

Response to 2011 Public Comments  
*Draft Remedial Investigation and  
Draft Feasibility Study for the Former Lease  
Area and for the Pope & Talbot Sawmill Site*  
*now known as the:*  
*Partial RI/FS for Port Gamble Bay*

A portion of the  
Port Gamble Bay and Mill Site

Puget Sound Initiative:  
*Reaching the goal of a healthy,  
Sustainable Puget Sound now and forever*

February 2013

*Focus*  
Puget Sound



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# Puget Sound Initiative

## Protecting and Restoring Puget Sound

The Puget Sound Initiative, established by Washington state, is a collaborative effort among local, tribal, state and federal governments, business, agricultural and environmental interests, and the public to restore and protect the Sound.

Contaminated sites along the shorelines are a leading source of pollution to the Sound. Ecology has accelerated its efforts to clean and restore these contaminated sites within identified priority bays. Within these bays, Ecology is cleaning up 50-60 sites within one-half mile of the Sound. Cleanup actions will help to reduce pollution and restore habitat and shorelines in Puget Sound, resulting in larger areas of usable shoreline habitat for fish, wildlife, and people.



**Puget Sound Initiative Priority Bays**

## Port Gamble Baywide Cleanup

Ecology is taking a baywide rather than site-specific approach to cleaning up numerous sites within a geographic area. At Port Gamble, local, state and federal agencies, local Native American tribes, businesses, and property owners are working to restore the waterfront – cleaning up several old industrial sites and restoring waterfront areas for fish, animals and people. This unique, baywide collaboration means more cleanups and restoration are happening faster. Important waterfront uses – parks, recreation, housing, fishing, cultural uses, and others – can thrive in a revitalized and healthy waterfront environment.

This Site has undergone a name change since the RI and FS Reports, the subject of this “Response to Comments”, were prepared and issued for public comment. The Site is now referred to as the *Port Gamble Bay and Mill Site*. While it has been described in different ways over the past few years, the boundaries have essentially remained the same. Reports prepared prior to 2012 have referred to this Site as two different Sites and still carry that reference. For example, the 2011 public review period released the Remedial Investigation and Feasibility Study reports for the “Pope & Talbot Sawmill Site”, and the “Port Gamble Leased Area”. These reports described the conditions at the Site and preferred remedial alternatives for the Bay and Mill areas. These two areas, and a third upland area that will address recently found dioxin contamination in soils at Port Gamble, make up the whole “Port

Gamble Bay and Mill Site”. The Bay area has been divided into five Sediment Management Areas (SMAs), based on the contamination and actions to be taken at each SMA, as shown in Figure 1 in the Explanatory Figures section. The final borders of the upland area are not yet defined. Scientific investigations in the upland area will help answer questions about the concentrations and distribution of contamination to be found there.

The following summary response to comments addresses the two previously separate areas, The Pope & Talbot, Inc. Sawmill Property and the Leased Area as shown in the Explanatory Figures section at this end of this document.

For more information on these sites visit: <https://fortress.wa.gov/ecy/gsp/Sitepage.aspx?csid=3444>

# Port Gamble Bay and Mill Site

## Site Background

The Port Gamble Bay and Mill Site was used for mill-related activities by Pope & Talbot, including the Sawmill property and the Leased Area. The Sawmill was used to manufacture forest products for 142 years from 1853 to 1995, while the leasing area was leased to Pope & Talbot by the Washington State Department of Natural Resources (DNR) from 1970 to 1995 and used for log transfer and rafting activities. This Site encompasses, in part, two major areas in the Bay.

### **Sawmill Property Area**

The Pope & Talbot, Inc. Sawmill property is located at the mouth of Port Gamble Bay, on the east end of NE View Drive, in Port Gamble, Kitsap County, WA. The site was used to manufacture forest products from 1853 to 1995. The mill was removed in 1997, yet the upper portion of the property was leased for log sorting, wood chipping, materials handling, and marine research. Operations on this property released pollutants, including petroleum hydrocarbons, carcinogenic polycyclic aromatic hydrocarbons (cPAHs), and metals. Some of these contaminants have been found in soil, groundwater, and sediments surrounding the mill. In addition to the chemicals released, wood waste impacts to the marine sediments have been found.

### **Leased Area**

The Leased Area is located at the southwest end of Port Gamble Bay and includes the central bay, portions of the eastern shoreline, and two portions along the southwest shoreline. This area was leased to Pope & Talbot, Inc. by DNR from 1970 to 1995. During that time, the log transfer and rafting activities conducted in Port Gamble deposited wood waste on the bed of Port Gamble Bay. Log rafting activities would have occurred prior to this time as well.

Ecology is investigating wood waste impacts from historical log handling operations throughout the Bay. When wood waste breaks down, it releases sulfide and ammonia, which are harmful to animals in the mud. Other chemicals that may accumulate in shellfish tissues are present in low concentrations throughout the Bay, and include arsenic, cadmium, cPAHs and dioxins/furans. In addition, wood waste can cause impacts to sediment by smothering aquatic habitat and animals, such as clams.

# Status and Proposed Cleanup

## Site Status

**2002 – 2005** Interim cleanup actions removed approximately 26,000 tons of soil through a Voluntary Cleanup Program action.

**2003** Pope Resources conducted dredging operations that removed 13,000 cubic yards of wood debris.

**November 6 – December 6, 2006** – A public comment period was held for the draft Interim Action Work Plan and State Environmental Policy Act (SEPA) determination of non-significance. This action was conducted by Ecology. The following interim action in **2007** was conducted by Ecology and resulted in approximately 17,000 cubic yards of wood debris being dredged from Sawmill Site.

**May 9 – June 9, 2008** A Public comment period was held for:

- Proposed Agreed Order (AO) and draft Public Participation Plan (PPP) for the portion of the site formerly known as the Pope & Talbot Sawmill Site. The Agreed Order required completion of a Remedial Investigation (RI) and a Feasibility Study (FS) work plan and RI and FS reports.
- Draft RI and FS Work Plans and draft Public Participation Plan for the portion of the site formerly known as the Leased Area Site. The work plans describe how existing reports and data will be reviewed to focus the investigation, as well as how new data will be collected during site sampling.

**December 2008 – 2011** – Data for the Remedial Investigation and Feasibility Studies was collected.

**February 28 – March 29, 2011** – A public comment period was held for the draft RI and draft FS for the portion of the site formerly known as the Pope & Talbot Sawmill Site, and the draft RI and FS for the portion of the site formerly known as the Leased Area Site. This Response to Comments is a summary response addresses comments received during this public comment period.

# Involving the Community in Cleanup

A significant milestone was reached with the issuance of the following documents at the Port Gamble Bay and Mill Site:

- **Draft Remedial Investigation - Sawmill Property**
- **Draft Feasibility Study - Sawmill Property**
- **Draft Remedial Investigation - Leased Area**
- **Draft Feasibility Study - Leased Area**

These draft documents were issued for public comment on February 28, 2011, and the public comment period ran through March 29, 2011. During the public comment period, Ecology provided the following public involvement materials and opportunities:

1. Mailed a fact sheet that described the site and the draft documents to all mailing addresses in the area and other interested parties.
2. Published a paid display ad in the *Kitsap Sun*, *The North Kitsap Herald* and the *Kingston Community News*.
3. Published a notice in the Toxics Cleanup Program Site Register.
4. Published a notice in the Ecology Public Involvement Calendar.
5. Posted draft documents on the Ecology website.
6. Provided copies of the documents through information repositories at Ecology's Headquarters Office and the Poulsbo Public Library.
7. Issued a press release on February 28, 2011.

This Summary Response to Public Comment provides information about the Port Gamble Bay and Mill Site and responds to public comments received during the public comment period. Ecology has reviewed all comments received on the draft documents. Based on these comments and further review by Ecology, the RI and FS documents for both the Sawmill Property and Leased Area have been updated and consolidated into a single document, the Port Gamble Bay and Mill Site Remedial Investigation and Feasibility Study.

# Comments and Responses

The comments received were reviewed and evaluated by the Ecology cleanup team. Comments were then categorized into groups based on who submitted the comment. The comments received below were in response to the draft Remedial Investigation (RI) and Feasibility Study (FS) for both the Pope & Talbot Sawmill Site and the Leased Area Site. Response to comments are provided first for those pertaining to the RI and then for comments received for the FS.

A total of three groups provided comments through letters and e-mail messages regarding the draft Remedial Investigation. In the comment table, each group is referenced in brackets. Draft Feasibility Study comments can be found on page 26.

## Draft Remedial Investigation Comments and Responses

### List of Commenter groups for the RI:

- Public
- The Port Gamble S’Klallam Tribe
- The Suquamish Tribe

Comment	Ecology’s Response
<b>Public</b>	
<p><b>Q1.</b>  <i>I was somewhat confused by the highlighted statement below.</i></p> <ol style="list-style-type: none"> <li><i>1. What matrix was being measured?</i></li> <li><i>2. Was this on a wet weight or dry weight basis?</i></li> <li><i>3. What might have been/is the source of Cd?</i></li> <li><i>4. I spent many years researching sublethal effects of pulp mill effluents and wood extractives, so doubt that Cd would have been present at the Pope and Talbot mill.</i></li> </ol> <p><i>“Cadmium, for example, is found at "background" levels in Puget Sound at a concentration of about 1 part per million. Ecology has sampled cadmium in Port Gamble Bay at up to 14 parts per million. However, levels have receded to near background levels.”[Public]</i></p>	<p><b>A1.</b> 1. Cadmium was found in one sediment sample and in a few shellfish samples at levels slightly above Puget Sound background concentrations.</p> <p>2. In sediments, cadmium is measured in parts per million (ppm or mg/kg) dry weight, while in tissues, cadmium is reported in ppm wet weight.</p> <p>3 &amp; 4. We do not know the source of cadmium in the Bay. It may have been related to ash or other industrial activities at the Site, or to waste deposited in the landfills. However, we do not have specific evidence that the Site was a source of cadmium to the Bay, although it is clear that cadmium is</p>



Comment	Ecology's Response
	slightly elevated at one sampling station in the Bay. A discussion of the sources of contaminants has been added to the RI Report, as well as a more comprehensive chapter discussing natural background comparisons.
<b>Port Gamble S'Klallam Tribe</b>	
<p><b>Q1.</b>  <i>Despite the existence of at least two likely sources of hazardous substances and a particularly vulnerable human population, Ecology was reluctant to expand the scope of the remedial investigation. Ecology eventually agreed to conduct a human health risk assessment (Appendix G) after repeated requests from the Tribe, but the results of this assessment were never fully integrated into either the RI or FS. The term "human health" does not appear once in the RI itself, and the FS pigeonholes health risks into cleanup alternatives that are designed to address environmental risks only. Moreover, the risk evaluation that did occur is rife with data gaps, thereby undercutting its conclusions. The most important of these data gaps concerns the uncertainty associated with dioxin concentrations in shellfish tissue. The human health risk assessment does not provide sufficient information for developing risk-based sediment cleanup levels, for adequately communicating potential risks to shellfish consumers (tribal and nontribal), or for developing and evaluating appropriate remedies. There is simply no way Ecology can demonstrate that a cleanup action plan will be protective of human health without addressing these and other data gaps discussed throughout the Tribe's comments.[S'Klallam Tribe]</i></p>	<p><b>A1.</b> Ecology agrees that evaluation of human health risk was not adequately incorporated into the previous RI and FS documents, due to the initial focus of the cleanup on wood waste. The final RI fully incorporates human health risk throughout the document, on an equal footing to protection of ecological receptors. A complete human health risk assessment has been conducted and incorporated as a basis for developing cleanup standards and Sediment Management Area (SMA)/site boundaries. Additional shellfish and crab data were collected both by Ecology and the Tribe and incorporated into the RI and risk assessment, including arsenic, PAH, polychlorinated biphenyls (PCB) congener, and dioxin/furan data with the lowest achievable detection limits.</p>
<p><b>Q2.</b> <i>Appendix G concludes that PCBs should be eliminated as baywide COCs because "the only Aroclor detections were in two tissue samples collected from the Mill Area," and further indicates that the Mill Site "will undergo active remediation and PCBs will be removed as part of that cleanup." G-17. Neither of these statements is accurate. PCB Aroclors were detected in three samples around the Mill Site in 2010 (PGST); three samples around the Mill Site in 2003 (Parametrix); and in crab hepatopancreas in 2008, RI Table I 1 (Ecology 2008). PCB Aroclors were also detected in two sediment samples in the central portion of Port Gamble Bay: PGSS38A and PGSS-44. RI Table 5. PCBs thus present a more</i></p>	<p><b>A2.</b> Additional sediment and tissue data were collected in 2011, including PCB congeners at low detection limits. This provided a more complete data set with which to evaluate human health risks and comparison to background concentrations. Based on this more detailed analysis, PCBs were again eliminated as site-specific contaminants of concern (COCs) because they were mostly undetected and because where detected, the distributions of PCBs in sediments and tissues at the site were not distinguishable from</p>

Comment	Ecology's Response
<p><i>substantial problem at the Mill Site than Appendix G indicates, as well as a wider Baywide problem. Finally, PCBs are not even mentioned in the Mill Site FS, so there is no guarantee that they will be removed from the site. [S'Klallam Tribe]</i></p>	<p>Puget Sound natural background concentrations. However, areas around the Site that previously had measurable concentrations of PCBs are included within the SMAs undergoing active remediation (see the Final FS Report). All these areas will be either dredged and/or capped.</p>
<p><b>Q3.</b> <i>Section G.2.2, p. G-6 Comment: For calculating human health risks, exposure point concentrations (EPCs) for COCs in clam, geoduck, and oyster tissues were the calculated mean values. Based on EPA risk assessment guidance and standard practice for MTCA risk assessments, the exposure point concentration is typically based on the 95% upper confidence limit of the mean concentration. See Risk Assessment Guidance for Superfund. Part A (EPA, 1989). The rationale given here for not using the upper confidence limits was that the numbers of organisms in the samples were sufficiently high to be considered representative of average exposures. While the large number of individual organisms per sample may adequately represent a particular location, the limited number of samples does not adequately represent the entire Bay. Recommendation: The exposure point concentration should be based on the 95% upper confidence limit of the mean. [S'Klallam Tribe]</i></p>	<p><b>A3.</b> We agree. The EPCs have been recalculated as the 95% upper confidence limit on the mean, or the maximum concentration if there is not enough data to calculate that statistic (see Section 8.2.5).</p>
<p><b>Q4.</b> <i>Section G.6.3, p. G-15. Comment A: The statement included in this section that "dioxin/furan TEQs and PCB Aroclors in sediment of Port Gamble Bay were no different from those in background sediment in Puget Sound" is unclear. Recommendation A: Please specifically address the methods for and results of statistical comparisons between site and background data sets consistent with overarching concern 2. [S'Klallam Tribe]</i></p>	<p><b>A4.</b> A more detailed section outlining the specific statistical tests used for comparison to background has been included in the final RI (see Chapter 9). Additional data with lower detection limits were collected in 2011 by Ecology as well as 2010 data collected by the Port Gamble S'Klallam Tribe for use in this analysis. Finally, significant effort was put into developing a more complete natural background data set for tissue for use in the analysis. Complete data sets used as natural background distributions for sediments and tissue are provided in Appendix C.</p>
<p><b>Q5.</b> <i>Comment B: This section also includes the statement that dioxin/furan TEQs in crab meat and hepatopancreas from the bay are "within background reference levels." Again, how specifically these data sets are compared and the regulatory implications of that comparison are unclear. Additionally, the majority of crab muscle samples identified</i></p>	<p><b>A5.</b> See the response to Q4. However, we agree that it is difficult to conduct meaningful background comparisons for dioxins/furans given the currently available background tissue data set, and the text has been modified accordingly (see Chapter 9). Ecology</p>

Comment	Ecology's Response
<p><i>in the reference data set had only one dioxin/furan congener detected, and are therefore primarily a reflection of the detection limits achieved in the various studies. Concentrations based on half the detection limit, range considerably in this data set (by a factor of more than 40), and do not provide a valid basis for eliminating dioxins as a chemical of concern. For example, the samples from Samish Island and Hat Island, each of which had only one of the 17 dioxin/furan congeners detected, were 30 times higher than samples from Freshwater Bay, which also had only one congener detected. Recommendation B: This section should more specifically address the methods for and results of statistical comparisons between site and background data sets, and describe the regulatory implications of that comparison. Also, as any routine statistical evaluation would identify the samples from Samish Island and Hat Island as outliers, particularly if this data set is intended to represent some type of background, those samples should be removed from the data set. [S'Klallam Tribe]</i></p>	<p>expects to collect additional tissue data for Puget Sound that will eliminate some of the detection limit problems of past data and provide a more robust background tissue data set for comparison. This data set can be used for comparisons to site tissue concentrations during monitoring of the selected remedies. Because dioxins/furans were identified as site COCs for human health in sediments and remedies were selected accordingly, the uncertainties in tissue comparisons did not affect decision-making for the RI and FS.</p>
<p><b>Q6.</b> Section G.7.1, p. G-17. Comment: <i>As discussed in various comments above, the statement that dioxins/furans were eliminated as COCs "since statistical evaluation demonstrated that there is no difference between Port Gamble Bay sediment dioxin TEQ concentration and the Puget Sound 90th percentile background concentration of 1.58 ng/kg TEQ" is unclear. Also in this section, as discussed above, the statements "dioxin/furan TEQs in the single crab sample from the bay was below the average background crab tissue concentration" and "all dioxin/furan congeners were non-detect in all clam and oyster samples from the Bay" are not accurate. The crab concentration from the site is described on page G-14 as "identical to the reference 90th percentile values," and not "below the average background" concentration. See also comments above regarding the reference area crab tissue data. Recommendation: Please more specifically address the methods for and results of statistical comparisons between site and background data sets, correct inaccuracies in the text, and cite the specific regulatory basis, if any, for eliminating dioxins as a chemical of concern. [S'Klallam Tribe]</i></p>	<p><b>A6.</b> See the response to Q4 and Q5. In the final RI, dioxins/furans are considered a COC for limited areas of sediment that exceed natural background and PQLs. Definitive conclusions are not drawn for tissue concentrations, given the current natural background data set and the prevalence of undetected concentrations in both the background and site data sets.</p>
<p><b>Q7.</b> <i>The two most notable sources include the hog fuel burner at the Mill Site, which likely released dioxins while incinerating saltwater infused wood, and thousands of creosote pilings scattered throughout the Mill Site and DNR</i></p>	<p><b>A7.</b> We agree that these are the main sources of contaminants to the Bay, particularly for PAHs. We have added a section that presents the conceptual site model outlining a</p>

Comment	Ecology's Response
<p><i>Lease Area, which release cPAHs on an ongoing basis wherever the pilings are or come to be located. Many of these pilings are dilapidated and susceptible to sheering off during storm events, a fact documented by tribal geoduck divers who have observed pilings on the ocean floor in the middle of the Bay. [S'Klallam Tribe]</i></p>	<p>summary of the sources to the Bay, as well as transport pathways and ecological and human health risks (see Chapter 10).</p>
<p><b>Q8.</b> <i>PCBs were eliminated as COCs based on inaccurate information regarding the number and location of PCB Aroclor detections, as well as insufficient information regarding dioxin-like PCB congeners. [S'Klallam Tribe]</i></p>	<p><b>A8.</b> Additional data were collected on PCB congeners in 2010 and 2011. Natural background comparisons for tissues and sediments based on this additional data combined with the previous data do not indicate elevated concentrations in the Bay. Therefore, PCBs were not retained as site-specific COCs.</p>
<p><b>Q9.</b> <i>Finally, Appendix G does not provide any rationale whatsoever for the elimination of dioxin-like PCB congeners as COCs. This is a particularly troubling oversight considering that dioxin-like PCB congeners were detected in all biota samples from the baywide investigation, see Dioxin PAH-PCB Tissue Worksheet (attached to email transmitting these comments); there is no background data provided to use in lieu of a risk-based cleanup level; and sediment samples from the Bay were not analyzed for PCB congeners; G-13. [S'Klallam Tribe]</i></p>	<p><b>A9.</b> Additional data were collected for PCB congeners in 2010 and 2011 in both tissues and intertidal sediments that might present an exposure risk to humans. Decisions for PCB congeners at the Site were based on comparison of tissue concentrations to natural background tissue concentrations (see Chapter 9).</p>
<p><b>Q10.</b> <i>Section G.2.2, p. G-6; see also G.6.2, p, G-13 Comment: This section states that "[f]or dioxin/furans in clams and oysters, all of the samples were non-detect for all congeners and homolog groups". In fact, both individual congeners and homolog groups were detected in one oyster sample (Oyster #2A). (See RI Table 12) Recommendation: Please correct this error and reassess any conclusions drawn from it. [S'Klallam Tribe]</i></p>	<p><b>A10.</b> All data have been checked and new data from 2010 and 2011 added. The complete data set is presented in Appendix A. The conclusions presented in the final RI are based on this more complete data set.</p>
<p><b>Q11.</b> <i>Section G.2.2, p. G-7 Comment: The statements here that "PCBs as Aroclors were detected in only two oyster samples collected from the mill area" and "PCBs as Aroclors were not detected in any of the three geoduck samples, in any of the 20 clam samples, or in any of the crab samples" are inaccurate. PCB Aroclors were also detected in cockles at station B3, Table G-I (PGST 201 0); crab hepatopancreas from the Baywide samples, RI Table II (Ecology 2008); and</i></p>	<p><b>A11.</b> All data have been checked and new data from 2010 and 2011 added. The complete data set is presented in Appendix A. The conclusions presented in the final RI are based on this more complete data set. Human health risk assessments are based on PCB dioxin-like congeners, while ecological risk assessments are based on total PCBs.</p>

Comment	Ecology's Response
<p><i>little neck clams (B1 and B2) and oysters (B3) in previous sampling in the vicinity of the Mill Site, (Parametrix 2003). Recommendation: Please correct these inaccuracies and reassess any conclusions drawn from them. As recommended above, calculate and include a discussion of potential human health risks related to PCB Aroclors, in addition to risks from PCB dioxin-like congeners. [S'Klallam Tribe]</i></p>	
<p><b>Q12.</b> Section G.6.1, p. G-13 <i>Comment: This section states "Port Gamble median and 95th percentile concentrations were 0.82 and 1.48 ng/kg TEQ, respectively, while local Puget Sound background median and 90th percentile concentrations were 1.06 and 1.58 ng/kg TEQ, respectively." It appears that the value identified as the 95th percentile from Port Gamble is actually the 95th percent confidence interval on the mean, and the median concentration for local Puget Sound background, which is shown here and in Table G-7 as 1.06 ng/kg TEQ appears to have been inaccurately calculated, and should be 0.77 ng/kg TEQ. Recommendation: Correct these calculations and reassess any conclusions drawn from them. [S'Klallam Tribe]</i></p>	<p><b>A12.</b> All toxicity equivalents (TEQs) have been recalculated and the data sets have been expanded, incorporating both historical data near the mill and newer data collected in 2010 and 2011. TEQs may differ from previous estimates, as they have been calculated using the Kaplan-Meier approach when there were sufficient detected values to do so (see Section 8.2.4).</p>
<p><b>Q13.</b> <i>Although the applicable law specifies that remedial investigations must consider both human health and environmental risks, the Baywide RI originally considered only the latter. The first paragraph of Appendix G notes that the Baywide RI was initially scoped as an SMS investigation to determine if there were adverse impacts to baywide sediment benthic invertebrates. The Tribe objected to this approach because tribal members consume large amounts of shellfish from Port Gamble Bay, and because there have been obvious sources of hazardous substances in or near the Bay for decades. [S'Klallam Tribe]</i></p>	<p><b>A13.</b> See response to Q1.</p>
<p><b>Q14.</b> Section G.2.2, p. G-5 <i>Comment: It is indicated in this section that chronic daily intakes (CDIs) were calculated for polychlorinated biphenyls (PCBs) both as the sum of Aroclors and TCDD TEQs for PCB congeners with dioxin-like activity. However, a CDI was not calculated for PCB Aroclors despite the fact that Aroclors were detected in Port Gamble Bay sediments, in crab hepatopancreas, and in samples collected around the Mill Site in both 2003 and 2010. Recommendation: Calculate and include a discussion of potential human health risks related to PCB Aroclors, in addition to risks from PCB dioxin-like congeners. [S'Klallam</i></p>	<p><b>A14.</b> No reference doses (RfDs) are available for the sum of Aroclors; therefore, CDIs were not calculated for them. Risks to human health from PCBs are calculated using PCB dioxin-like congeners.</p>



Comment	Ecology's Response
<i>Tribe]</i>	
<p><b>Q15.</b> <i>Dioxins were eliminated as contaminants of concern (COCs) based on the misapplication of MTCA "natural background" regulations. [S'Klallam Tribe]</i></p>	<p><b>A15.</b> In the final RI, dioxins/furans have been retained as COCs in limited areas that exceed sediment cleanup standards (see Section 11.1).</p>
<p><b>Q16.</b> <i>When MTCA "cleanup levels ... are less than natural background levels or levels that can be reliably measured..., the cleanup level shall be established at a concentration equal to the practical quantitation limit or natural background concentration, whichever is higher." (emphases added); see also G-16 (summarizing this rule). This regulation does not support the elimination of dioxins as COCs here because background sites were not selected appropriately, statistical evaluation of background data is not consistent with MTCA regulations, and the comparison between site (Port Gamble Bay) and background data sets does not satisfy the three part rule. [S'Klallam Tribe]</i></p>	<p><b>A16.</b> Ecology has carefully considered its approach to selecting background data sets and applying statistical methods to determine whether Site data distributions are elevated above natural background distributions. The science and statistics in this area are evolving, and the agencies regulating sediments have collectively put a substantial degree of effort into updating these methods in the last few years. The Model Toxics Control Act (MTCA) statistical methods were originally developed for soil and upland sites, and it has become apparent that these methods have some deficiencies when applied to large sediment sites. In addition, in recent years more sophisticated nonparametric statistical methods have become widely available that minimize the need for substitutions and multi-part tests, among other things. These methods were specifically developed to address complex data sets with sums of largely undetected chemicals with varying detection limits, and are highly applicable to the problems of comparing data sets near or below detection or quantification limits such as Port Gamble. Both the MTCA and Sediment Management Standards (SMS) rules allow use of latest science on a site-specific basis when approved by the Department. In this case, these newer statistical methods have been used in place of the older and less applicable MTCA statistical methods. The methods are fully described in the final RI and were used primarily to conduct comparisons to natural background. It should be noted that the final cleanup level for dioxins/furans was set based on the Practical Quantification Limit (PQL), in accordance with the comment, since the PQL is higher than both the risk-based</p>

Comment	Ecology's Response
	concentration and natural background (see Section 11).
<p><b>Q17.</b> "Natural background" is defined as "the concentration of hazardous substance consistently present in the environment that has not been influenced by localized human activities." 173-340-200. "For purposes of defining background concentrations, samples shall be collected from areas that have the same basic characteristics as the medium of concern at the site, have not been influenced by releases from the site and, in the case of natural background concentrations, have not been influenced by releases from other localized human activities." 173-340-709(2) (emphasis added). Although section G.5.1 acknowledges that "the potential need for cleanup to protect shellfish ingestion would be based on a comparison of sediment concentrations with natural background levels, consistent with cleanup goals under MTCA," there are no further references in this appendix to "natural background." Background is variously described as "local background," "representative background," "local Puget Sound background," or simply "background." If background data is being used for the purpose of establishing cleanup levels that are higher than a risk-based concentration, the data must meet MTCA requirements for natural background, as defined above. [S'Klallam Tribe]</p>	<p><b>A17.</b> The terminology used in the final RI report to refer to natural background has been standardized. For the final RI, Ecology selected natural background areas that have been used for more than 20 years in multi-agency sediment regulatory programs and augmented that with data from the Bold Study as reference areas for sediment chemistry and bioassay testing. We believe this meets the MTCA definition described above.</p>
<p><b>Q18.</b> As it stands, Appendix G provides no indication that the selected background sites in Hood Canal, Dabob Bay, and Admiralty Inlet are suitable for defining natural background concentrations. Dabob Bay is the most concerning of these sites because it has been used as a military operating area by the U.S. Navy since the 1950s, and activities conducted there include extensive testing of underwater systems such as torpedoes, countermeasures, targets, unmanned underwater vehicles, and ship systems. Water quality effects of military operations may include torpedo exhaust gas releases into the water, and accidental spills of fuel oil, torpedo propellants, and other substances. [S'Klallam Tribe]</p>	<p><b>A18.</b> Please see the response to Q17. We have no evidence from the data or from past bioassay performance that there is significant contamination in Dabob Bay. There were no outliers reported in the background data set for that bay.</p>
<p><b>Q19.</b> For identifying a local Puget Sound background concentration, data from Dabob Bay should be replaced by data from Holmes Harbor. Other more suitable areas for</p>	<p><b>A19.</b> See response to Q18. Dungeness Bay and Freshwater Bay are appropriate natural background areas for sites on the Strait of</p>

Comment	Ecology's Response
<p><i>determining natural background concentrations may include Dungeness Bay or Freshwater Bay, which are proposed for that purpose in association with cleanup in Port Angeles Harbor. [S'Klallam Tribe]</i></p>	<p>Juan de Fuca, which is lower in concentration than Puget Sound. Natural background bays were therefore selected from within Puget Sound.</p>
<p><b>Q20.</b> <i>Section G.6.2, p. G-13 Comment: This section provides a comparison to concentrations in shellfish tissue “from reference locations, which may be considered background values if collected from EPA or Ecology-recognized background locations.” Although these appear to be used as though they were “natural background” concentrations, there is no demonstration that the locations included here would be defined as natural background concentrations meeting the definition in MTCA. Recommendation: If these biota samples are being used to represent natural background, please demonstrate that they come from an appropriate site under WAC 173-340-200 &amp; 709. [S'Klallam Tribe]</i></p>	<p><b>A20.</b> A more complete discussion of the tissue data set used for natural background comparisons is included in the final RI (see Section 9.2), along with the data set itself (Appendix C). Ecology reviewed these data sets in detail and determined that they were appropriate for this purpose. In addition, most of these areas have also been used to represent natural background for Superfund sites in Puget Sound (e.g., lower Duwamish) and have received extensive agency and tribal review as part of that process.</p>
<p><b>Q21.</b> <i>Section G.7.I, p. G-15 to 16 Comment: This section summarizes the requirements included in various sections of MTCA that “[f]or protection of human health, MTCA requires establishing cleanup levels that are the highest of the following:</i></p> <ul style="list-style-type: none"> <li><i>• Risk-based concentration corresponding to less than an excess cancer risk of <math>1 \times 10^{-6}</math> or</i></li> </ul> <p><i>an HQ of 1;</i></p> <ul style="list-style-type: none"> <li><i>• Practical Quantitation Limit (PQL); or</i></li> <li><i>• Background.”</i> <p><i>However, this provision in MTCA always refers to “natural background,” not “background.”</i></p> <p><i>Recommendation: Make this correction in the text to be consistent with MTCA; indicate that when following this provision in Appendix G background refers to “natural background” as defined at WAC-173-340-200; and indicate how the data sets used to represent background for the purposes of setting cleanup levels meet the criteria for natural background. Follow these recommendations in all other instances where “natural background” should have</i></p> </li></ul>	<p><b>A21.</b> The terminology used for natural background and references to the rule have been made consistent throughout the final RI Report, as suggested.</p>



Comment	Ecology's Response
<p><i>been used in Appendix G or the RI. [S'Klallam Tribe]</i></p>	
<p><b>Q22.</b> <i>The RI does not include sufficient information to enable selection of a cleanup action that will protect human health and the environment. [S'Klallam Tribe]</i></p>	<p><b>A22.</b> Additional information was collected to augment the RI based on further interaction with the Tribe and information needs identified by Ecology. This included collection of additional sediment, tissue, and bioassay data in 2011, and thorough updates to the human health, natural background comparisons, source evaluation, transport pathways, cleanup standards, and SMA/site boundary identification sections. The final RI Report provides the information needed to support the final FS Report in selecting appropriate cleanup alternatives for the Site.</p>
<p><b>Remedial Investigation – Mill Site</b></p>	
<p><b>Q23. [KLALLAM TRIBE – Mill Site RI]</b> <i>The Tribe's overarching concerns regarding the Mill Site RI and FS parallel, and in some cases overlap with, the Baywide concerns above. These similarities exist because sediment cleanup efforts at both sites initially focused on wood waste, the same document (Appendix G) was relied upon to assess human health risks at these sites, and the information from Appendix G was never fully integrated into either cleanup. Some issues at the two sites actually overlap because a portion of the Baywide contamination was likely released from the Mill Site and cannot be adequately addressed without controlling continuing Mill Site releases. To the extent that the Tribe's Baywide comments also implicate the Mill Site, the Tribe requests that Ecology also address those concerns at the Mill Site. The following comments incorporate and assume knowledge of the facts and law set forth in the Baywide comments above. [S'Klallam Tribe]</i></p>	<p><b>A23.</b> Comment noted. See responses to baywide comments where the issues are the same. In addition, this is one reason that Ecology combined the RI and FS reports for both the Mill Site and the Leased Area Site into an RI and an FS report for a single site (Port Gamble Bay and Mill Site), because the issues and contamination do overlap.</p>
<p><b>Q24.</b> <i>Section 3.1.1, p. 6 Comment: The soil investigations done as part of the upland source area investigations were targeted to the location of former structures or activities, based on historic records and recollections of former mill workers. The Tribe understands that two previously unknown underground storage tanks, apparently for oil, were discovered in February 2011 on the site or in an uphill location where they could readily result in a release within site boundaries. This incident suggests that previous investigatory methods cannot be relied upon to have</i></p>	<p><b>A24.</b> Ecology believes that the upland investigation was thorough and complete. The area referenced is outside the Site cleanup boundaries and therefore was not included in the investigation.</p> <p>The discovery of two underground storage tanks (USTs) in an area outside the Site investigation area boundaries is not indicative of an inadequate evaluation of potential</p>

Comment	Ecology's Response
<p><i>identified sources.</i></p> <p><b>Recommendation:</b> <i>Re-evaluate the upland source investigation and the need for additional physical investigation such as use of ground-penetrating radar to identify old and buried structures that may be or contain contaminant sources. [S'Klallam Tribe]</i></p>	<p>contaminant sources within the Mill Site. A detailed and thorough investigation of the Mill Site was performed.</p> <p>Potential contaminant sources on the former Mill Site were thoroughly investigated through the use of employee interviews, historical air photos, company records, site maps, and other appropriate historical documents. A high standard of care was used in the evaluation of potential historical sources of contamination to environmental media within the Mill Site.</p> <p>The presence of the two very old USTs in the area immediately behind the Port Gamble General Store was not expected; however, the unexpected discovery of the USTs does not indicate a failure of the site investigation/characterization process. The two USTs were located outside the Mill Site area and were not marked on any maps or visible on any air photos that were available to the environmental consultants that performed the historical records searches and initial site investigations.</p> <p>After the USTs were discovered, a thorough evaluation of groundwater samples from monitoring wells down-gradient of the USTs was performed. This evaluation included the installation and sampling of an additional down-gradient monitoring well, which was installed at a location that was coordinated with Ecology, and demonstrated that the USTs did not affect groundwater on the Mill Site. In addition, Ecology subsequently issued a no further action (NFA) determination for the removal and remediation of the general store USTs based on extensive soil and groundwater sampling documenting that cleanup goals were achieved in soil and that groundwater was not impacted.</p>

Comment	Ecology's Response
<p><b>Q25.</b> Section 6.1, pp. 46-47 Comment: <i>The Tribe shares Ecology's concern that combustion of saltwater-laden wood in the hog fuel burner or elsewhere during the Mill's history may have generated dioxins. Tissue levels of dioxin were higher in shellfish in the Mill area than any other samples except crab hepatopancreas. See Baywide RI Comment 9, above. The Mill Site, including the hog burner and disposal of burner ash, are the most obvious possible sources of dioxins in the Bay. The supplemental dioxin investigation described in the RI, however, is insufficient to assess dioxin contamination from combustion or other sources. Soil testing for dioxins was only conducted west and northwest and within about one hundred yards of the burner site. RI, Figure 6-2. Old photographs of the Mill show the visible plume from the burner extending much further than 100 yards. While prevailing cool season winds are southerly, warm season winds are often west or northwesterly. U.S. Navy, Puget Sound Area Heavy Weather Port Guide, §3.1 (1996), <a href="http://www.nrlmry.navy.mil/port_studies/puget_sound/text/environmental.htm">http://www.nrlmry.navy.mil/port_studies/puget_sound/text/environmental.htm</a>. Recommendation: Additional soil testing should be conducted at greater distances from the former burner site, including testing beneath large conifers that may have captured wind-borne material and concentrated it in soil at the tree's base. Testing should also be conducted east and south of the former burner site to evaluate deposition from prevailing summer westerlies. Samples should be analyzed at a laboratory having appropriate detection levels. [S'Klallam Tribe]</i></p>	<p><b>A25.</b> A sufficient number of samples were taken at locations most likely to have the greatest concentrations of dioxin and furans. The PQLs were set by Ecology and met by the laboratory selected to conduct the analysis (see Section 5.7 in the RI).</p> <p>The soil samples collected for dioxin and furan analyses at the former burner were carefully located to obtain soil that had the greatest likelihood of containing dioxins and furans. The ten locations that were sampled represent the most likely sampling points to detect dioxins and furans in soil based on historical operations, wind and precipitation patterns, and excavation and fill data. Soil in areas that had been recently excavated and filled and in areas formerly under pavement or slabs during the time of potential deposition was excluded from sampling. In addition, the ten soil samples were obtained from areas northwest and west of the former burner to sample soil in the direction of the prevailing wind pattern during the wet season when particulates from the burner were likely to be captured by precipitation and concentrated in the surface soil close to the source.</p> <p>Six additional upland dioxin samples were collected more recently by the Tribe from areas farther away from the Mill area. These are believed to be affected by aerial deposition from burning at the Mill and will be addressed separately from this cleanup.</p>
<p><b>Q26.</b> Section 7.9, p. 73 Comment: <i>This section concludes that PCB concentrations in Port Gamble Bay are "not statistically different" from those in background areas of Puget Sound. This conclusion is not supported by Appendix G, which states that "comparison with Puget Sound background PCB concentrations could not be performed reliably." The elimination of PCBs as COCs at the Mill Site also undercuts</i></p>	<p><b>A26.</b> See response to Q8.</p>

Comment	Ecology's Response
<p><i>Appendix G's conclusion that they PCBs will be removed during the Mill Site cleanup. Recommendation: Fill previously mentioned data gaps, set PCB cleanup levels, and develop a cleanup action alternative ensuring compliance with the CUL.</i></p> <p><i>[S'Klallam Tribe]</i></p>	
<p><b>Q27.</b> <i>Section 3.2.6, pp. 26-27 Comment: The conceptual site model for the marine portion of the Mill Site only addresses wood waste and does not account for any chemical wastes at the site. A variety of chemicals were identified in marine sediment at levels above the SQS chemical criteria prior to interim sediment remediation. RI, p. 24. Marine biota at the Mill Site still have elevated levels of PCBs after the initial dredging by OPG (Parametrix 2003; PGST 2010). Despite decreased levels of chemicals in more recent Phase II sediment samples, chemicals should still be addressed in the sediment conceptual site model in order to better understand how chemicals came to be present in Mill Site sediments and shellfish tissue, how chemicals may have dispersed from the Mill Site into the Bay, and the future potential for chemicals to enter Mill and Bay sediments from upland runoff, treated wood poles and pilings, bottom paint on moored vessels, or other sources. Recommendation: Address chemical contaminants in the Sediment Conceptual Site Model. Include treated poles and pilings, runoff from uplands, and other possible chemical sources such as air deposition from hog fuel boilers. [S'Klallam Tribe]</i></p>	<p><b>A27.</b> The conceptual site model for the Bay has been updated and moved to the RI Report (see Section 10). The sources and chemicals mentioned in the comment have been included.</p>
<p><b>Q28.</b> <i>Section 3.2.7, pp. 28-29 Comment: The conceptual site model for uplands also does not discuss chemical contaminants, erosion/runoff to sediments, and former or present chemical contamination.</i></p> <p><i>Recommendation: Address chemical contaminants in the Sediment Conceptual Site Model. Include treated poles and pilings, runoff from uplands, and other possible chemical sources such as air deposition from hog fuel boilers. [S'Klallam Tribe]</i></p>	<p><b>A28.</b> The conceptual site model for the Bay has been updated and moved to the RI Report (see Section 10). The sources and release pathways mentioned in the comment and have been included.</p>
<p><b>Q29.</b> <i>Section 3.1.2, pp. 6-9 Comment: Table 3-11 provides data for analyses of "wood treatment compounds in soils" at the uplands mill site. In this table, only eight samples are listed, all from February 1999. Six samples were analyzed for 2-mercaptobenzothiazole and two samples for dicycldimethyl ammonium chloride. Nothing in the text explains why only these two compounds were analyzed and</i></p>	<p>A29.</p> <p>This comment is responded to in detail below.</p> <p><i>"Analyze soil samples for additional wood preservatives and analyze soils at wood</i></p>

Comment	Ecology's Response
<p><i>no other wood treatment compounds, such as chromate copper arsenate (CCA), creosote compounds, or the Pennatox compounds tested for in groundwater samples, as shown in Table 4-32. Wood treatment compounds, particularly pentachlorophenol, contain dioxins. Pentachlorophenol appears to be among the treatments used at the site. See RI, p. 35-36. Dioxins and furans appear to have only been analyzed at former hog fuel boiler locations and not in wood treatment areas. Upland dioxins may have contributed to elevated levels of dioxins found in Bay sediment samples. Additional upland dioxin analysis with appropriate detection limits is therefore warranted. Table 3-10 shows that chromium above MTCA soil cleanup levels was found in 40% of upland soil samples prior to 2002. Chromium is not identified as a chemical of potential concern in Section 3, however, nor in Figure 4-3, showing the location of the 2002 interim remedial soil removals. While most soil sample sites with chromium above cleanup levels appear to have been within the borders of the 2002 excavations, two (EPI-SP-5025 and EPI-SP-5026) do not appear to be, based on comparison of Figures 3-2 and 4-3. The RI does not mention any action directed at chromium since 2002, nor any follow-up soil sampling for chromium after the 2002 excavations. Chromium above the cleanup level remained in groundwater at monitoring well MW-2 in 2002-2004 sampling. RI, p. 33. That well is less than fifty feet seaward of two soil sampling sites that had actionable levels of chromium prior to 2002. Chromium is not mentioned in the Feasibility Study. These facts suggest that upland chromium contamination requires additional discussion in the RI. Table 3-10 also shows that lead in soil exceeded applicable cleanup levels, but lead is not identified in the text of Chapter 3 as a COPE. This is confusing because lead in soils is addressed at length elsewhere in the RI, e.g., §7.2.6. Recommendation: 1. Analyze soil samples for additional wood preservatives and analyze soils at wood treatment locations for dioxins. 2. Clarify whether 2002 interim remedial action excavations addressed chromium contamination at all soil sampling stations, and 3. explain why no further investigation or remedial action is proposed with regard to chromium in monitoring well GW-2. [S'Klallam Tribe]</i></p>	<p><i>treatment locations for dioxins”.</i></p> <ul style="list-style-type: none"> <li>• Wood treatment chemicals have been sampled extensively and analyzed at the site. See remainder of response for more detail.</li> </ul> <p><i>“Clarify whether 2002 interim remedial action excavations addressed chromium contamination at all soil sampling stations”</i></p> <ul style="list-style-type: none"> <li>• Targeted removal to address chromium exceedances was conducted. Based on the extent of these efforts and known excavation depths, chromium-impacted soil was completely removed to below cleanup levels. See below for more detail.</li> </ul> <p><i>“...explain why no further investigation or remedial action is proposed with regard to chromium in monitoring well GW-2.”</i></p> <ul style="list-style-type: none"> <li>• Following the 2002 interim action, the post-source removal groundwater compliance monitoring on total Chromium at MW-2 well was conducted beginning February 2004 through December 2006 on quarterly basis (Table 4-20 of RI/FS dated December 2012). Chromium Monitoring data were statistically analyzed to find the upper one-sided 95 percent confidence limit on the true mean (95% UCL) groundwater concentrations per WAC 173-340-720(9). It was found that 95% UCL on total Chromium were calculated to be 39 ug/L (using Land’s method of log-normal distribution assumption). This is well below the target cleanup level of 50 ug/L for Chromium. Based on the extent of soil interim actions of 2002 and additional groundwater</li> </ul>

Comment	Ecology's Response
	<p>compliance monitoring data after the interim action, Ecology concluded that the Chromium meets both soil and groundwater cleanup standards throughout the upland area and will be no longer an indicator chemical at site. (Note: GW-2 is identified as MW-2.) See below for more detail.</p> <p>The chemicals that make up chromated copper arsenate (CCA), creosote, and Pennatox were part of the analyses performed on upland soil samples. There is no specific analytical test for CCA, creosote, or Pennatox™, which is a trade name for several formulations of wood treatment products. Most Pennatox™ formulations potentially used at the Mill Site (10 of the 13) contain pentachlorophenol and/or tetrachlorophenol; the remaining three formulations contain tri-n-butyltin or carbamates (See Table 4-31). Other wood treatments used at the site, (Britewood™, PRO-TEK™, and Timbercote 2000™) contained 2-mercaptobenzothiazole and didecyl dimethyl ammonium chloride.</p> <p>The constituents that make up CCA, creosote, and Pennatox™ were part of the analyses performed on upland soil samples. All three metals that make up CCA (copper, chromium, and arsenic) were part of the analytical suite used for upland soil sampling (see Table 3-10). Creosote compounds were analyzed using a combination of polycyclic aromatic hydrocarbon (PAH) analysis (see Table 3-6) and semivolatile organic compound (SVOC) analyses (see Table 3-7). Pentachlorophenol and tetrachlorophenol were analyzed in upland soil samples as part of the SVOC analysis (see Table 3-7). Tri-n-butyltin and carbamates were analyzed in groundwater samples with no detections in any of the samples (see Table 4-32 of the Final RI appendix).</p> <p>The compounds 2-mercaptobenzothiazole</p>



Comment	Ecology's Response
	<p>and didecyl dimethyl ammonium chloride were called out separately in data tables as "wood treatment compounds" because they are not part of the normal PAH or SVOC constituent list. Other more common active ingredients found in wood preservative formulations that were used at the Mill Site such as pentachlorophenol and tetrachlorophenol, were analyzed as part of the normal SVOC list of compounds. As a result, 2-mercaptobenzothiazole and didecyl dimethyl ammonium chloride analyses were specifically requested from the analytical laboratory and were separated from the rest of the more common wood treatment active ingredients on the data tables. The rationale for including 2-mercaptobenzothiazole and didecyl dimethyl ammonium chloride analyses is based on site-specific information that is noted in Section 2.2 of the Port Gamble Mill Site Phase 1 Sampling and Analysis Plan (Parametrix, 1999).</p> <p>With respect to chromium, both sample locations EPI-SP-5025 and EPI-SP-5026 were located within the footprint of the excavations performed at the Mill Site in early 2005. These excavations are documented in the Supplemental Remedial Action Report by EPI, which is dated March 30, 2005. The excavation footprints for the 2005 remediation work are shown in Figure 4-17 of the Final RI appendix. The 2005 excavations shown in Figure 4-17 were driven by mercury concentrations in soil; Pope Resources removed soil in areas that also contained elevated chromium concentrations, including at sample locations EPI-SP-5025 and EPI-SP-5026.</p> <p>The excavations that were performed at EPI-SP-5025 and EPI-SP-5026 were driven by mercury concentrations rather than chromium concentrations in soil. This is because the soil cleanup levels were based on MTCA Equation 747-1, which calculated site-</p>

Comment	Ecology's Response
	<p>specific soil concentrations for COCs that are protective of groundwater at concentrations presented in the National Toxics Rule (NTR) Criteria (40CFR 131.36) for protection of human health from consumption of aquatic organisms. This approach was deemed appropriate because groundwater at the Mill Site ultimately discharges to Port Gamble Bay and Hood Canal and is not a source of potable drinking water. The Ecology-approved cleanup level development process caused chromium to drop out as a COC for this remediation project because there is no NTR criterion for chromium.</p> <p>Soil within the excavation footprint shown in Figure 4-17, which includes EPI-SP-5025 and EPI-SP-5026, was removed to variable depths ranging from a minimum of 7 ft. bgs to a maximum depth of 16 ft. bgs. The chromium exceedances in soil samples from EPI-SP-5025 and EPI-SP-5026 are shown in Table 3-10 of the RI/FS. These data demonstrate that at location EPI-SP-5025 the extent of chromium impacts at concentrations greater than the 19 mg/kg cleanup level is delineated by the 16 mg/kg detection in the 7 ft. bgs sample from this location. Based on these data and the known excavation depths, chromium-impacted soil at EPI-SP-5025 was completely removed during the 2005 excavation work.</p> <p>As noted in the comment, groundwater samples from well MW-2 had chromium detections at concentrations greater than the cleanup level of 50 µg/L during 2002-2004 sampling events. However, well MW-2 was also sampled from 2005-2006 as shown on Table 4-20 of the Final RI appendix. During that time, chromium concentrations in samples from well MW-2 demonstrated four consecutive quarters of non-detections or detections at concentrations that were less than applicable cleanup level of 50 µg/L. Four consecutive quarterly sample results that are in compliance with cleanup levels is the</p>



Comment	Ecology's Response
	<p>criterion that Ecology required to discontinue sampling at specific wells for specific constituents, and the chromium data for last four quarters of samples from MW-2 meet this criterion. The four quarterly sampling events are listed below along with the chromium concentrations that demonstrate four consecutive quarters of compliance.</p> <p>Quarterly Sampling Events:</p> <ul style="list-style-type: none"> <li>• 2/13/06 – 28 µg/L</li> <li>• 6/12/06 – ND (&lt;7 µg/L)</li> <li>• 9/05/06 – ND (&lt;7 µg/L)</li> <li>• 12/19/06 – 39 µg/L</li> </ul>
<p><b>Q30.</b> Section 3.2.3, pp. 19-21 Comment: <i>The biological data presented for the marine area include no tissue concentration data, nor is there discussion of tissue data in §7.9 regarding human health risks. Tissue data appears only in Appendix G, the Human Health Assessment. Important data such as this should be in text where it is more likely to be read and considered. Recommendation: Incorporate both the 2003 Parametrix and 2010 tribal tissue sampling data in the text of the RI. [S'Klallam Tribe]</i></p>	<p><b>A30.</b> The RI Reports for the Leased Site and Mill Site areas have been combined into one Final RI. All of the available tissue data are presented and discussed in the main text (see Section 6), as well as used in the human health risk assessment and in the comparison to natural background tissue concentrations. Additional tissue data was collected in 2011 near the Mill Site area to fill this data gap.</p>
<p><b>Q31.</b> <i>The RI does not include sufficient information to enable selection of a cleanup action that will protect human health and the environment. [S'Klallam Tribe]</i></p>	<p><b>A31.</b> See response to Q22.</p>
<p><b>Suquamish Tribe</b></p>	
<p><b>Q1.</b> <i>Chemical releases from wood waste and sediment contamination are inextricably linked, but the extent of sediment chemical contamination has not been fully defined - subsurface sediment samples collected during the RI were analyzed primarily for wood waste indicators and only a few samples were analyzed for chemicals of potential concern ("COPCs"). The chemical results of these "few samples" are not provided in the RI. The RI for the Sawmill Site (page 65-66) further states that "combined coring data provided a refined characterization of the vertical distribution of sediment layers and organic woody material at the Site, along with the elevation of the native (pre-1850) sediment contact." The RI does not delineate the vertical extent of sediment chemical contamination because it has not been completed. [Suquamish Tribe]</i></p>	<p><b>A1.</b> The point of compliance in sediments is the biologically active zone, or surface sediments. Subsurface sediments need to be characterized to the degree that this information is needed to evaluate and design cleanup alternatives. Based on the FS preferred alternatives, core sampling using Dredged Material Management Plan (DMMP) requirements was conducted in August 2012 to better characterize the material planned to be dredged. Further characterization of subsurface sediments needed for engineering design and evaluation of disposal options will be conducted after the Interim Action Plan has been finalized.</p>

Comment	Ecology's Response
<p><b>Q2.</b> <i>In addition, the lack of collocated sediment and tissue samples from intertidal locations during the RIs creates yet another data gap. The rationale of analyzing only shellfish tissue samples and not including other biota tissues is unclear and requires additional discussion. These data gaps and flaws are then compounded because they are used in the "focused" human health risk assessment. [Suquamish Tribe]</i></p>	<p><b>A2.</b> Co-located intertidal sediment and tissue data were collected near the Mill in 2011 and integrated into the final RI Report (see Section 3.5.2 and Sections 5 and 6). This information, including additional shellfish and crab data, was provided in an updated risk assessment and fully integrated into each stage of the RI and FS Reports.</p>
<p><b>Q3.</b> <i>One human health risk assessment was performed for both sites and was provided as Appendix G in each RI report. There is no integration of the risk assessment in the RI reports and limited integration in the FS reports, another fatal flaw in the documents. The Tribe cannot support the level of uncertainty in the risk calculations in the HHRA that arise from data gaps and flaws related to tissue and sediment sample results in the RIs, the lack of clearly identified exposure parameters, and the lack of cumulative cancer risk calculations. [Suquamish Tribe]</i></p>	<p><b>A3.</b> The Final (updated) RI Report contains a complete risk assessment that has been thoroughly integrated into every aspect of the RI and FS reports, and that forms one basis of cleanup decision-making for the site. In order to address data gaps, additional intertidal and subtidal sediment data were collected in 2011 with lower detection limits, exposure parameters are listed, calculation methods described, and cumulative risks estimated, along with risks from individual chemicals and exposure pathways (see Chapter 8).</p>
<p><b>Q4.</b> <i>The boundaries of the sediment management area ("SMA") and the selection of clean up alternatives are based on environmental risk and are contrary to MTCA because protection of human health is an afterthought. Cleanup action alternatives must protect human health and the environment (WAC 173-340-350 (8)(c) (i)(A)). The RIs, HHRA, and FSs are contradictory. The RIs show that the SMA boundaries are not inclusive of the human health risks, yet the FSs assert that they are. For example: Figure 8 in the Baywide FS (extending SMA A&amp;B boundaries to include cPAH and cadmium hotspots without showing that cleanup actions for these areas sufficiently address human health risks related to the hotspots). The isolated hotspot on the western side of the bay is also not included within the clean-up boundary. [Suquamish Tribe]</i></p>	<p><b>A4.</b> The current human health risk assessment has been fully integrated into the final RI in terms of developing cleanup standards and SMAs (see Chapters 8, 11, and 12). The final FS begins with these cleanup standards and SMAs, and is fully consistent with the final RI.</p>

## Draft Feasibility Study Comments

List of Commenter Categories:

- Public
- Agencies
  - Department of Archaeology and Historic Preservation (DAHP)
  - U.S. Fish and Wildlife Services (USFWS)
- Tribes
  - The Suquamish Tribe
  - Port Gamble S’Klallam Tribe

Comment	Ecology’s Response
<b>Public</b>	
<p><b>Q1.</b> <i>I propose that the wood waste be just allowed to decompose naturally rather than wasting money removing it. As for the creosote pilings, I am not sure that the amount of toxins are worth worrying about given the size of the body of water in question. [Public]</i></p>	<p><b>A1.</b> The wood waste and the creosoted pilings are major sources of contaminants and injury to natural resources and human health in the Bay. As the wood waste decomposes, it creates an environment without oxygen and releases a number of chemicals that are toxic to marine life. Therefore, large deposits need to be removed or capped to prevent long-term toxicity in the Bay. Creosoted pilings are one of two major sources of petroleum hydrocarbons that are carcinogenic and above background levels throughout most of the Bay. These ongoing sources of contaminants need to be removed to give the Bay a chance to recover and to reduce impacts to human health and the environment.</p>
<p><b>Q2.</b> <i>Will docks for large boats be unpermitted in Port Gamble? So that these boats and the pollution they bring not stop or hinder the natural recovery?[Public]</i></p>	<p><b>A2.</b> Ecology does not have regulatory authority to make future land use decisions.</p>
<p><b>Q3.</b> <i>I hope Port Gamble can still be a destination/vacation town. It is so unique. I was in favor of the development of 1,000 acres in exchange for the other 7,000. It doesn't look like that will come to fruition. Hopefully something can be done with those 8,000 acres that will benefit both Pope Resources and the people of Kitsap county. I know the Tribe is fighting a day marina on the inside of the bay, can something be</i></p>	<p><b>A3.</b> Ecology does not have regulatory authority to make future land use decisions. .</p> <p>Development of Port Gamble Bay is guided by local Comprehensive Plans and Shoreline Master Programs. Any future projects must comply with these programs and obtain the necessary permits and approvals from federal, state, and local</p>

Comment	Ecology's Response
<i>built outside the bay to the north but still on Pope land?[Public]</i>	agencies.
<b>Q4.</b> <i>I would like to see a seal habitat restored in the bay.[Public]</i>	<b>A4.</b> Ecology, along with state and federal agencies and tribes, is planning a number of habitat restoration projects in the Bay that are focused on natural resources that were injured by the wood waste and other contamination. Planned potential future projects will benefit fish, shellfish, and eelgrass, which will also restore food resources for marine mammals and attract them to the Bay.
<b>Q5.</b> <i>Are you going to need volunteers for monitoring?[Public]</i>	<b>A5.</b> Ecology is not aware of opportunities for volunteers at this time.  Both the cleanup and habitat restoration projects will require long-term monitoring and stewardship activities to make sure the Bay becomes and stays healthy over time.
<b>Q6.</b> <i>The cleanup documents seem to ignore the fact that the bay is a navigable waterway, with passage for boats being important. Dredging and capping could have the potential to impair the narrow entrance channel, or to make even shallower the area of the bay useful to boats. Charts could become inaccurate. The usable area for sailing could be diminished. It's not all about salmon; navigation has a place too.[Public]</i>	<b>A6.</b> SEPA is designed to ensure that impacts and mitigation measures will be identified and implemented during the cleanup period. Remedial actions are not planned to include dredging or capping at the entrance channel. To the extent that dredging and capping occur in other areas of the Bay that also are used by boats, the remedial actions will be designed with navigation considerations (e.g., depth of water, prop wash) as key design criteria.
<b>Q7.</b> <i>In my opinion the most important cleanup is to remove the creosoted pilings, and be sure none are left as dead heads to wreck boats. Creosote is there because it is toxic and will retard (poison) marine growth. It shouldn't be left to kill fish, birds, anemones, mussels, clams, etc. [Public]</i>	<b>A7.</b> Creosoted pilings will be removed as part of the cleanup action.
<b>Q8.</b> <i>Dredging to remove toxic materials makes sense. The usefulness of the bay to navigation should be addressed in the documents. The channel should be maintained. If a cap will not shift and result in shallower areas, it could have a place. Would it be disturbed by anchoring boats? This bay is a refuge for boats heading</i>	<b>A8.</b> See response to Q6.

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<p><i>to and from Pt. Townsend and the San Juans. Boaters should be able to use it.[Public]</i></p>	
<p><b>Q9.</b> <i>The clams in the bay should be protected. They are abundant, and except for some invasion by Manila clams, remain native.[Public]</i></p>	<p><b>A9.</b> Protection of natural resources is one of the primary considerations in making cleanup decisions. Cleanup standards are developed to be protective of clams, as well as other natural resources. All discussion of cleanup standards is presented in Chapters 8-11 of the Final RI Report along with supporting data and statistical appendices.</p>
<p><b>Q10.</b> <i>The draft proposals do not address effects on birds. Particularly in the winter, hundreds of birds rely on the bay. In summer we even see marbled murrelets. If the operations will disturb birds, they should be timed to minimize the effect.[Public]</i></p>	<p><b>A10.</b> The project is within the Pacific Flyway for migratory birds. Marbled Murrelets have not been observed in the project vicinity, but may occur there due to their use of old-growth forested areas and marine habitats in Washington State that occur in the region of the project. The outcome of the sediment cleanup and habitat restoration actions will be a net positive effect on human health and the environment, including birds, because the site will be improved over current conditions. Additionally, construction will occur during approved work windows determined by the regulatory agencies for protection of ESA-listed species such as Marbled Murrelets, and other wildlife. USFWS is the federal agency responsible for protection of Marbled Murrelets. USFWS will be consulted during the permitting process to ensure that BMPs are adhered to during construction.</p>
<p><b>U.S. Fish and Wildlife Service (USFWS)</b></p>	
<p><b>Q1.</b> <i>I previously provided an exposure matrix spreadsheet to you for your use in identifying and describing the extent of potential stressors of the various projects we are working on under the PSI cleanup program. This spreadsheet should prove very useful as we continue to coordinate on the Port Gamble projects. While it is intended for use prior to and during ESA consultation, I have found that it is also helpful in addressing impacts to other natural resources of concern (e.g., migratory birds, forage fish, etc.). For ESA consultation in particular, I'd recommend that it be used as early as possible in the coordination process</i></p>	<p><b>A1.</b> The exposure matrix was considered in developing and evaluating the alternatives. Ecology will use the matrix as part of a forthcoming ESA consultation and in developing detailed restoration designs for the Site. This will be considered for potential implementation in coordination with the cleanup. Ecology has been working closely with USFWS on the restoration design process and will continue to do so in the future.</p>

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<p><i>(e.g., when identifying possible construction methods and their potential impacts) to avoid and/or minimize impacts from suspended sediment, SPLs, and other short- and long-term potential stressors when it's still early enough in the process to do so.[USFWS]</i></p>	
<p><b>Q2.</b> <i>In regards to the SMA-2 site, the Feasibility Study indicates that the dredge alternative would likely be used for the cleanup. If sheetpile shoring is used for this site, we recommend that you coordinate with us when formulating the cleanup action plan on sheetpile installation, removal, and associated shoreline restoration/fill placement activities. [USFWS]</i></p>	<p><b>A2.</b> The revised dredging alternatives will be implemented in conjunction with habitat restoration, which would include softening the shoreline and associated removal of fill and shoreline structures. USFWS has been closely involved in planning the potential future restoration projects and will also be involved during the final project design. Remedial design sampling will likely be required to determine whether <u>temporary</u> sheetpiling may be required in the northwest corner of SMA-2; if so, we will coordinate with USFWS on remedial design. Sheetpile, if required, would be installed only <u>temporarily</u> during construction to facilitate remedial excavation and/or dredging, and would be removed after that work was completed.</p>
<p><b>Q3.</b> <i>For SMA-3 and SMA-4, the Feasibility Study indicates that the preferred remedial alternative would be the MNR option, which would include no construction activities (e.g., dredging, capping, removal of existing piles, etc.). However, the ranking outputs provided for the various options do not sufficiently address potential for long-term impacts due to resuspension of contaminants and/or reintroduction of pathways when and if the existing creosote piles are removed from the site in future actions (that will likely be unrelated to the cleanup). In fact, the MNR option would leave over creosote-treated 600 piles in the SMA-3 and SMA-4 areas, which would serve as a creosote source over the long-term.[USFWS]</i></p>	<p><b>A3.</b> The revised cleanup plan includes removal of all creosoted pilings within the site in a manner that is closely coordinated with the active cleanup actions. The preferred remedy for SMA-3 and SMA-4 (Central Bay and Former Lease Area, respectively) is Enhanced Monitored Natural Recovery (EMNR) which does entail placement of a six-inch layer of clean material. This would be coordinated with the piling removal to ensure the least overall disruption and potential exposure from the combined piling removal and thin layer placement. Dredging or capping will be conducted as soon as possible after piling removal to prevent transport of piling debris and/or re-suspended contaminated sediments and wood waste to more remote areas of the Bay. Ecology will coordinate closely with USFWS as well as the other resource and permitting agencies during design and permitting to ensure that impacts from removing the pilings are minimized.</p>
<p><b>Q4.</b> <i>We recommend that all the piles in the two areas be removed during the cleanup. Piles should be either</i></p>	<p><b>A4.</b> The current cleanup plan requires removal of all creosoted pilings, sequenced with the active</p>



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<p><i>completely removed/extracted, or cut at least two feet below the surface of the substrate. Even if the remaining area is not capped and MNR is applied (if this is possible), we recommend that resultant holes be capped with sand or other clean substrate that is similar to existing natural conditions at this depth to prevent long-term exposure of aquatic biota--including but not limited to species listed under the ESA and their prey resources--to creosote contaminants, or other target contaminants at the site. For reference, I've included the link to a helpful NMFS document listing standard suggested BMPs associated with removal of creosote piles (<a href="http://swr.nmfs.noaa.gov/EFH-NonGear-Master.PDF">http://swr.nmfs.noaa.gov/EFH-NonGear-Master.PDF</a>; see p. 34).[USFWS]</i></p>	<p>cleanup actions to avoid or minimize impacts to the Bay as a result of the piling removal activities. Ecology will consult with the resource and permitting agencies during development of a piling removal plan to determine the best approach to this project. At this time, Ecology anticipates using the standard operating procedures developed by DNR for piling removal as a guide and the State Department of Fish &amp; Wildlife HPA permitting process which establishes best management practices for pile removal.</p>
<p><b>Q5.</b> <i>We will likely want to discuss issues such as: a) the potential for elevated in-air and underwater sound pressure impacts from installation of the piles, which, depending on installation methods, may have appreciable effects on ESA-listed species, migratory birds, and other aquatic biota.[USFWS]</i></p>	<p><b>A5.</b> Piling installation is currently not envisioned as part of the cleanup process. Ecology will consult with the USFWS on construction activities that may result in noise impacts.</p>
<p><b>Q6.</b> <i>We will likely want to discuss issues such as: b) the shoreline restoration/rehabilitation design (e.g., placement of habitat mix or other substrate fill, slope of intertidal area, etc).[USFWS]</i></p>	<p><b>A6.</b> Ecology has worked closely with USFWS throughout the cleanup planning processes, including planning and designing the potential restoration projects, and will continue to do so. Restoration projects include shoreline softening and recontouring, placement of habitat mix, eelgrass restoration, and other significant habitat enhancements in and around the mill site. Ecology will also consult with tribes, DNR, State Fish and Wildlife, and Kitsap County's Shoreline Master Program Requirements as appropriate.</p>
<p><b>Feasibility Study – Former Leased Area</b></p>	
<p><b>Q7.</b> <i>Please revisit the rankings for the Lease Site as compared to the Mill Site to insure an adequate level of consistency, as there appears to be some notable inconsistencies (or at least a possible perception of inconsistency). For example, the proposed MNR alternative for the lease sites--which would include no removal of any materials--reports a ranking value of 4 (out of 5) for permanence (p. 45), and notes that this is "consistent with the mill area FS". However, at some sites in the Mill Site FS, this rationale appears to differ.</i></p>	<p><b>A7.</b> We agree and noted that there were some inconsistencies in the rankings between these two FSs. The final FS has been combined into a single document for the entire Bay, and the scoring of alternatives for all SMAs have been modified to more directly reflect the criteria in the SMS rule. This was conducted in a consistent manner across all SMAs and alternatives.</p>

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<p><i>For the SMA-2 (Mill Site example), it appears the permanency score was related to varying levels of removal and potential reexposure. Where some wood (but not all) was removed, there was a score of 4; where all wood would remain but would be capped, the score was 3. In SMA-A and SMA-B, where all wood remains, and is not capped, there is a score of 4. This seems inconsistent for a rationale. I'm sure it's more complicated than that; the ranking is based on other factors--e.g., has more to do with how much wood is present and remains, depth of wood waste, characteristics of site, presence of eelgrass growing on borders, and/or some combination of these or other factors? The brief explanation for these considerations as provided in the feasibility studies seems to be a bit subjective based on the text when compared between the two documents. I understand the ranking process will be somewhat subjective by its very nature, but I'd recommend that these be looked at again to verify an adequate level of consistency between the two cleanup areas (Mill Site vs. Lease Site).[USFWS]</i></p>	
<p><b>Q8.</b> <i>If any creosote-treated piling remain in SMA-A or SMA-B, these should be removed as described and for the reasons noted above.[USFWS]</i></p>	<p><b>A8.</b> All creosoted pilings will be removed from the Site as part of the cleanup.</p>
<p><b>Port Gamble S'Klallam Tribe</b></p>	
<p><b>Q1.</b> <i>Erroneous application of MTCA statistical methodology to determine background dioxin concentrations.[S'Klallam Tribe]</i></p>	<p><b>A1.</b> Ecology has carefully considered its approach to selecting background data sets and applying statistical methods to determine whether site data distributions are elevated above natural background distributions. Currently-accepted scientific methodology has been used to make decisions about background concentrations for dioxin. The science and statistics in this area are evolving, and the agencies regulating sediments have collectively put a substantial degree of effort into updating these methods in the last few years. The MTCA statistical methods were originally developed for soil and upland sites, and it has become apparent that these methods have some deficiencies when applied to large sediment sites. In addition, in recent years more sophisticated nonparametric statistical methods have become widely available that minimize the need for</p>



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	<p>substitutions and multi-part tests, among other things. These methods were specifically developed to address complex data sets with sums of largely undetected chemicals with varying detection limits, and are highly applicable to the problems of comparing data sets near or below detection or quantification limits such as Port Gamble. The MTCA and SMS rules both allow use of latest science on a site-specific basis when approved by the Department. In this case, these newer statistical methods have been used in place of the older and less applicable MTCA statistical methods. The methods are fully described in the final RI and were used primarily to conduct comparisons to natural background. It should be noted that the final cleanup level for dioxins/furans was set based on the PQL, in accordance with the comment, since the PQL is higher than both the risk-based concentration and natural background (see Section 11).</p>
<p><b>Q2.</b> <i>There does not appear to be any regulatory basis for the elimination of dioxins as chemicals of concern for human health. Dioxins must therefore be carried forward into the evaluation of remedial alternatives in the Baywide FS. [S'Klallam Tribe]</i></p>	<p><b>A2.</b> In the Final RI, dioxins/furans have been retained as COCs in limited areas that exceed sediment cleanup standards (see RI Section 11.1). They have been carried forward into the FS for evaluation of remedial alternatives (see FS Sections 2.4 and 3.1).</p>
<p><b>Q3.</b> <i>This plan should include a review of methods, operational windows, and an approach that includes hydraulic cutting just below sediment surface for the preferred piling removal method. The plan should be fully integrated into relevant sections of the FS, including but not limited to 2.1, 3.4, 5.5, a new 6.6 (change current 6.6 to 6.7), and throughout sections 8 and 9. [S'Klallam Tribe]</i></p>	<p><b>A3.</b> A discussion of pile removal methods will be included in the Engineering Design Report once the Interim Action Plan has been approved. Ecology currently anticipates using the standard operating procedures developed by DNR for piling removal as a guide and the State Department of Fish &amp; Wildlife HPA permitting process which establishes best management practices for pile removal.</p>
<p><b>Q4.</b> <i>Section 3.4.4, p. 9 Comment: Similar to RI comment 7A above, the statement included in this section that "dioxin/furan TEQs and PCB Aroclors in sediment of Port Gamble Bay were no different from those in background sediment in Puget Sound" is unclear. Recommendation: Please specifically address the methods for and results of statistical comparisons between site and background data sets consistent with</i></p>	<p><b>A4.</b> All discussion of natural background comparisons has been removed from the FS Report and moved to Chapter 9 of the Final RI Report, where complete presentation of statistical methods, results, and data sets is provided.</p>

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<i>overarching comment 2. [S'Klallam Tribe]</i>	
<p><b>Q5.</b> <i>Section 4.2.2, p. 13 Comment: This section summarizes the procedures used to determine risk-based cleanup levels, which are based in large part on a comparison to some type of background concentration using "applicable statistical procedures," and on developing cleanup levels that are protective of human health for the shellfish ingestion pathway "according to procedures described in MTCA and supporting guidance." Recommendation: Please describe and cite the applicable statistical procedures used, as well as the relevant procedures described in MTCA and supporting guidance. [S'Klallam Tribe]</i></p>	<p><b>A5.</b> All discussion of cleanup standards based on risk, natural background, and/or PQL has been moved to Chapters 8-11 of the Final RI Report along with supporting data and statistical appendices.</p>
<p><b>Q6.</b> <i>Section 3.1, p. 5 Comment: This section states that historical releases of sawdust and wood chips "likely migrated from the mill area throughout much of the bay," although it is not clear from this FS or other site-related documents whether the entire bay is considered part of the Mill Site or the Leased Area Site, or what parties would be responsible for conducting any required actions related to historical releases. Recommendation: This document, as well as other relevant site documents, should include a description of site boundaries, based on the nature and extent of contamination related to site releases. Until site boundaries are clearly defined through adequate site characterization, any remedial actions should be considered interim actions. [S'Klallam Tribe]</i></p>	<p><b>A6.</b> The Final RI Report merges the Mill Site and Leased Area into one report. The referenced discussion can now be found in Chapters 10-12 of the Final RI. This presents a conceptual site model discussing transport of contaminants. The final report presents a complete picture of the Bay including cleanup standards and site boundaries. Potentially liable parties are jointly and severally responsible for cleanup throughout the Bay and are currently negotiating who will conduct cleanup in which areas.</p>
<p><b>Q7.</b> <i>Site-to-background comparison does not support eliminating dioxins as COCs. [S'Klallam Tribe]</i></p>	<p><b>A7.</b> Dioxins/furans have been retained as COCs in limited sediment areas exceeding the dioxin/furan cleanup standards presented in Chapter 11 of the RI Report.</p>
<p><b>Q8.</b> <i>The Tribe requests full consideration of the cPAH source control and hotspot removal actions proposed in its April 26, 2011 Technical Workgroup Presentation, which is incorporated as Appendix I to these comments. [S'Klallam Tribe]</i></p>	<p><b>A8.</b> A number of significant actions are being incorporated into the cleanup plan to accomplish PAH source control and hot spot removal, including removal of all creosoted pilings at the site, active cleanup in areas of highest PAH concentrations, and remediation of shoreline areas previously impacted by creosote and/or boiler ash. For example, the Mill Site South area with the highest level of carcinogenic PAHs is targeted for full removal of contaminated sediments (see</p>

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	Section 3.2 of the FS for the identification of SMAs driven by presence of cPAHs).
<p><b>Q9.</b> Section 3.4.3, p. 8 Comment: <i>As in the RI (see RI comment 3), this section states that "[f]or dioxin/furans in clams and oysters, all of the samples were non-detect for all congeners and homolog groups." In fact, both individual congeners and homolog groups were detected in one oyster sample (Oyster #2A). RI Table 12. Recommendation: Please correct this error and reassess any conclusions drawn from it. [S'Klallam Tribe]</i></p>	<p><b>A9.</b> All data have been checked and new data from 2010 and 2011 added. The complete data set is presented in Appendix A. The conclusions presented in the Final RI are based on this more complete data set.</p>
<p><b>Q10.</b> Section 3.4.4, p. 9 Comment: <i>The statement here that "[c]omparison of the sediment levels to background and identifying sediment cleanup levels based on background concentrations would, in turn, be protective of shellfish ingestion from the bay" is not supported by the available data. While in specific cases it is permissible under the regulations for a cleanup level based on natural background to exceed risk-based concentrations, this does not mean that such a level would be protective. Particularly for globally distributed bioaccumulative chemicals, levels that may be considered natural background may exceed acceptable risk thresholds. Recommendation: Please revise this statement and eliminate any conclusions regarding protectiveness that are not clearly supported by the data. [S'Klallam Tribe]</i></p>	<p><b>A10.</b> We agree. Natural background levels for a number of chemicals in Puget Sound are above risk-based levels and are not protective of human health. The text of the RI and FS has been carefully reviewed and revised to be clear about the risks that exist both at the site and in natural background areas.</p>
<p><b>Q11.</b> Section 3.5.2, p. 10 Comment: <i>It is not clear how the sedimentation rates were derived from the data included in Appendix E, and it appears from the data that the rate given here (0.40 to 0.48 cm/year) may be high for the period represented by the cores. Section 5.3 indicates that "this accumulation rate corresponds to a sedimentation rate of 0.22 to 0.26 cm/year in sediment deeper than 60 cm and 0.43 to 0.48 cm/year in shallow (0 to 10 cm) sediment" and that "this decrease in apparent sedimentation with depth is due to consolidation and increased density of deeper sediments." However, there is no supporting information or calculations regarding consolidation or other key factors. Note that the projected time required for accumulation of 10 cm of new sediment (20 to 25 years) is twice as long as the timeframe projected for natural recovery (on the order of 12 years) included in</i></p>	<p><b>A11.</b> It is difficult from the existing data to accurately determine sedimentation rates near the mill site, although we believe the estimate of 20-25 years in the center of the Bay is reasonable. However, it is clear that these sedimentation rates are not rapid enough to allow recovery within the 10-year timeframe anticipated by the SMS for most cleanups. Therefore, we did not put additional effort into further characterizing these very low sedimentation rates.</p>

Comment	Ecology's Response
<p><i>Section 6.3.1.</i></p> <p><i>Recommendation: As this rate is a key factor in determining the restoration time frame, more supporting information and discussion should be provided regarding the projected sedimentation rate and related factors that may influence natural recovery. A review of possible impacts and potential increased sedimentation rates due to long-term, ongoing navigational dredging at the mill site and other Port Gamble Bay areas between 1853 and 1995, as well as interim dredging actions, should be included in this section of the FS or referred to if included in a new appendix. [S'Klallam Tribe]</i></p>	
<p><b>Q12.</b> <i>Comment B: The statement here that concentrations of cPAHs "exceeded the calculated 6.0 ug/kg background concentrations by up to about a factor of three" is inaccurate. Concentrations actually exceeded the calculated background by up to about a factor of 10. Table G-17. Also, cPAH concentrations are not included in any of the data summary tables here or in the RI. Recommendation B: Please correct this statement and provide sediment data here and in the appropriate RI tables including total cPAH concentrations. [S'Klallam Tribe]</i></p>	<p><b>A12.</b> All of this information is now presented in detail in Chapter 5.5.1 of the Final RI Report, along with detailed discussion of the data, tables and maps of cPAH concentrations, and a fingerprinting analysis. The cPAH data are provided in Appendix A of the RI Report.</p>
<p><b>Q13.</b> <i>Comment C: The statements here that the single crab sample from the bay "was below the background crab tissue concentration" and that "all dioxin/furan congeners were non-detect in all clam and oyster samples from the Bay" are not accurate, and do not support the conclusion that dioxin should be eliminated as a COC. See also RI Comment 9. Additionally, biota dioxin data collected by the Tribe and provided to Ecology in September 2010 included detections of 8 of the 17 congeners in oysters and 3 of the 17 congeners in cockles. See Appendix B. Detected concentrations of dioxins in biota collected by the Tribe around the Mill Site were significantly higher than in any other tissue samples from the bay, with the exception of crab hepatopancreas. Recommendation C: Correct the factual errors in this statement, and delete the conclusion to eliminate dioxins as COCs since it is not supported by the data or regulations. Also, consider including or discussing data collected by the Tribe.</i></p>	<p><b>A13.</b> Additional data in sediments and tissues were collected by Ecology in 2011, and all of the tribal sediment and tissue data have also been added to the data set. All discussion of the data has been moved to Chapters 5 and 6 of the Final RI. Dioxins/furans have been retained as COCs in limited sediment areas exceeding the dioxin/furan cleanup standards presented in Chapter 11 of the RI Report.</p>

Comment	Ecology's Response
<i>[S'Klallam Tribe]</i>	
<p><b>Q14.</b> <i>Table 1. Figure 7 Comment: The weight of evidence scoring in Table 1 indicates that samples 22, 54, and 64 all have a score of 4 and should be included in SMA-B, but are color coded as 3s in Figure 7. This modification would change the size of SMA-B. Recommendation: Please make this correction. [S'Klallam Tribe]</i></p>	<p><b>A14.</b> This weight-of-evidence approach is no longer used in the Final FS. The use of updated bioassay procedures cleared up much of the inconsistencies and quality assurance failures in that data set and allowed direct use of SMS biological interpretive criteria for decision-making.</p>
<p><b>Q15.</b> <i>Table 2 Comment: This table indicates that through the screening process, all technologies other than institutional controls, monitored natural recovery (MNR) and enhanced natural recovery (ENR) have been "discarded." Recommendation: Either confirm that this is the case or change this table accordingly. [S'Klallam Tribe]</i></p>	<p><b>A15.</b> The Final FS has been revised to consider active cleanup alternatives for all SMAs in the bay (see Chapter 4 generally and Section 4.3.10 specifically).</p>
<p><b>Q16.</b> <i>Figure 2 Comment: This figure displays cPAH TEQ exceedances of the local background concentration, which is identified in Tables G-9 and G-17 of RI Appendix G as 6.04 ug/kg TEQ. However, this figure uses a Puget Sound background concentration of 7.7 ug/kg TEQ. The difference in these values would impact at least 5 sample locations. It appears that the value of 7.7 may be from the entire Puget Sound data set. Recommendation: Please correct this figure consistent with Table G-9 and G-17 of Appendix G, correctly identify those locations that exceed background (by one or three times), and modify the "human health overlay" of the SMAs as presented in Figure 8. [S'Klallam Tribe]</i></p>	<p><b>A16.</b> As noted in the RI responses, updated statistical measures and a revised background data set have been selected for use in the natural background comparison. The cPAH cleanup standard has been selected based on the 90/90 upper threshold limit, as described in Chapters 9 and 11 of the Final RI Report. An SMA has been defined based on this concentration that extends throughout much of the bay (see Chapter 12 of the RI Report and Section 3.2 of the FS).</p>
<p><b>Q17.</b> <i>The recommended cleanup alternatives similarly prioritize an expedited wood waste cleanup over one that is demonstrably protective of human health. This approach to human health risks is inconsistent with MTCA regulations and unacceptable to the Tribe. [S'Klallam Tribe]</i></p>	<p><b>A17.</b> The Final FS considers human health and ecological risk equally, as required by MTCA and SMS (see Section 6.2 for the revised evaluation of alternatives).</p>
<p><b>Q18.</b> <i>As Ecology considers these comments, please be mindful of the fact that tribal members will continue to eat shellfish from Port Gamble Bay long after these cleanups are complete and even if the cleanups fail to reduce health risks from hazardous substances at these two sites. [S'Klallam Tribe]</i></p>	<p><b>A18.</b> Ecology acknowledges the importance of shellfish in the bay to tribal subsistence and commercial fishermen and understands that these uses will continue to occur even in the face of remaining risks. Human health risks will be reduced upon completion of cleanup and will continue to diminish as Enhanced Monitored Natural Recovery</p>



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	(EMNR) and Monitored Natural Recovery (MNR) ensues. The Final FS selects a remedy that reduces risks and sources of these contaminants to the maximum extent practicable. However, Ecology recognizes that risks may still remain over the long term. See A19.
<p><b>Q19.</b> <i>The recommended cleanup alternatives in the FS are not protective of human health as required by MTCA regulations. [S'Klallam Tribe]</i></p>	<p><b>A19.</b> The alternatives selected in the Final FS reduce risks to human health and the environment as much as is practicable and possible. Because risks even in natural background areas of Puget Sound exceed risk-based levels, it is not possible to clean up all contaminants to levels that fully meet risk-based levels. MTCA allows for consideration of natural background levels, as well as technical practicability, in determining whether risk-based levels can be met.</p>
<p><b>Q20.</b> <i>The FS does not address human health in its alternatives analysis. Section 7.1.1 lists protection of human health as the first threshold requirement under MTCA, but the description and evaluation of remedial alternatives in section 8, as well as the conclusions and recommendations drawn from this discussion in section 9, focus solely on environmental risk. Thus, even if SMA zones derived from benthic ecological criteria were expanded to include areas where human health risks have been documented, compare FS 21 with FS Comment 10, that expansion alone would not be sufficient to protect human health. [S'Klallam Tribe]</i></p>	<p><b>A20.</b> The Final FS includes human health considerations fully in the development and evaluation of the alternatives (see the revised evaluation of alternatives in Section 6.2).</p>
<p><b>Q21.</b> <i>Ecology must revise its alternatives analysis to include a discussion of human health risks and verify that the expectations outlined in section 370(7) are met before recommending MNR as a cleanup alternative for any portion of the Bay. [S'Klallam Tribe]</i></p>	<p><b>A21.</b> The Final FS meets these requirements and includes a more complete evaluation of monitored natural recovery, including the technical practicability analysis required by SMS (see Section 6.4). MNR has been selected only for SMA-5, where active cleanup actions are not practicable.</p>
<p><b>Q22.</b> <i>Section 5.0, p. 21 Comment: This section states that baywide SMAs were first developed to address exceedances of the benthic ecological criteria, but were finalized to include an overlay of areas that exceeded human health risk levels. However, the acreage of SMA-A and SMA-B included on p. 25 of the FS and the SMA configurations evaluated for remedial actions do not</i></p>	<p><b>A22.</b> The SMAs have been updated in Chapter 12 of the Final RI Report to take human health and ecological risks equally and fully into account.</p>

Comment	Ecology's Response
<p><i>include the human health "overlay." The final SMAs are only based on ecological impacts associated and wood waste indicators, and do not consider human health impacts. Recommendation: Please revise SMAs to adequately address human health concerns, incorporating information from the aforementioned piling and overwater structure removal plan as necessary, and revise all related discussion, evaluation, and cleanup alternatives accordingly. [S'Klallam Tribe]</i></p>	
<p><b>Q23.</b> <i>Section 4.2.2, p. 14 Comment A: Note that cleanup levels should be based on the highest of the risk-based concentration, the PQL, or natural background, and not simply background. See RI Comment 8. Recommendation A: Make this correction in the text to be consistent with MTCA; indicate "natural background" as defined at WAC-173-340-200; and indicate how the data sets used to represent background for the purposes of setting cleanup levels meet the criteria for natural background. Follow these recommendations in all other instances where "natural background" should have been used. [S'Klallam Tribe]</i></p>	<p><b>A23.</b> We agree with this comment. The Final RI Report provides a complete discussion of these three factors and their relationship for each of the contaminants of concern (see RI Chapters 8-11). Both the RI and the FS Reports have been updated to consistently use "natural background."</p>
<p><b>Q24.</b> <i>There can be no doubt that a comprehensive creosote piling and overwater structure removal plan is necessary here given the large number of pilings in Port Gamble Bay, the propensity of creosote pilings to release cPAHs and other hazardous substances throughout their lifetime, and the toxicity of cPAHs to humans and other forms of life. [S'Klallam Tribe]</i></p>	<p><b>A24.</b> We agree. The timing and method of piling and structure removal is critical to the overall success of the cleanup. A piling removal plan will be prepared as part of or alongside the Engineering Design Report.</p>
<p><b>Q25.</b> <i>The Tribe also does not support the use of monitored natural recovery as a Baywide remedy given the significant bioassay failures and hotspots of human health risk detected near to and within proposed natural recovery areas. [S'Klallam Tribe]</i></p>	<p><b>A25.</b> In the Final FS, monitored natural recovery areas have been reduced in size, and more active cleanup alternatives selected in areas with higher levels of contamination, significant wood waste deposits, and both human health and ecological risks. MNR has been selected only for SMA-5, where active cleanup actions are not practicable.</p>
<p><b>Q26.</b> <i>The FS concludes that Monitored Natural Recovery (MNR) meets these requirements without: (a) Discussing source control-much less ensuring that source control has been conducted to the maximum extent practical, see Mill Site comments. [S'Klallam Tribe]</i></p>	<p><b>A26.</b> More discussion and emphasis has been placed on source control in the Final FS, including removal of all creosoted pilings and active cleanup in areas of higher concentrations and biological toxicity.</p>

Comment	Ecology's Response
<p><b>Q27.</b> <i>The FS concludes that Monitored Natural Recovery (MNR) meets these requirements without: (b) Explaining how leaving detected hotspots of cPAH, dioxin, PCB, and cadmium contamination on-site does not pose an unacceptable threat to human health. [S'Klallam Tribe]</i></p>	<p><b>A27.</b> Higher areas of sediment contamination are included in the active cleanup areas recommended in the Final FS. The Final FS includes a more complete evaluation of monitored natural recovery, including the technical practicability analysis required by SMS when contaminants will be left in place for MNR (see Section 6.4 of the FS).</p>
<p><b>Q28.</b> <i>The FS concludes that Monitored Natural Recovery (MNR) meets these requirements without: (c) Providing any evidence of natural biodegradation or chemical degradation of these hazardous substances. [S'Klallam Tribe]</i></p>	<p><b>A28.</b> As noted above, it is anticipated that natural degradation and recovery will be slow in this bay. Selection of monitored natural recovery areas is based largely on an inability to actively remediate an area as large as the entire bay. Demonstration that there is no practicable alternative is the basis for this choice (see WAC 173-204-590(2)(f) and Section 6.4 of the FS).</p>
<p><b>Q29.</b> <i>The FS concludes that Monitored Natural Recovery (MNR) meets these requirements without: (d) Justifying its decision to use the post-cleanup monitoring process to address data gaps relevant to setting cleanup levels that are protective of human health. See FS Comment 9. [S'Klallam Tribe]</i></p>	<p><b>A29.</b> Cleanup levels protective of human health have been set in Chapter 11 of the Final RI and used to establish SMAs and site boundaries in Chapter 12. These cleanup levels will also be used in post-cleanup monitoring.</p>
<p><b>Q30.</b> <i>Section 3.1, p. 6 Comment: This section indicates that "[r]esuspension and loss of dredging residuals from the 2003 and 2007 interim action dredging projects at the Mill Site may have also contributed to releases of fine wood material." It is not clear that the potential for resuspension and loss of dredging residuals from future proposed remedial actions is adequately considered when making projections regarding the effectiveness and time frame for natural recovery options. Recommendation: The FS should discuss the potential for resuspension and redistribution of materials, including all hazardous substances that have been detected within dredging areas, associated with remedial actions and the potential impact on the effectiveness and time frame for complying with cleanup levels through natural recovery alternatives. [S'Klallam Tribe]</i></p>	<p><b>A30.</b> US Army Corps of Engineers (USACE) 401 water quality permit requirements will be met to control potential impacts due to dredging operations. This can include monitoring of suspended solids (SS), such as wood debris and control of dissolved or drifting contaminants.</p> <p>Monitored natural recovery will likely require at least a 20-year timeframe, but it is not clear exactly how long until various different aspects recover (e.g., ecological health vs. reducing human health contaminants of concern to background levels) or whether it is possible to precisely predict the effects of active cleanup on other areas of the Bay. The phasing of the cleanup actions will take into account these potential impacts in order to minimize them as much as possible. Monitored natural recovery has been selected only for SMA-5, which has lower-level contamination and no practicable active cleanup alternative.</p>



Comment	Ecology's Response
<p><b>Q31.</b> Section 5.0, p. 21 Comment: This section indicates that "future bay-wide monitoring will assess data gaps related to potential human health risks as a key objective." Monitoring conditions after the cleanup will not ensure that the cleanup itself is protective of human health. The data gaps described in section 4.1. I of the FS, as well as others described in these comments, must be addressed now under WAC 173-340-350(7)(c)(iii) &amp; (iii)(G) to ensure that the selected cleanup action meets the requirements of WAC 173-340-360. Post-cleanup monitoring will be necessary to ensure that cleanup levels protective of human health were and continue to be satisfied. Recommendation: Ensure that adequate source control, i.e. creosote piling removal and hot spots, are addressed with appropriate cleanup action alternatives. Specify how and when identified data gaps will be filled to adequately characterize the site for the purpose of developing and evaluating cleanup action alternatives. [S'Klallam Tribe]</p>	<p><b>A31.</b> Data gaps, including those related to human health, were evaluated in 2011 and a sampling program conducted to fill them. The Final RI includes a complete assessment of human health risks and cleanup levels based on human health, natural background, and PQLs. These statements have been removed from the Final FS. Removal of all creosoted pilings and areas of high chemical contamination through active cleanup have been included in the final preferred alternatives.</p>
<p><b>Q32.</b> Section 8.1.1 Comment: The working assumption stated in this section, that the restoration time frame for SMA A would be shorter than SMA B because there are only SQS exceedances, as opposed to CSL exceedances, is somewhat unclear, and does not take human health concerns into account. Recommendation: Please provide more detail regarding the anticipated effectiveness and time frame for natural recovery, including more substantiation for why deposition of less than 10 cm of new clean sediment would be expected to eliminate unacceptable ecological impacts, how it would eliminate impacts related to the continued degradation of wood waste, and how it would address human health concerns within the respective SMA areas. Specifically address whether any biological recovery assumptions drawn from the Mill Site may be attributable to the 2003 and 2007 dredging operations that removed 31,000 cy of sediment from the southern mill area, and why recovery time is based on the maximum sedimentation rate from the core samples. [S'Klallam Tribe]</p>	<p><b>A32.</b> The data collected in 2011 have provided additional information on bioassay responses as well as human health contaminants of concern. The SMAs for this area have been redrawn and the natural recovery discussion rewritten. The question raised by the commenter has been addressed. Monitored natural recovery is expected to be slow throughout the Bay and has been selected only in areas for which there is no other practicable alternative, and as such is not subject to the 10-year timeframe for recovery.</p>

Comment	Ecology's Response
<b>Feasibility Study – Mill Site</b>	
<p><b>Q33.</b> Like the Baywide FS, the Mill Site FS relies on natural recovery (SMAs 3 and 4) without demonstrating compliance with the four requirements of WAC 173-340-370(7). Nor does the FS discuss human health risks in its description and evaluation of cleanup alternatives. Instead, the FS selects a cleanup alternative based solely on environmental risks and then concludes that this alternative is adequately protective of human health because (1) interim dredging actions in 2003 and 2007 reduced on-site cPAH concentrations, (2) 640 creosote piles will be removed during the cleanup to accommodate further dredging, (3) additional creosote piles are "targeted for removal as part of other restoration programs," and (4) future trends in cPAH concentrations will be monitored. FS 76-77. There are a number of problems with this analysis. First, the determination of adequacy is made without ever referencing the cPAH cleanup level set in Appendix G, Table G-17. Second, there is no formal discussion of cPAH source control or other indication that it has been conducted to the maximum extent practicable as required by WAC 173-340-370(7). The FS acknowledges that MNR is appropriate "following source control" of wood waste, p. 30, but it never discusses source control for cPAHs or other COCs. Chemical fingerprinting suggests that elevated cPAHs at the site are primarily due to ongoing releases from creosote pilings, p. 77, yet the FS never attempts to quantify the number of pilings remaining on-site or elsewhere in the Bay (although Ecology staff have stated in public that such piles likely number in the thousands) or explain how the cleanup will protect human health if these cPAH sources are not removed. Finally, MTCA states: "[T]he feasibility study shall include at least one permanent cleanup action alternative...to serve as a baseline against which other alternatives shall be evaluated for the purpose of determining whether the cleanup action selected is permanent to the maximum extent practicable." WAC 173-340-350(8)(c)(ii)(A). Considering a single human health cleanup alternative with minimal source removal does not comply with this requirement. [S'Klallam Tribe]</p>	<p><b>A33.</b> Human health-based cleanup standards have been set in the Final RI and are used as the basis for development of SMAs and design and evaluation of FS alternatives. Source control is addressed in the Final FS through active remediation of areas of higher contamination and areas with large deposits of wood waste, and through removal of all creosoted pilings and structures in the cleanup area. Active cleanup alternatives have now been selected for SMA-1, -2, -3, and -4. The requirements for monitored natural recovery are referenced and addressed in the Final FS, including the technical practicability evaluation required by the SMS when recovery is expected to require more than 10 years (see Section 6.4).</p>
<p><b>Q34.</b> Section 2.5, p. 11-15 Comment: The sediment site conceptual model refers to supposed natural</p>	<p><b>A34.</b> The results of bioassay sampling in 2011 no longer support the suggestion that recovery is</p>

Comment	Ecology's Response
<p><i>sedimentation rates of 0.4 to 1.0 cm/year. These rates are used in the design of alternatives, e.g. FS, p. 30, and in the evaluation of alternatives, FS p. 57-68. The FS notes that the upper end of this range may have been influenced by past human activities and may be high. FS, p. 12. More analysis is necessary to verify the sedimentation rate at the Mill Site as that rate is a crucial factor in evaluating whether remediation will occur within the time required by law. This section also indicates that biological recovery in the southern embayment from 2002 to 2008 was largely attributable to sedimentation. More information is needed to support this conclusion, including whether some portion of the detected biological recovery may be attributable to the removal of 31,000 cy of sediment from the southern mill area during the same time period. Recommendation: As the sedimentation rate is a key factor in determining the restoration time frame, more supporting information and discussion should be provided regarding the projected sedimentation rate and related factors that may influence natural recovery. A review of possible impacts and potential increased sedimentation rates due to long-term, ongoing navigational dredging at the mill site and other Port Gamble Bay areas between 1853 and 1995, as well as interim dredging actions, should be included in this section of the FS or referred to if included in a new appendix. The FS should analyze whether on-site contamination that is not removed may be transported to actively remediated areas through natural sedimentation, dredging, and piling removal. [S'Klallam Tribe]</i></p>	<p>occurring in areas around the mill. As a result, active cleanup of larger areas is being required. We agree that sedimentation rates from the center of the Bay are likely to be more realistic than those measured near the mill, due to the various kinds of disturbances there. Natural recovery in areas not actively remediated is expected to be slow, longer than the 10-year timeframe established in the SMS. Therefore, monitored natural recovery has been selected only for areas where there is no practicable alternative.</p> <p>USACE 401 water quality permit requirements will be met to control potential impacts of residual contamination from dredging operations. This can include monitoring of suspended solids such as wood debris and control of dissolved or drifting contaminants. The monitored natural recovery (MNR) monitoring plan will include chemical analysis. This will provide information on any potential impacts from re-suspended contaminated sediments and contingency actions that may be necessary.</p>
<p><b>Q35.</b> <i>Section 7.6, FS pp. 79-80 Comment: OPG has withdrawn its application for permits required under federal law for the proposed dock referenced in this section. In view of the withdrawal of that particular proposal, and because the proposal would have been inconsistent with applicable law, the proposal should not be discussed in the FS. Recommendation: Delete the discussion of the OPG dock proposal in Section 7.6. [S'Klallam Tribe]</i></p>	<p><b>A35.</b> The final cleanup alternatives recommended in the FS are selected fundamentally on the basis of cleanup considerations. Discussion of the dock proposal has been removed from the Final FS.</p>
<p><b>Q36.</b> <i>Section 6.2.2.1, p. 50 Comment: For SMA-I, the dredge boundary does not extend to the end of the site boundary. From the feasibility study, this area still</i></p>	<p><b>A36.</b> As a result of new data collected in 2011 and subsequent redrawing of the SMA boundaries, the SMAs and proposed cleanup alternatives have</p>

Comment	Ecology's Response
<p><i>appears to show bioassay results greater than CSL and SMS criteria. Additionally, this area is more exposed to currents than the lower bay. Recommendation: Since it has been shown that the northern or upper part of the site most likely contaminated lower parts of the site due to currents, cleaning up this northern part of the site to a higher standard is necessary to prevent recontamination of natural recovery zones in the lower bay. See WAC 173-340-370(7). [S'Klallam Tribe]</i></p>	<p>been modified in the Final FS. Active cleanup alternatives have been recommended for areas with bioassay exceedances.</p>
<p><b>Q37.</b> <i>Section 7.4, p. 78 Comment: As noted in both the Baywide and Mill site FS's, the sites have a rich cultural resource environment. Cultural resources are not limited to archeological resources but also include environments such as resource harvest areas, travel routes, and traditional landmarks; intangibles such as oral histories and songs; and the integrity of the relationship between these things and tribal members. The documented archeological sites around the Bay and the areas identified in the Cultural Resources Overview for the Port Gamble Bay Clean Up and Restoration Project report, referenced in this section and in section 9.3.1 of the Baywide FS, should not be viewed as the only areas or circumstances where there is a high probability of affecting or encountering cultural resources. All of Port Gamble Bay is recognized by the Port Gamble S'Klallam Tribe as a Traditional Cultural Landscape under the National Historic Preservation Act. Under the criteria in 36 CFR Part 60, Port Gamble Bay and its shorelines, including the Baywide and Mill cleanup sites, are eligible for listing on the National Historic Register as a Traditional Cultural Property. Recommendation: The Baywide and Mill FS's acknowledge that cultural resources will need to be considered in later, implementation stages of the cleanup. In planning for those stages, several principles should be followed. First, because of the high probability that cultural resources significant to the Tribe will be affected in the cleanup process, cultural resource assessments, including archeological surveys, will be needed at the Mill Site and Baywide, as will archeological monitoring plans. The presumption should be that archeological monitoring will be needed throughout the cleanup process and at all sites, unless a specific site activity is determined to have a very low likelihood of resource disturbance. Third, the resource</i></p>	<p><b>A37.</b> Cultural, archaeological, and historical resources are present in the Bay and surrounding uplands. During the remedial design and permitting phase, an assessment of cultural resources impacts will be conducted in consultation with Tribes and the Department of Archaeology and Historic Preservation (DAHP). The Section 106 compliance process and government-to-government consultation will be led by the U.S. Army Corps of Engineers. Ecology and other parties affiliated with this action will comply with cultural resource provisions of SEPA and support the Section 106 consultation effort by coordinating with Tribes and DAHP. The cultural resources process will be conducted in accordance with state and federal regulations and generally will be conducted as follows:</p> <ol style="list-style-type: none"> <li>1. A draft of a cultural resources assessment plan has been developed and provided to the tribes and DAHP for review. An archaeological survey and a geoarchaeological analysis are planned to be conducted as appropriate. A draft cultural resources survey report is expected to be provided to tribes and DAHP for review.</li> <li>2. The anticipated cultural resources survey report will make recommendations for archaeological monitoring. An archaeological monitoring plan will be developed and provided to tribes and DAHP for review.</li> <li>3. Ecology anticipates an on-going dialogue with tribes regarding cultural resources. In addition to reviewing the documents</li> </ol>

Comment	Ecology's Response
<p><i>assessments and monitoring plans must be designed with the Port Gamble S'Klallam Tribe, and the monitoring plans must include a data recovery plan and curation agreement. Fourth, sufficient time and resources must be made available for the development and implementation of these assessments and monitoring plans and for proper response if archaeological resources are discovered. Finally, mitigation plans will be needed where cleanup actions affect cultural resources, including effects on the relation of Port Gamble Tribal members to the Bay, such as interference with natural resource harvest. [S'Klallam Tribe]</i></p>	<p>described above, opportunities for meetings and site visits will be provided.</p> <ol style="list-style-type: none"> <li>4. Timeframes for review and comment on documents, and in the case of unanticipated discovery, will be discussed with tribes and DAHP.</li> <li>5. If there will be adverse effects to historic properties, a Section 106 agreement document describing mitigation measures will be developed in consultation with tribes and DAHP and other responsible agencies and entities as appropriate.</li> </ol>
<p><b>Q38.</b> <i>As stated in the Tribe's overarching Baywide concerns, there is not a valid basis for eliminating dioxins and PCBs as COCs or for developing a cleanup action plan without first addressing data gaps. Based on detected dioxin and PCB contamination within the Mill Site, additional sampling for these substances should be conducted consistent with the Tribe's Baywide recommendations. [S'Klallam Tribe]</i></p>	<p><b>A38.</b> Additional sampling for these chemicals was conducted in 2011, and a complete human health risk assessment and comparison to natural background concentrations conducted. These evaluations formed a sufficient basis for selection of site-related COCs and development of associated risk-based cleanup standards. Dioxins/furans have been retained as COCs in limited areas that exceed the site-specific cleanup standards. PCBs concentrations are comparable to those in natural background areas, and thus PCBs are not considered COCs for the site.</p>
<p><b>Q39.</b> <i>Other necessary actions to address data gaps include: • Additional cPAH sampling with better detection limits outside of proposed dredging areas to ensure that cleanup levels are met. [S'Klallam Tribe]</i></p>	<p><b>A39.</b> Additional sampling to address this data gap was completed in 2011 throughout the Bay and the results incorporated into the RI Report, including development of cleanup standards for cPAHs and establishment of the very large cPAH Background SMA-5 based primarily on exceedance of cPAHs above background concentrations.</p>
<p><b>Q40.</b> <i>Other necessary actions to address data gaps include: • A comprehensive creosote piling and overwater structure inventory. [S'Klallam Tribe]</i></p>	<p><b>A40.</b> This has been initiated by PR/OPG and will be completed during remedial design.</p>
<p><b>Q41.</b> <i>Other necessary actions to address data gaps include: • In order to accurately characterize contamination from the Mill Site and minimize the need for the site to be reopened in the future, conduct sediment trends analysis to determine where Mill Site contaminants have likely settled and will be likely to resettle if resuspended during dredging and piling</i></p>	<p><b>A41.</b> Additional sampling of dioxins, PAHs, and PCBs with lower detection limits was conducted in 2011 and integrated into the Final RI report. The more thorough data collection and evaluation in the Final RI includes an evaluation of how and where contaminants are moving in the Bay, and provides a basis both for identification of historical</p>



Comment	Ecology's Response
<p><i>removal; additional sampling with appropriate detection limits for cPAHs, dioxins, and PCBs in those settling areas; discussion of best management practices to limit resuspension of COCs. [S'Klallam Tribe]</i></p>	<p>sources and evaluation of how cleanup actions may affect the Bay. Best management practices to limit re-suspension of COCs during active cleanup actions will be developed during engineering design.</p>
<p><b>Q42.</b> <i>Other necessary actions to address data gaps include: • Discussion of effect of piling removal on sedimentation rates, hydrology, and sediment transport. [S'Klallam Tribe]</i></p>	<p><b>A42.</b> We have a general sense from studying existing transport in the Bay what may happen when pilings and structures are removed. However, it may not be possible to predict all of these effects in advance because the hydrology of some areas of the Bay will change. Long-term monitoring after cleanup is completed will provide information to help evaluate these processes and adaptively manage the site.</p>
<p><b>Q43.</b> <i>Other necessary actions to address data gaps include: • A map depicting the areal coverage of cPAH and cadmium contamination; if cadmium and cPAH contamination is not co-located, additional discussion explaining how cPAH risk control adequately protects against human health risks from cadmium; additional discussion describing the steps taken to determine that there is no known cadmium source within the Bay. [S'Klallam Tribe]</i></p>	<p><b>A43.</b> Maps of cadmium and cPAH concentrations are now included in Chapter 5 of the Final RI. These contaminants appear to have different sources and different transport pathways, as discussed in that section. There is only one station that exceeds the risk-based cleanup standard for cadmium, and it appears to be concentrated there through natural processes (adherence to clay particles). Therefore, although this station is included in the cPAH cleanup SMA, no special cleanup actions are proposed for cadmium. In 2011, Ecology sampled additional intertidal areas, both near the mill and around the Bay, as well as drainages in the south and southwest areas of the Bay, in an attempt to find other potential sources. Nothing new or notable was found – intertidal areas were among the cleanest sediments sampled in the Bay except immediately adjacent to the Mill site. Intertidal areas adjacent to the Mill site in SMA-1 and SMA-2 that exceed cleanup standards are being excavated to a depth of at least two feet below the existing surface and replaced with clean material as part of the preferred alternatives (see Final FS Sections 6.1.1 and 6.1.2).</p>
<p><b>Q44.</b> <i>Other necessary actions to address data gaps include: • Additional upland sampling in line with the Tribe's recommendations below. [S'Klallam Tribe]</i></p>	<p><b>A44.</b> Comments related to upland sampling are addressed separately in the Remedial Investigation Comment Response portion of this document.</p>



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<p><b>Q45.</b> <i>Other necessary actions to address data gaps include: • Additional sampling for other COCs described below, i.e. chromium, wood preservatives. [S'Klallam Tribe]</i></p>	<p><b>A45.</b> See response to Q44.</p>
<p><b>Q46.</b> <i>Other necessary actions to address data gaps include: • Recomputation of cleanup levels for all COCs after determining natural background concentrations in accordance with MTCA regulations. [S'Klallam Tribe]</i></p>	<p><b>A46.</b> All background comparisons have been recalculated, incorporating the new data with lower detection limits, and those cleanup standards that are based on natural background have also been recalculated (see Chapter 11 of the Final RI). Statistical procedures are based on the latest science and are described in the revised RI in Chapter 9, in accordance with MTCA and SMS.</p>
<p><b>Q47.</b> <i>The recommended cleanup alternative in the FS is not protective of human health as required by MTCA regulations. [S'Klallam Tribe]</i></p>	<p><b>A47.</b> The recommended cleanup alternatives in the Final FS have been revised, and are protective of human health to the maximum extent practicable.</p>
<p><b>Q48.</b> <i>Please fill necessary data gaps; consider source control and hotspot removal consistent with WAC 173-340-370(7), the Tribe's requested actions in Appendix I, and Baywide Overarching Concern 4; and redo the alternatives analysis consistent with MTCA regulations. Although the primary focus of the foregoing discussion has been on cPAHs, the Tribe's requested actions encompass source control and hotspot removal of all detected hazardous substances. [S'Klallam Tribe]</i></p>	<p><b>A48.</b> The Final FS has been updated to reflect consideration of human health risks and to carefully follow the MTCA/SMS regulations in selecting cleanup alternatives for all contaminants of concern. Source control and removal of high-concentration areas are included in the final preferred alternatives (see Final FS Section 6.2).</p>
<p><b>Q49.</b> <i>Section 6.1, p. 45 Comment: Upland institutional controls discussed in the FS are limited to a restrictive covenant to prevent use of arsenic contaminated groundwater as a drinking water source, and notations in county property records to ensure maintenance of soil cover over areas of elevated lead. The need for additional controls, including runoff controls, may need to be reevaluated depending on the results of additional sampling, including additional dioxin testing and clarification of chromium levels in soil, discussed in the Tribe's Mill site RI comments. No institutional controls are considered for marine areas, despite the risk that future site uses may affect recovery. For example, prop wash or driving of new pilings may compromise the cap over undredged wood waste. Recommendation: Include a description of what institutional controls would be used to limit or prohibit uplands runoff recontamination of the marine area. Unless large vessel use or driving of</i></p>	<p><b>A49.</b> Institutional controls that would need to be associated with the cleanup alternatives are discussed in the revised FS. However, Ecology does not have control over future land and water uses. Under existing regulations, any new proposed land or water use would need to take into account remaining contamination and/or permanent cleanup measures such as caps during the permitting process.</p>

Comment	Ecology's Response
<p><i>new pilings is to be prohibited using institutional controls, the FS should analyze the likelihood and consequences that recovery will be compromised by these or other site uses. [S'Klallam Tribe]</i></p>	
<p><b>Q50.</b> <i>The Port Gamble S'Klallam Tribe appreciates the opportunity to submit these comments. The Tribe has high expectations for this cleanup. Curing the Bay of the afflictions of 150 years of heavy industry is something of extraordinary importance to the Tribe, to non-Indians who benefit from the Bay and its resources, and to the resources themselves. Something that important is worth doing, not merely well, but with excellence. The Tribe believes that, with the additional data collection and analysis recommended in its comments, the Port Gamble Bay cleanup can be an excellent one. The Tribe looks forward to continuing to work closely with the Department to that end. [S'Klallam Tribe]</i></p>	<p><b>A50.</b> Ecology appreciates the comments submitted by the Port Gamble S'Klallam Tribe and the close working relationship we have maintained throughout the course of this project. Comments submitted by the Tribe and others have contributed to substantially improving the quality of the data set and the resulting decision process for cleanup of Port Gamble Bay.</p>
<p><b>Suquamish Tribe</b></p>	
<p><b>Q1.</b> <i>The Tribe concurs with the Port Gamble S'Klallam Tribe's ("PGST") comments dated April 28, 2011 that information in the draft Remedial Investigation ("RI") and the draft Feasibility Study ("FS") reports for these two MTCA sites are technically inadequate and inconsistent with WAC 173340- 350 through 173-340-370.[Suquamish Tribe]</i></p>	<p><b>A1.</b> Please see the responses to the Port Gamble S'Klallam Tribe's comments on the RI and FS Reports.</p>
<p><b>Q2.</b> <i>In the Lower Duwamish Waterway process, both NOAA and the Suquamish Tribe supported defining a surface layer greater than 10 cm. The surface layer should be defined as 0-30 cm rather than 0-10 m, to accommodate the bioturbation/biologically active zone.</i></p> <p><i>[Suquamish Tribe]</i></p>	<p><b>A2.</b> This was discussed, but Ecology believes there is stronger evidence for the 0-10 cm biologically active zone for protection of the general benthic community in marine systems such as Port Gamble Bay. However, a three-foot biologically active zone is being used in the Final FS for protection of geoduck in areas where geoduck are present. In intertidal areas, a two-foot depth has been selected due to presence of other clam species (and possible direct contact from beach play or clamming activities).</p>
<p><b>Q3.</b> <i>In the cleanup action objective sections of the FSs, there is no discussion of the inherent problems in setting sediment cleanup levels that are protective of human health when MTCA and Sediment Management Standards (SMS) collide as is the case here. See SMS</i></p>	<p><b>A3.</b> The Final RI Report now includes development of a cleanup level under MTCA and SMS that takes into account human health, natural background, and PQLs, and the supporting field and statistical studies have been conducted to fully evaluate each</p>

Comment	Ecology's Response
<p><i>Update Issue Summary: Human Health Risks for Sediment, Ecology, June 2009. [Suquamish Tribe]</i></p>	<p>of these components (see RI Chapters 8-11).</p>
<p><i>Q4. The FSs use a mish mash of cleanup levels from MTCA and SMS even though SMS only has narrative criteria that generally require "no significant human health threats." SMS/SQS are designed to be protective of benthic organisms, not human health. [Suquamish Tribe]</i></p>	<p><b>A4.</b> Because the SMS rule revisions to better address human health are still underway, Ecology has used the process described in MTCA for selecting cleanup standards based on the highest of human health, natural background, and PQLs in addition to the SMS biologically based standards. See Chapters 8-11 of the Final RI.</p>
<p><i>Q5. The FSs state, "A bay-wide cultural resources overview was developed for Port Gamble Bay to identify and map areas of known or possible historical, archaeological, and cultural resources within the project area. The overview was developed by a professional archaeologist for OPG, WDNR, and the Port Gamble S'Klallam Tribe and provided ...." The Suquamish Tribe has treaty protected cultural resources in Port Gamble and Port Gamble Bay but has been excluded from this process. Ethnographic and historic data demonstrate the Suquamish People controlled the north end of Hood Canal, including Port Gamble, until the early 1850s, when the Pope and Talbot lumber operations were established at Port Gamble in 1853. Hudson's Bay Company records from the 1820s to the 1840s, United States Exploring Expedition records from 1841, and Catholic Archdiocese records from the 1830s through the 1870s refer to Suquamish villages at Ebey's Prairie on Whidbey Island, at Point No Point at the north end of the Kitsap Peninsula, at Port Ludlow northwest of the north end of Hood Canal, and at Quilcene Bay on the west side of Hood Canal, and seasonal Suquamish encampments at Hood Head and Termination Point on the west side of Hood Canal. U.S. Exploring Expedition personnel named Suquamish Harbor at the north end of Hood Canal based on the presence of Suquamish fishing and hunting parties and villages in the area. An 1841 map produced by the U.S. Exploring Expedition shows the Suquamish controlled the north end of the Kitsap Peninsula and the west side of Admiralty Inlet and Hood Canal, from north of Port Ludlow to south of Suquamish Harbor. Ethnographic data document pre-European contact Suquamish use of the north end of Hood Canal and indicate the S'Klallam families who settled in the Port Gamble vicinity came</i></p>	<p><b>A5.</b> Cultural, archaeological, and historical resources are present in the Bay and surrounding uplands. Ecology understands the expressed interest of the Suquamish Tribe in cultural resources in the Bay. The Section 106 compliance process and government-to-government consultation will be led by the U.S. Army Corps of Engineers. Ecology and other parties will comply with cultural resources provisions of SEPA and support the Section 106 consultation effort by coordinating with tribes and DAHP, and participate in efforts to identify cultural resources. Ecology will include the Suquamish Tribe in cultural resources coordination, and will provide relevant documents to the Tribe for review.</p>

Comment	Ecology's Response
<p><i>from Dungeness Spit on the Strait of Juan de Fuca after the Pope and Talbot lumber mill was established in 1853. Place names recorded by ethnographers between 1910 and 1940 demonstrate Suquamish use of the Port Gamble vicinity. Suquamish use of the Port Gamble area decreased after 1853; however, the Tribe requires consultation and needs to review any information that Ecology, OPG, PGST, and WDNR plans to implement concerning the protection of or discovery of cultural resources related to these projects. Any other course of action will cause project delays that could be significant. [Suquamish Tribe]</i></p>	
<p><i>Q6. There is insufficient dioxin sampling and analysis to determine whether the proposed cleanup footprint is sufficient. [Suquamish Tribe]</i></p>	<p><b>A6.</b> Additional dioxin sampling was conducted in 2010 by the Port Gamble S'Klallam Tribe and in 2011 by Ecology, of both tissues and sediments, with the lowest possible detection limits. These data along with the previous data successfully bounded the area of sediments exceeding the dioxin/furan cleanup standards.</p>
<p><i>Q7. The FS characterizes Port Gamble Bay as having a "generally quiescent environment," yet Pope has been very clear about retaining their commercial/industrial uses, which seem to conflict with a "quiescent environment". These current and future uses need to be addressed in more detail. [Suquamish Tribe]</i></p>	<p><b>A7.</b> The FS is describing the natural environment of the Bay. Future land uses are unknown at this time and outside the regulatory authority of MTCA/SMS, but must be compatible with the selected cleanup action.</p>
<p><i>Q8. The risks to tribal populations are not clearly presented. Furthermore, there is no evaluation of a child's exposure via ingestion of shellfish--a tribal exposure pathway that is clearly not speculative-- and should have been considered the reasonable maximum exposure scenario (WAC 173-340-357). Even when considering the flaws and uncertainties inherent in the current HHRA, the results show that unacceptable cancer risks exist for cPAHs (<math>1 \times 10^{-4}</math> dioxins (<math>3.6 \times 10^{-4}</math>), PCBs (<math>1.2 \times 10^{-4}</math>), inorganic arsenic (<math>1.5 \times 10^{-5}</math>), and cadmium and copper contained hazard quotients greater than 1.0 (2.0 and 1.1, respectively) for adults consuming shellfish from Port Gamble Bay at both sites. The HHRA not only downplays risks to tribal populations from ingesting contaminated shellfish but ignores the cumulative cancer risk to Tribal members based on</i></p>	<p><b>A8.</b> A complete human health risk assessment based on reasonable maximum exposures to tribal fishermen and children, including both seafood ingestion and beach use/clamming, has been included in Chapter 8 of the Final RI Report. The risks to tribal members and children, both from individual chemicals and pathways, and cumulative risk, are clearly presented.</p>

Comment	Ecology's Response
<p><i>current data. [Suquamish Tribe]</i></p>	
<p><i>Q9. Under the current FSs, the proposed remedy for both sites leaves sediment contamination in place, and therefore, that sediment will continue to be a health risk to tribal shellfish consumers given the unacceptable cancer risk levels identified in the HHRA. None of the documents discuss environmental justice issues or provide an assessment of the disproportionate risk to tribal populations resulting from contaminants left in-place for decades. This is a significant flaw in the FSs. [Suquamish Tribe]</i></p>	<p>A9. Even though significant risks have been identified based on tribal consumption scenarios, not all of the sediments that exceed risk-based levels can be actively remediated. This would entail capping or dredging nearly the entire bay, which would be impractical and not cost-effective according to the disproportionate cost analysis required under MTCA. Dredging or capping the entire bay would cause significant harm to the natural resources of the Bay (see Section 6.4 of the Final FS for a discussion of technical practicability). A substantial proportion of these human health risks are comparable to risks present in natural background areas throughout Puget Sound, or are estimated based on detection limits for chemicals that may or may not be present at those levels. Where risks exceed natural background risks, the cleanup alternatives place strong emphasis on source control and active remediation in areas with the highest concentrations that can be effectively remediated without substantial disruption of the functioning ecosystem in the bay.</p>
<p><i>Q10. For both sites, higher importance is placed on costs when evaluating cleanup action alternatives, and lower importance is placed on protection of human health and consideration of tribal concerns. [Suquamish Tribe]</i></p>	<p>A10. Human health risks have been given a higher priority and costs a lower priority in the Final FS, commensurate with protection of the environment and other threshold criteria (see Chapter 5 of the Final FS). Technical feasibility is a significant concern with an area this large, and it is unavoidable that not all of the entire area that exceeds health-based cleanup standards can be addressed through active cleanup. Human health risk and tribal concerns were seriously considered and addressed in developing the alternatives.</p>
<p><i>Q11. Cumulative cancer risks needs to be calculated for each cleanup alternative discussed.</i></p> <p><i>Alternatives not meeting cleanup standards should not be considered. [Suquamish Tribe]</i></p>	<p>A11. It may not be possible for any alternative to fully meet human health-based cleanup standards in the short term, as the cleanup area encompasses most of the Bay and active cleanup of this entire area would substantially disrupt the ecosystem of the Bay. Additionally, this approach is technically impracticable and not cost-effective. It is not MTCA practice to calculate risks for individual alternatives; however, the degree to</p>



Comment	Ecology's Response
	which each alternative reduces human health risks is carefully assessed and factored into the evaluation.
<i>Q12. There is no discussion of suppression effects due to contamination. [Suquamish Tribe]</i>	<b>A12.</b> This has been incorporated into the uncertainty evaluation section of the human health risk assessment in Chapter 8 of the Final RI Report.
<i>Q13. The use of Institutional Controls (ICs) should be minimized to the extent possible. WAC 173-340-360(2)(e)(iii) states, "In addition to meeting each of the minimum requirements specified in this section, cleanup actions shall not rely primarily on institutional controls and monitoring where it is technically possible to implement a more permanent cleanup action for all or a portion of the site." Institutional controls need to be a temporary solution with clean up being the preferred long- term alternative. Institutional controls are not remediation measures. ICs do not protect human health, which requires achievement of protective levels through the reduction of contaminant levels in sediment. [Suquamish Tribe]</i>	<b>A13.</b> We agree that institutional controls should not be relied upon in lieu of a more permanent remedy, except to the extent that they are needed to ensure the long-term protectiveness of the cleanup remedy.
<i>Q14. As noted by PGST, the misplaced comparison of background data to site data and the lack of background data, combined with detection limit issues that were then used to eliminate chemicals of concern ("COCs") such as PCBs and dioxins, is a significant flaw. [Suquamish Tribe]</i>	A14. Please see responses A1-A2 to the Port Gamble S'Klallam Tribe's comments on natural background comparisons and COCs.
<i>Q15. The Mill Site FS acknowledges that fingerprinting shows the elevated cPAHs at the site are due to ongoing releases from creosote pilings, but only recommends removing pilings specific to dredging activities and leaving other pilings in place. To implement source control, as called for in MTCA, all pilings in Port Gamble Bay should be removed. [Suquamish Tribe]</i>	A15. A more complete fingerprinting analysis is presented in the Final RI Report, which shows that sediments near the Mill site have a creosote contribution and sediments farther out in the Bay have a large combustion contribution, likely due to the burning of hog fuel at the Mill. While the hog fuel source has previously been discontinued, the Final FS includes removal of all creosoted pilings throughout the Site.
<i>Q16. Creosote pilings were determined to be the source of cPAHs and should all be removed during the cleanup activities to prevent future releases to the environment under MTCA (source control) and to comply with anti-degradation requirements of WAC 173-204-130. The recommended remedy for the Mill Site, however, is the</i>	<b>A16.</b> See response to Q15.



Comment	Ecology's Response
<p><i>removal of 640 pilings and dredging, but leaves 77 creosote pilings in place with MNR. It is well documented by the Washington State Department of Natural Resources ("DNR") that a piling containing creosote can leach throughout its entire lifetime. [Suquamish Tribe]</i></p>	
<p><i>Q17. The approach and conclusions in these documents fail to support that the remedy selection is protective of human health when emphasis is placed primarily on removing some but not all of the wood waste at the Mill Site, and relying on monitored natural recovery for the majority of the areas of concern. [Suquamish Tribe]</i></p>	<p><b>A17.</b> The Final FS includes more active cleanup in larger areas at the Mill site, including all areas with substantial deposits of wood waste, as well as in all areas showing bioassay toxicity in the Bay.</p>
<p><i>Q18. The HHRA states that PCBs will be removed during the Mill Site cleanup (p. G-17), while at the same time the RI/FS is silent as to PCB removal or re-suspension during dredging. [Suquamish Tribe]</i></p>	<p><b>A18.</b> Based on the natural background comparisons, PCBs are not considered site-related COCs in Port Gamble Bay. This section of the former Human Health Risk Assessment has been revised to remove statements about cleanup, since the HHRA is now an integral part of the Final RI, and all discussion of potential cleanup actions is located in the Final FS.</p>
<p><i>Q19. The Tribe does not support monitored natural recovery (MNR) as a practicable permanent remedy at the Mill Site and/or for all of the of the Baywide site. The effectiveness of MNR is a significant uncertainty. [Suquamish Tribe]</i></p>	<p><b>A19.</b> Monitored natural recovery has been selected only for SMA-5, where there is no practicable alternative, in accordance with the SMS (see Section 6.4 of the Final FS). The other SMAs in the Bay and areas near the Mill site are now proposed for active cleanup remedies in the Final FS (see Section 6.2).</p>
<p><i>Q20. For the Baywide Site, there is no active remedy at all, and the current alternative leaves existing contamination in place with MNR. Hotspots, another contaminant source, on the west shoreline have also not been addressed. The FSs are silent as to why MNR is the appropriate alternative before hazardous substance sources are controlled. [Suquamish Tribe]</i></p>	<p><b>A20.</b> Substantial additional discussion supporting the selection of monitored natural recovery in area SMA-5 where there is no practicable alternative has been added to the FS (see Section 6.4). In addition, all areas exhibiting bioassay toxicity in the bay are now proposed for active cleanup.</p>
<p><i>Q21. The Mill FS states, "This analysis involves comparing the costs and benefits of the alternatives whose incremental costs are not disproportionate to the incremental benefits." Weighting factors were developed and identified as "subjective" and serve to "represent the importance of each of the benefits criterion at this site, relative to the MTCA requirement</i></p>	<p><b>A21.</b> Weighting factors were developed by Ecology for the Baywide FS but inadvertently omitted by the contractor. This was corrected. The combined Final FS includes the weighting factors in this evaluation consistently for all areas of the Bay and near the Mill site (see Chapter 5).</p>

Comment	Ecology's Response
<p><i>to protect human health and the environment." However, these weighting factors were not employed in the Baywide FS, an inconsistency that begs the question as to why they are being used. Under WAC 173-340360 (3)(e)(ii)(C): "The comparison of benefits and costs may be quantitative, but will often be qualitative and require the use of best professional judgment. In particular, the department has the discretion to favor or disfavor qualitative benefits and use that information in selecting a cleanup action." Therefore, the department has the ability to exercise its judgment to choose a remedy more beneficial to human health and the environment despite the possibly higher costs. [Suquamish Tribe]</i></p>	
<p><i>Q22. When looking at the MTCA DCAs for both sites and when considering the RI and HHRA data gaps/flaws and unacceptable level of uncertainty in the HHRA, these tables support the Tribe's assertion that the selection of MNR is primarily based on cost where the benefits are skewed to focus primarily on environmental risk rather than protection of human health and/or addressing tribal concerns. See Mill FS, Tables 6-1 thru 6-7; Baywide FS, Tables 3 and 5. [Suquamish Tribe]</i></p>	<p><b>A22.</b> The Final FS has been revised to fully incorporate human health risks in the development and evaluation of alternatives. The human health risk assessment in the Final RI as well as the cleanup standards and SMAs based on it have been updated and improved. Human health risks and ecological risks are given equal consideration and are weighted more highly than cost considerations. However, it is unavoidably the case that it is more technically practicable to achieve the ecologically-based cleanup standards (because they are exceeded over much smaller areas) than it is the human health cleanup standards, resulting in a more complete cleanup for ecological risks than for human health.</p>
<p><i>Q23. The reasonable restoration timeframe analysis used for the MNR and ENR may be skewed by inaccurate assumptions concerning sedimentation rates, since there was no sediment transport study, nor study of the relationship between those rates and biological recovery rates. [Suquamish Tribe]</i></p>	<p><b>A23.</b> The expected restoration timeframe has been revised to a more scientifically defensible timeframe based on the low sedimentation rates determined from the core in the center of the Bay. We expect that monitoring will occur for approximately 20-30 years. This may be necessary to achieve recovery to background concentrations.</p>
<p><i>Q24. When comparing remedial alternatives, likelihood of success should be fully considered.</i></p> <p><i>Larger cleanup footprints will have a larger predicted cost but may be less likely to require follow-up actions when an area of the site fails to achieve target concentrations. [Suquamish Tribe]</i></p>	<p><b>A24.</b> Likelihood of success is considered in the scoring of alternatives in several ways, among them technical feasibility and long-term protectiveness (see Section 6.2).</p>

Comment	Ecology's Response
<i>Q25. Monitoring is an assessment and evaluation tool, not a control technology. [Suquamish Tribe]</i>	<b>A25.</b> Agreed. This language has been revised.
<i>Q26. More detail needs to be provided regarding monitoring, performance standards and contingency actions. [Suquamish Tribe]</i>	<b>A26.</b> This information will be provided as part of a Monitoring Plan to be developed during remedial design.
<i>Q27. A complete set of appendices for the RI/FSs were not provided to the Tribe for review and this omission impacted our ability to initially evaluate these documents. [Suquamish Tribe]</i>	<b>A27.</b> This has been corrected. We appreciate your comments and will ensure that the Suquamish Tribe receives a complete set of Final RI/FS documents when available.
<i>Q28. There has been no prior consultation with the Tribe related to the sampling and analysis plans, the development of relevant tribal exposure scenarios for risk assessment, methods for deriving site cleanup levels, identification of remedial alternatives, and/or remedy selection for these sites. [Suquamish Tribe]</i>	<b>A28.</b> Since this comment was received, we have been working more actively with the Tribe in review of RI/FS milestones, methods, and results. We appreciate the Tribe's participation in this process.
<i>Q29. The alternative interpretation of toxicity testing was not discussed in detail with the Tribe so that it could be determined if it is an appropriate approach. [Suquamish Tribe]</i>	<b>A29.</b> The alternative interpretation of toxicity testing included in the Draft RI was used because of reference failures in the bioassays that made it difficult to interpret the results. However, in 2011 a new bioassay protocol was used that was designed to reduce interference from very fine-grained sediments in the Bay, and that succeeded in eliminating these reference failures and providing a more consistent and clear understanding of toxicity in the Bay. The use of this revised bioassay protocol also eliminated the need for alternative bioassay interpretive approaches. This improved protocol was also presented at the 2012 regional sediment technical and policy forum (Sediment Management Annual Review Meeting) for public review.
<i>Q30. The Tribe requests: notification of all meetings that occur with stakeholder agencies or tribes; copies of all agency/tribal comments that were submitted for the review of these documents; a meeting with stakeholders be held to discuss comments and response to comments on these documents; and a stakeholder briefing on Human Health Risk Assessment findings and conclusions. Finally, we request that Ecology not finalize these RI/FSs until after receipt and our review of Ecology's written response to comments and before any</i>	<b>A30.</b> Ecology has provided regular briefings and workshops with interested tribes and agencies throughout the cleanup and restoration planning process, including a workshop during which Ecology provided information about how the documents would be updated based on comments received. Comments on the Draft RI/FS Reports and Ecology's responses are provided here. The Final RI/FS Report has been updated in response to comments received and upon further review by

Comment	Ecology's Response
<p><i>revisions have been made to these reports. [Suquamish Tribe]</i></p>	<p>Ecology. This included a full data gap analysis and additional field work, fingerprinting/source analyses, and comprehensive human health risk assessment and natural background comparisons. Briefings and workshops have been held throughout this process to update the Tribes on Ecology's progress and receive feedback. Additional such meetings may be held as information becomes available.</p>
<p><i>Q31. Port Gamble, including Port Gamble Bay, is located within the Tribe's adjudicated usual and accustomed fishing area ("U&amp;A") and within the ancestral territory of the Tribe. The Tribe's ancestors have occupied the Kitsap Peninsula and surrounding areas of Admiralty Inlet, Hood Canal, and Puget Sound since early post-glacial times, over the past 14,000 years. The Tribe seeks protection of all treaty-reserved natural resources through avoidance of impacts to habitat and natural systems. [Suquamish Tribe]</i></p>	<p><b>A31.</b> Ecology has included all interested Tribes, including Suquamish Tribe, in numerous meetings and discussions regarding cleanup and restoration of this Site. Ecology is appreciative of the time and expertise that the Tribes bring to these planning efforts. Ecology has also engaged in formal meetings with Tribes regarding issues pertaining to this Site. Ecology will continue this effort.</p>
<p><i>Q32. Caps cannot conflict with or restrict Tribal treaty fishing rights or other treaty protected rights. There is no discussion or incorporation into the alternatives analysis of this issue in the FSs. [Suquamish Tribe]</i></p>	<p><b>A32.</b> Ecology has worked diligently to identify and select remedial actions that provide the greatest protection and the least disruption to resources and people that are dependent on those resources. Ecology is continuing discussions on the potential impacts of the preferred remedial actions on the Tribes' activities in the Bay, and ways of mitigating these impacts through remedial design and timing of the actions. Discussion of these issues is included in the evaluation of the alternatives (see Section 6.2 of the Final FS) and the technical practicability evaluation (see Section 6.4); however, we expect that these issues will come more strongly to the forefront as we proceed into planning and permitting phases of the project. Ecology will continue to work closely with the Tribes as we proceed through remedial design and implementation.</p>
<p><i>Q33. The short-term and long term effects of remedial actions should take into account the costs to tribal fishers if disturbances in the waterway impact the abundance of fish available or the ability of tribal fishermen to access their fishing areas. How will</i></p>	<p><b>A33.</b> See response to Q32. Discussions have been initiated with all of the affected Tribes on these issues, and we look forward to working closely with the Tribes to ensure that these issues are addressed during the planning, permitting, and</p>

Comment	Ecology's Response
<p><i>potential gear damage be addressed? With increased vessel traffic in an enclosed/constrained area the potential for gear damage increases significantly. [Suquamish Tribe]</i></p>	<p>engineering design phases of the project to minimize any potential impacts to fishing activities.</p>
<p><i>Q34. Neither of the FSs addresses current and future use by tribal members. In fact, the Baywide FS states, "The preferred MNR alternative has negligible, if any impact on current and future land use." This statement fails to take into account current use. Neither does it consider future increased tribal (and non-tribal) harvesting of fishery resources with habitat improvements, as well as increased recreational use of these areas. [Suquamish Tribe]</i></p>	<p><b>A34.</b> The Final FS has been revised to more comprehensively address all affected current and future land uses. The statement has been removed from the document.</p>
<p><b>Department of Archaeology and Historic Preservation (DAHP)</b></p>	
<p><i>Q1. There needs to be greater elaboration of the Paleoenvironmental Setting including the expected Late Pleistocene and Early Holocene Landform and elaboration of Sea Level Changes for this area. Note Figure 3 identifies a marine Terrace that is not mapped in the Figures. [DAHP]</i></p>	<p><b>A1.</b> A draft of a Cultural Resources Assessment Plan has been developed and addresses issues such as these.</p>
<p><i>Q2. The Model presented in Figure 25 needs to be crosswalked with the DAHP predictive model and discussed in terms of congruence or differences. Also note the historic features such as the Chinese cabin in Figure 24 are contradicted by Figure 25. Similarly, Figure 25 has a low probability the Mill area, which based upon historical accounts represented the area of the original village. [DAHP]</i></p>	<p><b>A2.</b> A complete review of archaeological potential will be included in new documentation.</p>
<p><i>Q3. The data gaps should expand not just on the needed further archival research but also chart a path forward to field work. [DAHP]</i></p>	<p><b>A3</b> A Cultural Resources Assessment Plan describing research designs for archaeological, cultural, and historic resources has been drafted and provided to consulting parties for review.</p>
<p><i>Q4. There needs to be a key for the various historic images and their photo orientation in relationship to current features. [DAHP]</i></p>	<p><b>A4.</b> New reports will include all relevant information for photos and maps.</p>
<p><i>Q5. The historic photographs identify a number of important features and structures including the 1856 Blockhouse, the cabins of works from the mill, the</i></p>	<p><b>A5.</b> Built environment resources in the new area of potential effects (APE) will be completely inventoried.</p>

Comment	Ecology's Response
<i>historic lake associated with the mill. [DAHP]</i>	
<i>Q6. Figure 10 of homes burning in Little Boston is not discussed in the text. This must represent a significant historic event that is archaeologically documentable. [DAHP]</i>	<b>A6.</b> A complete review of historic archaeological potential will be included in new documentation.
<i>Q7. We would appreciate receiving any correspondence or comments from concerned tribes or other parties that you receive as you consult under the requirements of 36CFR800.4(a)(4). [DAHP]</i>	<b>A7.</b> Ecology acknowledges this request and appreciates the expertise of DAHP.
<i>Q8. We are concerned regarding the proposed review timelines for the cultural resources document. The draft report was received on February 11th and comments were requested on February 12th, a day on which DAHP is closed. [DAHP]</i>	<b>A8.</b> Comment noted.
<i>Q9. In the event that archaeological or historical materials are discovered during project activities, work in the immediate vicinity must stop, the area secured, and the concerned tribes and this department notified. [DAHP]</i>	<b>A9.</b> An Inadvertent Discovery Plan for the requested notification will be developed and circulated to Tribes and DAHP for review.
<i>Q10. We have reviewed a cultural resources overview for this project and Dr. Rob Whitlam, State Archaeologist submitted comments on this overview on February 16, 2010. We have received no further materials to review regarding cultural resources since that time. To date the comments have not been addressed nor has a plan developed to identify and address archaeological and cultural resources. The project area has a very high probability for both precontact and historic archaeological resources. Human remains may also be present. [DAHP]</i>	<b>A10.</b> Ecology, DNR, and PR/OPG are aware of the archaeological, historical, and cultural sensitivity of the area. A thorough review of cultural resources potential will be included in new documentation.
<i>Q11. Please be aware that archaeological sites and human remains are protected from knowing disturbance on both public and private lands in Washington States. RCW 68.60, RCW 27.44 and RCW 27.53.060 require that a person obtain a permit from our Department before excavating, removing or altering Native American human remains or archaeological resources in Washington. Failure to obtain a permit is punishable by civil fines and other penalties under RCW 27.53.095, and by criminal</i>	<b>A11.</b> New documents developed for the current project will be in compliance with state and federal laws and regulations.



Comment	Ecology's Response
<i>prosecution under RCW 27.53.090. [DAHP]</i>	
<i>Q12. Chapter 27.53.095 RCW allows the Department of Archaeology and Historic Preservation to issue civil penalties for the violation of this statute in an amount up to five thousand dollars, in addition to site restoration costs and investigative costs. [DAHP]</i>	<b>A12.</b> New documents developed for the current project will be in compliance with state and federal laws and regulations.
<i>Q13. Also, these remedies do not prevent concerned tribes from undertaking civil action in state or federal court, or law enforcement agencies from undertaking criminal investigation or prosecution. Chapter 27.44.050 RCW allows the affected Indian Tribe to undertake civil action apart from any criminal prosecution if burials are disturbed. [DAHP]</i>	<b>A13.</b> New documents developed for the current project will be in compliance with state and federal laws and regulations.
<i>Q14. We remain concerned regarding the proposed Area of Potential Effect (APE) and the questions regarding the extent of the cleanup area illustrated in Figure 2. Note the potential Restoration Area in Figure 2 extends beyond the Study Area. The Restoration Area should be part of the formal Study Area. [DAHP]</i>	<b>A14.</b> The APE for the project will be defined by the U.S. Army Corps of Engineers.

# Explanatory Figures

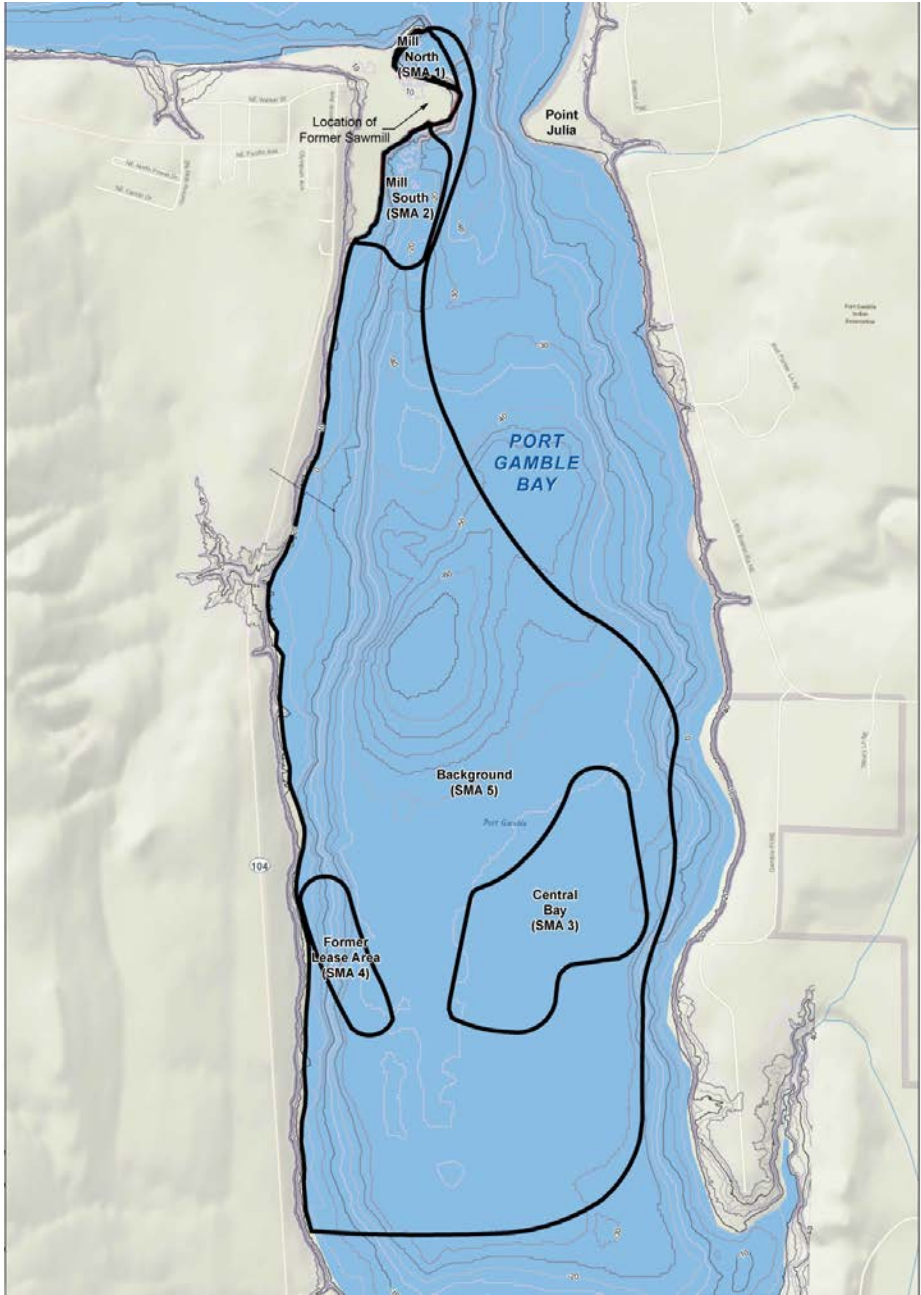


Figure 1. Port Gamble Bay and Mill Site cleanup boundary.

# Ecology Contact Information

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**To review documents:**

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<https://fortress.wa.gov/ecy/gsp/Sitepage.aspx?csid=3444>