
Revised December 4, 2011



**DRAFT - Shellfish Culture Areas in South Puget Sound**

**ENVIRON**  
 Compiled by: ENVIRON  
 June 2008  
 Data Sources: WA Shellfish Growers  
 WA Dept. of Natural Resources  
 WA Dept. of Ecology

- Shellfish Culture Areas
- Highways or Ferry System
- - - Rivers
- ▭ County Boundaries



See South Mason County Vicinity Map

See Mason Map 18

See Mason Map 17

See Thurston County Vicinity Map

See Mason Map 16

See Pierce Map 5

See Pierce Map 4

See Mason Map 15

See Mason Map 14

See Mason Maps 12 and 13

See Mason Map 8

See Mason Map 11

See Pierce Map 3

See Pierce Map 2

See Mason Map 10a

See Mason Map 10

See Mason Map 9

See Mason Map 5

See Mason Map 3

See Mason Map 4

See Mason Map 2

See Mason Map 1

**Towslee, Molly**

---

**From:** Katich, Peter  
**Sent:** Monday, June 11, 2012 3:53 PM  
**To:** Towslee, Molly  
**Cc:** Dolan, Tom  
**Subject:** FW: Shellfish Development at Burley Lagoon

Hi Molly: here's another comment on the draft smp. Please include it in the council's materials for the public hearing tonight. Thanks. Pete

---

**From:** [artman1951@comcast.net](mailto:artman1951@comcast.net) [<mailto:artman1951@comcast.net>]  
**Sent:** Monday, June 11, 2012 3:31 PM  
**To:** Katich, Peter  
**Subject:** Shellfish Development at Burley Lagoon

Dear Mr. Peter Katich:

My family has owned beachfront property on Burley Lagoon for over 50 years and we are concerned about the expansion of geoduck farming in the lagoon. We are against expanding the business beyond what has existed for decades. My sister, Heather, lives in the family home and doesn't recall getting any notices about public hearings regarding changes in the use of Burley Lagoon. I live in Seattle, but keep up with Gig Harbor events.

Yes, this something the shellfish industry has been working on for years. As more information has become public, my sister has taken an active role in learning more about the NW shellfish industry and Taylor Shellfish in particular. What we have learned from the public records, news reports and other shoreline property owners is disturbing.

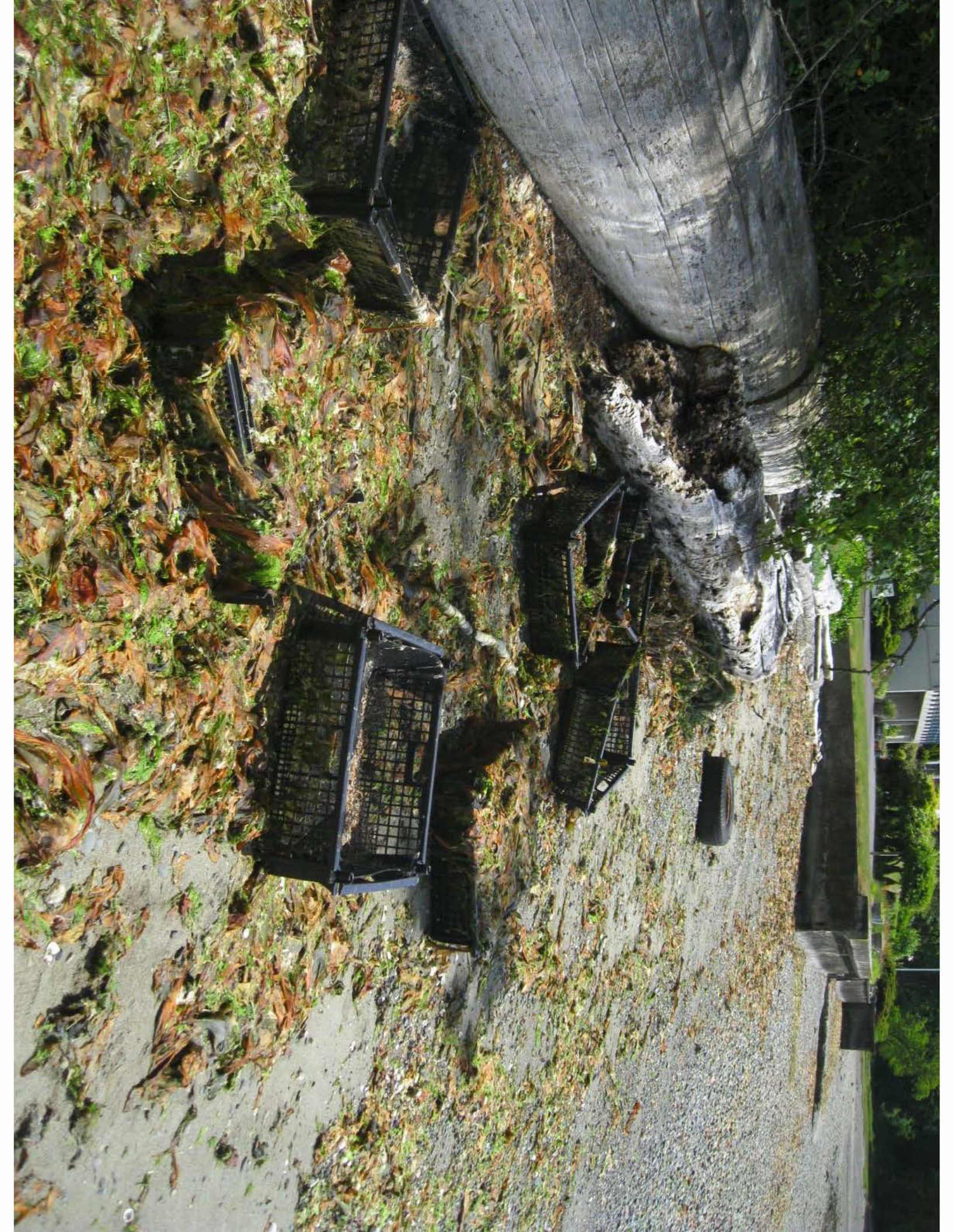
Most of the people near Burley Lagoon and the surrounding area chose to live there for the rural atmosphere and natural beauty. Seeing how commercial aquaculture operations changed the natural character of Totten Inlet, Case Inlet and other local bays – we do not want the industrialization of Purdy and Burley lagoon. There is no benefit to the surrounding community of Pierce County residents.

In short, why do we need to ruin Puget Sound to satisfy the Asian seafood market?

Thank you,

James McFarlane  
6017 1st Avenue NW  
Seattle, WA 98107  
Email: [artman1951@comcast.net](mailto:artman1951@comcast.net)  
Home: 206.782.0522  
Mobile: 206.778.3782  
Portfolio: <http://www.jamesmcfarlane.com>







COMMENTS FOR THE SHORELINE MASTER PROGRAM UPDATE, JUNE 11, 2012

Gig Harbor City Council

Civic Center – 5:30pm

The Burley Lagoon waterfront/water view property owners pay over \$520,000. Per year in property taxes. According to the Pierce County Assessor's website, the ten major parcels of tidelands were taxed as "agricultural/farming" at less than \$1000. for all ten combined. There is something wrong with those numbers, especially ~~when~~ <sup>with</sup> proposed regulations appear to favor the major expansion to industrial size aquaculture in our fragile Lagoon.

On March 29, Taylor Shellfish reps, Mr. Dewey and Ms. Cooper announced that Taylor was taking a 20 year lease to manage the Lagoon shellfish operations. The first order of business was to clean up the area. The following Sunday morning, at 6:00am, the huge lift barge came into the lagoon and offloaded many large oyster cages parallel to the Purdy Spit. Those cages were later filled and removed, and also used to reset oysters elsewhere in the Lagoon. We knew ~~there would be~~ <sup>expected</sup> changes, but we didn't anticipate a 6:00am or earlier start of the business day. Western Oyster's practices were more benign and we lived in harmony with them for 50 plus years. Taylor shellfish added geoducks and mussel rafts to their shellfish license for the Lagoon, but neither geoducks nor mussel rafts have been approved.

*applicant*

That brings us to the changes highlighted ~~That brings us to the changes highlighted~~ in Chapter 7: Shoreline Use and Modification – Policies and Regulations and the subset of Permitted Use Tables.

Burley Lagoon falls under the "Urban Conservancy" category. We disagree with categorizing Burley Lagoon as "Marine Deepwater," and question how a hydrologist made that decision.

The Lagoon is a fragile, shallow inlet, not a deep water harbor like Gig Harbor. That designation clearly favors the shellfish industry's uses outlined on pages 7-7 and 7-8. We do not want "floating culture mussel rafts in Burley Lagoon. They collect all manner of marine organisms and stink unless or until they are hosed. The debris then sinks to the mud layer beneath the rafts. How can ~~correlate~~ <sup>correlate</sup> with the oft-repeated statement that shellfish farming "cleans the water."

*that*

Chapter 7, Page 7-13: Panel on Recreation: In the Urban Conservancy - we don't understand "only low intensity, passive uses."????!!! The Lagoon is subject to the Public Trust Doctrine which allows us unrestricted access to the public waters over the tidelands.

We recognize that shellfish farming will add some distractions and ~~flots~~<sup>bump</sup> over working areas. That is not a problem, but it is a problem if the growers plan to totally eliminate our traditional use of those navigable waters. We have at least 80 watercraft including skidoos, canoes, kayaks, ski boats, paddle boards, small sailboats, one lovely outboard "surrey with a fringe on top" and numerous rowboats. None of ~~these~~<sup>our</sup> tax paying citizens should be prohibited from using any of these watercraft. The children grow up learning the rules of the road, safety on the water, respect for marine life and all human activity. It is an important aspect in young persons lives, especially with less savory temptations in other venues.

In addition to ~~children~~<sup>the</sup>, we are a Critical habitat for many wildlife species. ~~The~~<sup>although</sup> bald eagle was removed from the "endangered" list to "Sensitive," ~~if~~<sup>if</sup> major changes occur in their ~~environment~~<sup>habitat</sup> they can once again become endangered. Attached is a photo of an immature bald eagle that was caught in predator nets on a geoduck farm in the South Sound. Local outboard enthusiasts used a towel to cover the bird's head so they could release it from the predator netting. *That is a major reason we don't want a huge geoduck farm on Burley Lagoon. Taylor Shellfish has leased 300 acres of tidelands. If only 50 acres were put into geoduck farming, it could result in the installation of over 2 million pvc tubes into the mud.*

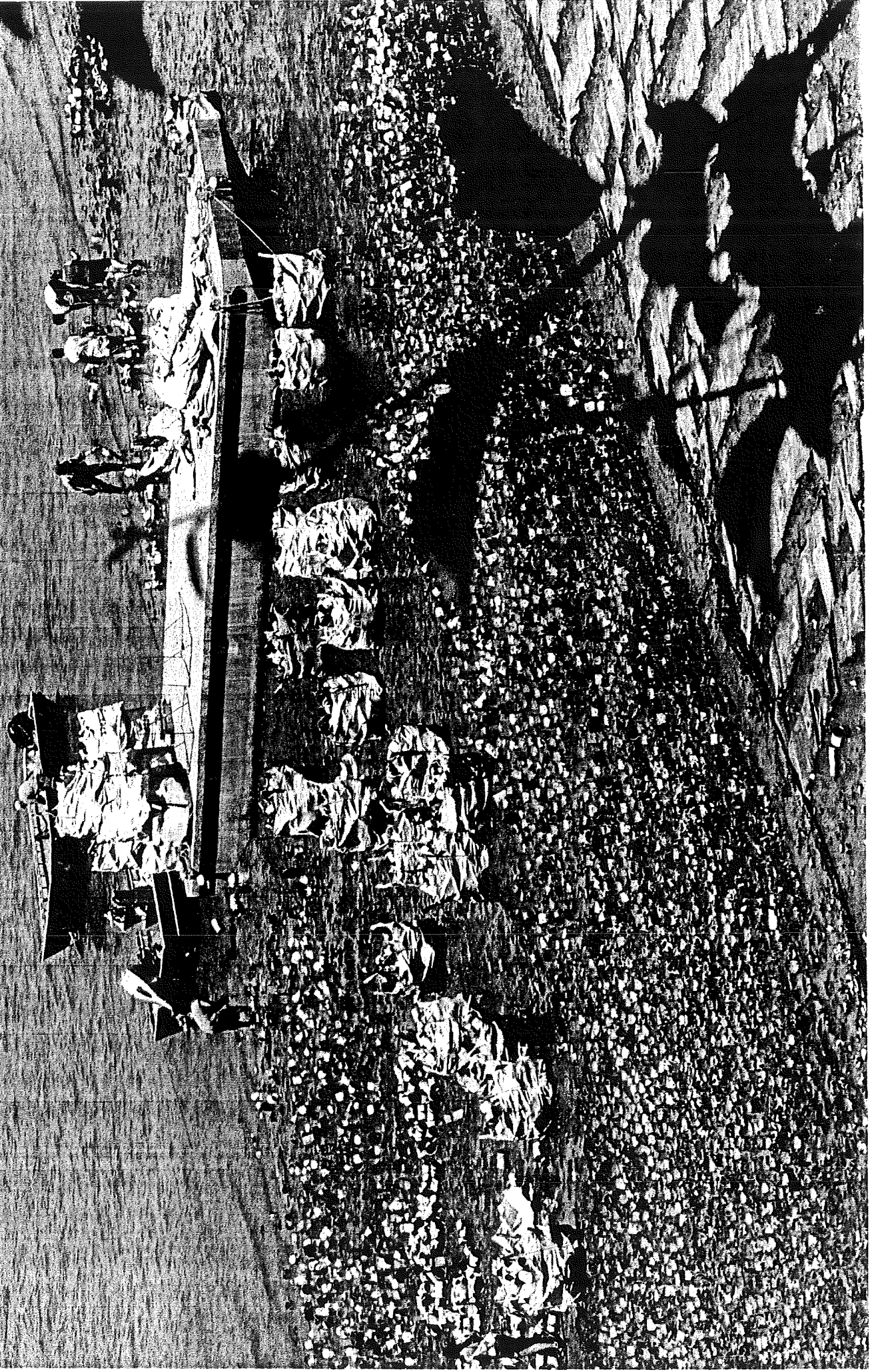
~~Proposed~~ New Title 18S: Another major issue is the proposal to establish what can only be termed a "Planning Tsar" to be the sole decision maker on Substantial Development Permits. That is putting too much power in the hands of one individual who oversees an already depleted department. It may appear to save money at the front end of the process, but I can foresee lawsuits over decisions costing the County a lot more money, not to mention the extra staff work that would be required to meet the demands of Court ~~Cases~~<sup>Challenges</sup>. It also goes against the concept of open or transparent government. Allowing written comments is not the same as public confrontation on issues.

Our Friends of Burley Lagoon will continue to engage in this process and follow to completion. <sup>it</sup><sub>1</sub>

Thank you.

*Arzooker McFarlane*  
6/11/2012

*Toteco Inlet*







Exhausted eagle after being freed from geoduck predator exclusion nets, Harstine Island

*Immature*

**"There is no science to support the case that geoduck farming is harmful to the environment"**

**Jim Gibbons of Seattle Shellfish Company**

*(See US Fish & Wildlife "Incidental Take Permit,"*

*The Bald Eagle as symbol of what is wrong with expanded geoduck farms.*





**Mussel rafts at Gallagher Cove, Totten Inlet.**

*Inappropriate Structures for Bunkey Lagoon*

*2012*

**Brad Newell**

---

**From:** "Costello, Kris (DFW)" <Kris.Costello@dfw.wa.gov>  
**To:** "Brad Newell" <bsnewell@msn.com>  
**Sent:** Monday, September 26, 2011 2:08 PM  
**Subject:** RE: Totten Inlet surveys

Hi Brad,

I am sorry for the long delay on getting back to you but I have been in the field work the Salmon crew. I have looked at the map & we do a survey for herring spawn in that area but not a lot has been found. We will keep on doing surveys to check on the herring. See you soon.

**Kris Costello**  
**Shellfish Technician**  
**Marine Resources**  
**Region 4**

---

**From:** Brad Newell [mailto:bsnewell@msn.com]  
**Sent:** Friday, August 19, 2011 7:13 AM  
**To:** Costello, Kris (DFW)  
**Subject:** Totten Inlet surveys

Hi again Kris,

Does DFW take herring surveys in Totten Inlet?

Thank you, Brad Newell

----- Original Message -----

**From:** [Costello, Kris \(DFW\)](#)  
**To:** [Brad Newell](#)  
**Sent:** Monday, August 15, 2011 9:43 AM

Hi Brad,

Well I have some numbers for you regarding Henderson Bay herring spawn. After running the numbers this year was one of our best. I am going to give you a couple of years numbers so you can see how the tons differ each year. The first year is 2008 with 496 tons, 2009 125 tons, 2010 500 tons and in 2011 we had 711 tons of spawn. The reason why so much spawn this year is because the area that the herring spawned was much bigger.

I hope this helps you out and hope to see you next herring spawn season.

**Kris Costello**  
**Shellfish Technician**  
**Marine Resources**  
**Region 4**

**Brad Newell**

---

**From:** "Brad Newell" <bsnewell@msn.com>  
**To:** "Stick, Kurt C (DFW)" <Kurt.Stick@dfw.wa.gov>  
**Sent:** Monday, November 07, 2011 12:54 PM  
**Subject:** Re: herring spawn documentation

Hi Kurt,

You had asked if I was interested in potential aquaculture activity at this location. Would it be possible to transpose onto the herring spawn doc, the location of pending aquaculture site with a parcel#0122233064?

Thanks Kurt, Brad Newell 253 209 0196

----- Original Message -----

**From:** [Stick, Kurt C \(DFW\)](mailto:Stick, Kurt C (DFW))  
**To:** [Brad Newell](mailto:Brad Newell)  
**Cc:** [Lindquist, Adam P \(DFW\)](mailto:Lindquist, Adam P (DFW))  
**Sent:** Monday, October 31, 2011 3:23 PM  
**Subject:** RE: herring spawn documentation

Brad, please see attached image which shows our documented herring spawning grounds (in grey) and location of all sampling stations where eel grass was observed (green dots) on herring spawn deposition surveys using a substrate rake attached to a line. Note: because sampling depth is recorded as a minimum and maximum, and the sample waypoint is typically at the start of the sample transect, the actual location of observed vegetation could be anywhere within the sample range.

Thanks, Kurt.

Kurt Stick - Fish & Wildlife Biologist  
Washington Department of Fish and Wildlife  
P.O. Box 1100  
La Conner, WA 98257-9612  
(360) 466-4345 Ext. 243  
[Kurt.Stick@dfw.wa.gov](mailto:Kurt.Stick@dfw.wa.gov)

---

**From:** Brad Newell [<mailto:bsnewell@msn.com>]  
**Sent:** Saturday, October 29, 2011 12:34 PM  
**To:** Stick, Kurt C (DFW)  
**Subject:** herring spawn documentation

Hi Kurt,

Thank you for taking the time to speak with me last week and for the link to the dfw website.

Yes, I am interested in potential aquaculture sites in Henderson Bay. I would also be interested in obtaining anything relating to eelgrass delineation and any documentation of the herring spawn activity that you could provide.

Thanks again, Brad Newell



June 11, 2012

Robert G. Frisbie  
9720 Woodworth Avenue  
Gig Harbor, WA 98332  
Phone: 253.224.3524  
Email: [bobfrisbie@foxinternet.com](mailto:bobfrisbie@foxinternet.com)

Mayor and Gig Harbor City Council  
City of Gig Harbor  
3510 Grandview Street  
Gig Harbor, WA 98335

Subject: Shoreline Master Program (SMP) Update Comments

In addition to this letter, please add my sixty-five (65) page DNS appeal documents to my comments.

**General Comments:**

1. Many additions and changes have been made to this Draft SMP based on Technical or White Papers provided by the State of Washington. Many of these papers are generic in content and as a result contain recommendations that are not germane to Gig Harbor's proposed SMP.
  - Recommendation: Specifically reference the document name, chapter and verse that is being used to substantiate the additional and/or change. This will allow all of us using the SMP in the future to test these Technical/White Paper statements against current papers to see if they apply any longer.
2. Over the last 30 months I have submitted to the Staff, Planning Commission and WSDOE several items that no one has questioned or refuted. Therefore at this time I would like the Council to recognize the following as fact or provide alternate statistics or information:
  - a. A minimum of 66% of the shorelines of the State of Washington are in the hands/ownership of single family residents.
  - b. The current salmon run records show that for the 10 year period from 1999 to 2008 the salmon harvest numbers were 168% of the previously recorded high for the period of 1914 to 1923. Additionally, the salmon harvest numbers for the 20 year period of 1989 to 2008 were 149% of the previously recorded high for the period of 1914 to 1923.
  - c. Soft armoring has caused the tax papers of the State of Washington and Pierce County in particular to pay for the Narrows park soft armoring project three times. Once for the initial hard armoring, a second time by the Narrows Bridge contractor to go to soft armoring and a third time by the Pierce County Parks Department to



reconstruct the work by the Narrow Bridge contractor because it failed in a typical South Puget Sound Storm.

**Recommended Changes:**

1. Delete the requirements to go to soft armoring.
  - a. Reason 1: Soft armoring isn't sufficient in typical Sound Puget Sound storms to protect the upland property.
  - b. Reason 2: My property at 3521 Harborview would lose a minimum of 6% (2:1 slope) of the dry land and a probable 12% (4:1) of dry land due to this requirement.
  - c. Reason 3: The size of the fish runs cited above do not justify going to soft armoring.
  - d. Reason 4: Technical Paper 2007-04 says that soft armoring will offset the global sea level rise. Refer to pages 3, 4 and 5 of 65 of my DNS appeal. This Technical Paper is too subjective to be used to justify soft armoring. .
  - e. Reason 5: The City of Gig Harbor did not recognize that Soft Armoring was necessary within Gig Harbor Bay when they designed and constructed the Maritime Pier at the foot of Soundview Drive.
2. Do not approve the use of over water Net Sheds being used for residential uses.
  - a. Reason 1: NOAA's technical paper clearly predicts an 11.48 high wave entering Gig Harbor Bay. This clearly presents a health and safety hazard so why put these people in harm's way?
  - b. Reason 2: The City earthquake requirements are outlined under the IBC. This wave is the direct result of an earthquake and therefore the City needs to avoid placing individuals in harm's way.
3. The SMP needs to clearly state that the City will pay individual property owners for Public Access. Refer to pages 6 through 9 of 65 of my DNS appeal for additional details.
4. The DRAFT SMP calls for improvements to be setback from the OHWM. This is a change from the current SMP which allows zero setback. Recommendation, continue with the zero setback requirement if the property owner owns the abutting Tidelands. Refer to pages 9 and 10 of 65 in my DNS appeal letter for additional information.
  - a. Reason 1: Takes away from usable property for no benefit. IF the Council sees fit to consider this provision, then I ask for a simple cost benefit table/comparison to be prepared and presented.
  - b. Reason 2: Over the last +/- 10 years, the Council has increased the housing density throughout the City. Applying this setback only to waterfront property owners is inconsistent with this City wide density increase.

5. The DRAFT SMP calls for limits on the maximum impervious lot coverage. I recommend not limiting this so long as the property owner handles their own storm water run off.

6. The DRAFT SMP calls for the installation of sanitary pump out facilities. I believe the City should provide these facilities at their sole cost.

Reason 1: No technical review and supporting waste load calculations showing the need to supersede Coast Guard regulations for a boat's waste water treatment and holding tank requirements have been presented.

- i. Identify the associated capital costs, connection charge, monthly cost and yearly maintenance cost for a pump out system. I believe the capital cost of such a system for my marina is approximately \$100,000 with connection charges.
- ii. Assuming "i" above is really, really small if at all measurable, then set a marina size threshold whereby the marina would not be required to install such a facility. Otherwise, as a small business, the overhead cost of running the business will out way the income.
- iii. The City recognized the cost of a business providing restroom facilities to the general public walking the sidewalks fronting Gig Harbor as being cost prohibitive +30 years ago. Since that time, the City has constructed and maintains today a minimum of 5 restroom facilities for the public. I ask that the City continue to provide and maintain a wastewater pump station at their sole cost, versus my marina having to construct and maintain a duplicate system just as the City relieved the individual store, business and restaurant owners of this obligation for people walking the Gig Harbor waterfront.
- iv. Refer to Exhibit "G" and Table 7 for Gig Harbor. Update the category listing for Gig Harbor considering: 1) The outfall is operational outside the Harbor, 2) The estimated waste load from the septic tank drain fields on the County side of the Harbor, 3) The estimated waste load for the Canadian Geese and other water fowl, 4) The estimated waste load for livestock/wild animals and/or pets 5) The estimated waste load from the boats visiting Gig Harbor not tied to permanent moorage, 6) The estimated waste load from the boats tied to permanent moorage in Gig Harbor and 7) The estimated waste load from commercial fishing vessels moored in Gig Harbor.

**Conclusion: Once all of the above data is collected, provide a Table in the Checklist detailing the data in rank order form. In this way, we will all know how to write the final regulations. Refer to Exhibit "J" page 2 of 2. Bacteria sources were studied on three (3) rivers in the Washington DC area. The average results from these three studies were as follows: Pets = 17.8%, Livestock = 6.7%, Humans = 20.6% and Wildlife = 54.9%. Wildlife included: Geese,**

**deer, raccoons and muskrats. Point → Available technical data would indicate that the City's wastewater pump out station at the City dock will provide the necessary service for Gig Harbor Bay.**

2. Regulations for Commercial Fishing Moorage, 7.11.11.

a. Relief Sought:

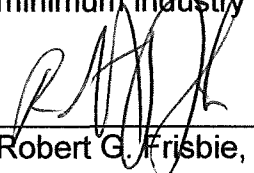
i. Why is this industry not required to provide pump out stations? Provide a technical review and supporting waste load calculations showing their waste load to Gig Harbor.

ii. Why is this industry not required to provide Public Access? The Checklist needs to identify the benefit for this exemption.

b. Recommendation: Continue to provide the fisherman the parking exemption because many of the properties used by them have no physical area for parking. But.....apply all other requirements to them which include but are not limited to: Public Access, Sanitary Sewer Pump Out Stations, armoring etc. etc.

Answering all of the above issues should be accomplished very quickly since there are supposed to be Technical or White Papers to support each issue.

If answers to the above issues are not quickly forthcoming, then I would suggest the Council look very carefully at whether or not the "White/Technical" papers really meet minimum industry standards or.....are just papers based on someone's wish list.



Robert G. Frisbie, P.E.