RESPONSE to COMMENTS

Draft Feasibility Study
Draft Consent Decree/Cleanup Action Plan
Draft Public Participation Plan
SEPA Determination of Non-Significance

GP West Cleanup Site
Pulp -Tissue Mill Remedial Action Unit
Bellingham, Washington

October 30, 2014

WASHINGTON STATE DEPARTMENT OF ECOLOGY

TOXICS CLEANUP PROGRAM

1. Introduction

On July 14, 2014, a draft Feasibility Study (FS), and a draft Consent Decree/Cleanup Action Plan (CD/CAP), along with a draft Public Participation Plan (PPP) and a State Environmental Policy Act (SEPA) Determination of Non-Significance (DNS) for the Pulp & Tissue Mill area of the GP West cleanup site were issued for a 45-day public comment period. The public comment period closed on August 27, 2014. Public involvement activities related to this public comment period included:

- Distribution of a fact sheet describing the site and requesting review of the draft FS, CAP, and CD through mailing and emailing to approximately 6,000 people, including neighboring businesses and other interested parties;
- Publication of a notice in the Washington State Site Register, dated July 10, 2014;
- Publication of one paid display ad in *The Bellingham Herald*; dated July 11, 2014;
- Announcement of the public comment period and posting of the documents on the Department of Ecology (Ecology) website;
- Providing copies of the documents through information repositories at Ecology's Bellingham Field Office and Northwest Regional Office, and Bellingham Public Library-Downtown Branch.

A total of nine persons/organizations submitted written comments during the comment period. Comment submitters are listed in Table 1. Section 2 of this document provides background information on the Site, and Section 3 presents next steps for the cleanup. Section 4 lists the comments received and Ecology's response. Appendix A provides the original comments as received.

Table 1. Comment Submitters

1	Terry J. Wechsler
2	Andrew Renaud
3	Deb Gaber
4	David M. Camp
5	Vilma Camp
6	Earl G. L. Cilley
7	Hayman Environmenal, LLC
8	Gaythia Weis
9	RE Sources

2. Background

The approximately 74-acre Georgia Pacific West cleanup site is located at 300 West Laurel Street, on the south side of the Whatcom Waterway federal navigation channel, in Bellingham. A pulp and tissue mill operated at the site from 1926 through 2007. The Port of Bellingham

acquired property within the site from Georgia Pacific Corporation in January 2005, and plans to use the property for commercial, retail, and residential purposes.

Environmental investigation of the site showed contamination in two separate and distinct areas. As a result the port and Ecology agreed to divide the site into two separate cleanup remedial action units (RAUs) to expedite cleanup and support redevelopment. The two areas are known as the Pulp and Tissue Mill RAU and the Chlor-Alkali RAU.

Pulp & Tissue Mill RAU

The former mill manufactured pulp for on-site production of tissue and toweling products, and for sale as market pulp. Other operations included an alcohol plant, lignin plant, acid plant, and steam plant with fuel oil storage. As a result the 31-acre area contains metals, low pH, petroleum hydrocarbons, volatile organic compounds, and dioxin/furans at levels that exceed state cleanup standards for unrestricted use.

Chlor-Alkali RAU

The former chlor-alkali plant operated from 1965-1999. It used mercury to produce chlorine and sodium hydroxide for use at the pulp & tissue mill. Petroleum was also stored there. As a result this 43-acre area contains mercury, high pH, polycyclic aromatic hydrocarbons, and petroleum hydrocarbons that exceed state cleanup standards for unrestricted use.

In 2011 and 2013, the port, with Ecology oversight, conducted interim cleanup work within the Pulp & Tissue Mill RAU and the Chlor-Alkali RAU respectively. Soil with high levels of petroleum were removed from the Pulp &Tissue Mill RAU, treated, and disposed at a permitted landfill. Soil with high levels of mercury, and mercury-contaminated building materials were removed from the Chlor-Alkali RAU, treated as needed to allow landfill disposal, and disposed at permitted landfills.

3. Next Steps

Ecology has reviewed and considered all comments received on the Pulp & Tissue Mill RAU cleanup documents. Comments are presented below in Section 4 with Ecology's response. Minor modifications to the CAP were made to improve clarity as indicated in our responses. Since these modifications are not substantial, the FS, SEPA DNS, PPP and CD/CAP, are considered final documents. The CD/CAP will be signed and recorded in Whatcom County Superior Court.

Following entry of the Consent Decree/CAP in court, the cleanup will move forward into pre-design characterization and remedial design. As part of the design and permitting phase of the cleanup, an Engineering Design Report (EDR) will be prepared and is expected to be available in late 2015/early 2016. The EDR will contain details on the cleanup action including contingent remedies as well as a Cleanup Construction Management Plan, Compliance Monitoring Plan, and Inspection and Maintenance Plan. The objective of the plans is to confirm that cleanup standards have been achieved, and to confirm the long-term effectiveness of the cleanup action. The plans will contain discussions on sampling locations, duration, and frequency of monitoring and the trigger for maintenance or contingency response actions. Following Ecology approval of

the EDR, detailed construction plans and specifications will be developed, and construction of the cleanup action will be implemented.

Construction of the cleanup action is expected to take about nine months following completion of remedial design, permitting, and contracting. Long-term monitoring activities will be initiated following completion of construction activities.

4. Comments and Ecology Responses

Comments submitted by Terry J. Wechsler, Andrew Renaud, Deb Gaber, David M. Camp, and Vilma Camp requested that Ecology hold a public meeting.

> *Ecology Response: Under MTCA if ten or more persons request a public meeting Ecology will provide notice and hold a meeting. The minimum of ten requests were not received and a public meeting will not be held.*

Comment submitted by Earl G. L. Cilley

Dear Mr. Sato:
I'm a private citizen born in 1935 and raised to age 14 in Bellingham, returned to work here for a time in 1962, and retired here in 1990 where I've since lived, in a small house above the Bay, on 14th Street.

I offer these comments on the Port's proposal.

- Reserve a significant part of the area for development in the future rather then in the next 16 years to provide options for future uses; retaining in the meantime as open space as buffer to designated park and public recreation areas.
- Designate a major part of the shoreline for public access, park and recreation, boat launch, and docking.
- Relocate the BNSF tracks and yard areas so that the mainline runs beneath and next to the bluff, and the siding and storage areas adjacent to Cornwall Avenue and the head of Whatcom Waterway – West Holly Street be located elsewhere to lower value real estate.
- Emphasize the areas to the north or Boulevard Park on to Chestnut to be used for park, recreation, and low rise residential areas, with limited commercial uses for retail and office uses/development.
- Sharply constrain building heights in the overall area to prevent the high rise apartment and office buildings and preclude the kinds of commercial development as Seattle's downtown area, Bellevue, and lower Manhattan.
- I favor cleanup option Alternative 3 as the remedial action of choice, and a faster action then the currently proposed timeline on Page 5, that I might live to see the results of the program and enjoy its benefits.

> *Ecology Response: Ecology's role under state cleanup law is to ensure protection of human health and the environment given current and planned uses of the GP West site. Our regulatory cleanup authority does not extend to the land use comments you have provided.*

Land use decisions for the Pulp & Tissue RAU reside with the Port of Bellingham and the City of Bellingham.

Ecology is aware of extensive planning efforts by the Port and City and many of your comments may already be in the plans for this area of the waterfront. Please see the City of Bellingham website at: http://www.cob.org/services/planning/waterfront/documents.aspx.

Regarding Alternative 3, your preference is noted however the increased cost of this option over Alternative 1 is not proportionate to the increase in benefit. This is described in the disproportionate cost analysis, required under MTCA (see WAC 173-340-360(3)(e), and presented in the Pulp & Tissue Mill Remedial Action Unit (RAU) Feasibility Study. Note that the timeline on page 5 of the mailer sent to you is for designing and constructing Alternative 1. It is not the timeline for achieving groundwater cleanup levels in the interior of the Pulp & Tissue Mill RAU. While Alternative 3 would speed up the time to meet groundwater cleanup levels in the interior of the Pulp & Tissue Mill RAU, the time to complete the design and construction is similar.

Comments submitted by Hayman Environmental, LLC

Draft Cleanup Action Plan

General Comment

The Pulp/Tissue RAU is part of the Ecology identified complex Bellingham Bay Site. The RAU is divided into four subareas of contamination, each with different contaminants, and there is ubiquitous contamination throughout the RAU. In addition, there are concerns that sea level rise will impact future redevelopment of the site. It can be inferred that the cleanup actions will also be affected by sea level rise. The Draft Cleanup Action Plan (dCAP) is very general in the description of the cleanup actions and has very little detail or specificity. The 13 page dCAP suggests that the cleanup of the Pulp/Tissue RAU is simple and straight forward even routine. The lack of detail in the dCAP seems inconsistent with the complexity of the site.

Ecology Response: The cleanup action plan meets the requirements of WAC 173-340-360 Cleanup Action Plan. For the Pulp & Tissue RAU, the CAP is relatively straight forward because the exposure pathways are limited and the actions necessary to address potential or completed exposure pathways are routine. The Engineering Design Report (EDR) will contain additional details consistent with the requirements of WAC 173-340-400 Implementation of the Cleanup Action. The EDR is expected to be available in 2015. The Chlor-Alkali RAU is complex compared to the Pulp & Tissue Mill RAU due to the mercury contamination and site conditions. The FS and CD/CAP Amendment for the Chlor-Alkali RAU are under development and are expected to be available for public review in 2015.

Detailed Comments

Page 1

Last paragraph, last sentence, this sentence is not consistent with Figure 2. The figure indicates, with color, that the area where soil was excavated is not part of the Bunker C Subarea. In addition, the figure has the apparent excavation area identified as being soil with Bunker C > (greater than) 10,000 mg/kg. Please see the comment on the figure for suggested revisions.

Ecology Response: The interim action achieved the 3,100 mg/kg TPH soil cleanup level within the excavation footprint. Therefore, the interim action excavation area itself is not part of the Bunker C Subarea. Figure 2 has been revised.

Page 2

First paragraph, line 1, insert *(low)* after acidic. This will clarify the meaning of acidic pH to the non-technical reader.

Second paragraph, first line, define the acronym aka.

Ecology Response: The CAP has been revised to insert "low" and to define "aka".

Page 3

First paragraph, line 2, note that there is a known threat of sea level rise at the site. The proposed cleanup action should be evaluated for effectiveness assuming a rise in sea level and an associated rise in the groundwater table. This would be a good place to state that the potential impact of sea level rise on the cleanup actions over the 36 year projected time to achieve the cleanup has been incorporated into the cleanup evaluation and plans.

Ecology Response: To establish soil cleanup levels that are protective of groundwater, Ecology assumed that soil contamination is in contact with groundwater (saturated condition) and available to leach to groundwater. As a result, the groundwater elevation (seasonal variations/sea level rise) does not affect the cleanup level. The proposed cleanup action will protect groundwater at any groundwater elevation.

Page 4

Fifth paragraph, line 3, delete the phrase *"It is anticipated that"*. This phrase suggests that the institutional controls presented in the dCAP may not be implemented. The Consent Decree for the site is out for public comment and contains an Environmental Covenant as Exhibit D. The land use restrictions in the covenant should be paraphrased in this section of the dCAP and the consent decree should be referenced.

Ecology Response: The CAP has been revised to delete the phrase "it is anticipated that" and to paraphrase general restrictions and requirements.

Page 5

Seventh paragraph, lines 3 and 4, provide a reference for estimated average depth of 12 feet for the contamination scattered throughout the RAU.

Twelfth paragraph, this paragraph states that natural attenuation is effectively reducing contaminant concentrations at the RAU. The RAU is to be capped as part of the cleanup. This

action will stop the exchange between the soil gas and the atmosphere (the oxygen source). How will this affect natural attenuation? Vinyl chloride is present in the LP-MW01 Subarea. Natural attenuation of vinyl chloride is very rapid in the presence of oxygen. It is probable that removing the oxygen source will reduce the effectiveness of natural attenuation in this subarea.

Ecology Response: *The first bullet in section 3.2 of the CAP provides the reference to the FS (Aspect, 2014) that describes the extent of contaminated soils exceeding cleanup levels.*

Most of the RAU (including the LP-MW01 area) is currently covered (capped) by asphalt pavement, concrete roadways, or building floors/foundations. Therefore additional capping implemented as part of the cleanup action is unlikely to affect the natural attenuation process currently taking place. Section 7.8.3.2 of the RI describes the geochemical conditions that are conducive to the biological degradation of the chlorinated solvents including vinyl chloride; this includes more oxygenated conditions measured during the wet season. Table 7-8D of the RI also provides additional information on groundwater chemistry including dissolved oxygen.

Page 7

First paragraph, line 1, this sentence introduces the term *residual saturation remediation level*. Please provide the value for this term and give a reference.

Ecology Response: *The residual saturation remediation level represents the concentration of Bunker C (10,000 mg/kg TPH) below which the free product is not mobile. At this Site, this concentration also represents a remediation level protective of the soil to groundwater (leachability) pathway as demonstrated with empirical groundwater data and modeling work using the MTCATPH analysis workbook. Details of this work is further described in Section 7.5.2.1 of the RI.*

The CAP has been revised to provide a value and a reference.

Fourth paragraph, this is a well written, concise and focused paragraph that clearly states how remediation in the overlap area will be addressed.

Ecology Response: *Comment noted.*

Page 8

Second paragraph, last sentence, there is model language for environmental covenants in the Draft Consent Decree that is currently out for public comment. If the currently unwritten Institutional Controls Plan is going to contain the covenant language from the consent decree, it is preferable to reference an existing document rather than the future document.

Ecology Response: *The CAP has been revised to clarify that Institutional Controls shall be used to limit or prohibit activities that may interfere with the integrity of the cleanup action and provide for inspection and maintenance.*

Fourth paragraph, last sentence, provide a reference for the document where the site specific residual saturation cleanup level was determined.

Ecology Response: The CAP has been revised to provide a reference.

Sixth paragraph, last sentence, this sentence reads *"The permits, approvals, and substantive requirements that are known at this time to apply to the selected cleanup action are listed as an exhibit to the Consent Decree."* This sentence is incorrect. Exhibit G of the Draft Consent Decree is titled *Applicable Substantive Requirements of Procedurally Exempt Permits or Approvals*. The consent decree does not list the ARARs. Additionally, the dCAP shall include the applicable or relevant and appropriate requirements (ARARs) as stated in WAC 173-340-380(1)(a)(vii). ARARs are presented in Section 2.6 of the draft feasibility study for the site. Please add them in the dCAP as required by MTCA.

Ecology Response: Please refer to both Exhibit F and G of the Consent Decree for the list of permits, approvals, and substantive requirements, also known as ARARs. The CAP has been revised to include a reference to Section 2.6 of the FS for the list of ARARs.

Table 1
The pH cleanup levels appear to be incorrect, for example the groundwater cleanup level for pH is <6.2 or >8.5 which means pH of less than 6.2 or pH of greater than 8.5.

Ecology Response: Table 1 of the CAP has been revised accordingly.

Figure 2
The dCAP text states that soil with Bunker C > 10,000 mg/kg was excavated. On the figure it appears that the excavation area is labeled as containing soil with Bunker C > 10,000 mg/kg. Please make the dCAP text and the figure consistent. In addition, label the excavated area with text. Currently the Bunker C Subarea and the excavation area are different colors suggesting that the excavation area is not part of the clearly labeled Bunker C Subarea. Connecting the two parts of the subarea to the text label with an arrow would eliminate this confusion.

Ecology Response: As stated above, the interim action excavation area itself meets cleanup levels and is not part of the Bunker C Subarea, as is indicated on Figure 2.

Response to Gaythia Weis Comments

According to the Draft Cleanup Action Plan, Pulp/Tissue Mill Remediation Unit, for the Georgia-Pacific West Site in Bellingham, Washington, the plan designated therein as "Alternative 1" was selected in these draft documents by the Washington State Department of Ecology. It was stated in section 3.4 *Rationale for Selecting Cleanup Action*, that Alternative 1 met the criteria that this alternative is permanent to the maximum extent practicable.

I believe that this Feasibility Analysis is lacking in several key respects and that more stringent cleanup methods need to be applied to this site.

Site Designation

As defined in these documents, "the site", Georgia Pacific West, is divided into two remedial Action units. It is stated that this is to expedite cleanup and development. The remedial action unit to be considered here is the area that was the Georgia Pacific pulp/tissue mill. The remainder of the site, the Chlor-Alkali plant, is to be considered as a separate remedial action unit.

The problem with this approach is that it betrays the idea that cleanup issues on Bellingham Bay would be dealt with in the whole, using a bay-wide approach: http://www.ecy.wa.gov/programs/tcp/sites_brochure/blhm_bay/blhm_bay.htm. According to the Feasibility Study, this report is predicated on the idea that the Whatcom Waterway cleanup will take place prior to, and/or during the time devoted to the pulp/tissue mill cleanup.

This simultaneous action plan needs to be the case with the chlor-alkali plant also. Specifically, the presence of mercury contamination in the chlor-Alkali site directly adjacent to that of the pulp/tissue mill presents some serious problems with exposures if development on the pulp/tissue area commences before cleanup of the chlor-alkali plant is completed. Contaminants don't observe property boundaries, and further cleanup may reveal that the chlor-alkali contamination is greater in extent than currently acknowledged and documented.

The cleanup efforts at the chlor-alkali site may also pose health and safety risks to members of the public who may, by that time, be residing upon the site of the former pulp/tissue mill, as allowable under the unrestricted use designation.

It is noted in the feasibility study that remediation of the chlor-alkali plant is expected to be considerably more complex than that for the pulp/tissue area.

These two sites, the pulp/tissue mill and the chlor-alkali plant need to be cleaned up in conjunction with one another.

Development on any portion of this site should not be allowed to commence until it is known that the remedial levels have been achieved for the entire site.

Adjacent development opens the possibility of public exposures and might place limits on the cleanup actions at the chlor-alkali plant that could subsequently be accomplished.

> *<u>Ecology Response:</u> The GP West site, is part of the Bellingham Bay Demonstration Pilot initiative. Under this program, a team of federal, state, local, and tribal entities are working to achieve the*

mutual goals of contaminated site cleanup, marine habitat restoration, control of pollution sources, and sustainable waterfront land use in Bellingham Bay. The team meets regularly to coordinate and stay informed on bay projects including the GP West site and Ecology's decision to establish two remedial action units (RAUs).

Our decision to create two RAUs is based on: 1) contamination in the two RAUs is separate and distinct and requires separate remedies; and 2) the remedy for the Pulp & Tissue Mill RAU is less complex than the remedy for the Chlor-Alkali RAU leading to an opportunity for a more expeditious cleanup at that portion of the site, which is also a high priority redevelopment area for the port and city. Figure 8-2 of the August 2013 Final Remedial Investigation report (2013 RI) shows the preliminary contamination footprints within the two RAUs. This figure can be found at: https://fortress.wa.gov/ecy/gsp/CleanupSiteDocuments.aspx?csid=2279. Note that the Chlor-Alkali RAU Feasibility Study is currently being developed and is expected to be issued for public review in 2015.

Regarding development of the Pulp & Tissue Mill RAU, Section 3 of the Cleanup Action Plan and Exhibit E to the Consent Decree provide details about the relationship between the cleanup and development. Fundamentally, development activities must restore the requirements of the cleanup action plan and cannot limit cleanup options for the Chlor-Alkali RAU.

Impacts on Surrounding Sites and Bellingham Bay

The SEPA document states that approximately 10,000 gallons of water may be extracted and discharged to the Aerated Stabilization Basin (ASB). This further states that this basin is currently sealed with no discharge to Bellingham Bay.

However, the Port of Bellingham has applied for a permit to discharge water into Bellingham Bay from the aerated settling basin ASB) of the former Georgia Pacific paper mill.

Furthermore, in my comments to that permit application, I noted that the ABS, by itself, not even including added collected discharges from the GP West site, would, according to pan evaporation data, be a net gainer of water. Thus, I conclude that there must be some seepage to the Bay currently.

Additional water collection, such as that described above, would more quickly lead to the need to exercise the ABS discharge permit. The idea that these waters would be safely contained within the ABS is thus questionable.

This also points to the strong need for better Bellingham Bay wide coordination.

Ecology Response: The Port has rarely discharged from the ASB. Since 2008 only two discharges have occurred, both in 2014 as part of a pilot study in support of their draft NPDES permit.

Moreover, the impact of the approximately 10,000 gallons of water from the cleanup of the Pulp & Tissue RAU is negligible. The 29-acre ASB has a capacity of approximately 250 million gallons. The addition of 10,000 gallons will increase the water level by about 1/100th of an inch.

Pertaining to seepage from the ASB, the draft NPDES permit proposes that the Port conduct a water balance. Even if there is seepage, given the large volume of the ASB, the water from the Pulp & Tissue Mill cleanup activities would have little effect on contaminant concentrations in the ASB.

Concerning bay wide coordination, please see our response to your Site Designation comments.

Groundwater: Potential Changes in Groundwater Flow Regimes

In my opinion, this report lacks a thorough analysis of potentials for changes in groundwater levels and gradients as described below.

Changes in hydraulic pressures and flow do not necessarily lead to mixing, but could serve to drive a contaminated aqueous mass in new directions.

Groundwater Flow From Upland Area Sources Not Controlled by Surface Capping

This area is filled tidelands, well below the levels of the original bluffs. This report does not consider the need for cutting off the site from subsurface groundwater flows from the bluffs above. These flows are subject to change with changes in pervious/impervious surfaces in the city above, including more development there but also increased use of "rain garden" style stormwater facilities.

Ecology Response: You are correct, surface capping does not control groundwater flow from off-site sources. The purpose of surface capping is to eliminate human direct contact with contaminated soils and prevent these soils from being carried to the bay by erosion and overland flow of water.

The remedial investigation (RI, https://fortress.wa.gov/ecy/gsp/CleanupSiteDocuments.aspx?csid=2279) found that groundwater discharging from the RAU to the bay does not contain contaminant concentrations above levels established to protect surface water and sediment. Therefore controlling groundwater flow from off-site sources is not necessary. Groundwater discharge to Bellingham Bay will be monitored over the long-term to ensure the cleanup levels in Table 1 of the Cleanup Action Plan continue to be met.

Sea level Rise Leading to Groundwater inundation

Anticipated sea level rise would change the height of the groundwater "water table". Contaminants could percolate upwards with rising groundwater levels. Or, in the case of oils, be floated as a top layer to the rising water table. In which case, a mg/kg level in soils as currently given might no longer apply.

The Feasibility study notes that petroleum contaminated soils (Bunker C concentrations exceeding 30,000 mg/kg) remain at depths adjacent to the former oil pipelines between the former storage tank

and the steam plant and the pier. Concentrations of PAH's exceeded the unrestricted soil screening level (for direct contact) are described as "common throughout the [Bunker C] subarea". Dioxins are also an issue.

Sea Level Rise Leading to Groundwater Inundation

"Groundwater inundation is localized coastal-plain flooding due to a simultaneous rise of the groundwater table with sea level. Groundwater inundation is an additional risk faced by coastal communities and environments before marine flooding occurs because the groundwater table in unconfined aquifers typically moves with the ocean surface and lies above mean sea level at some distance from the shoreline."

http://www.eurekalert.org/pub_releases/2012-11/uoh-id110812.php
and
http://www.sciencedaily.com/releases/2012/11/121111153801.htm.

The potential exists for contaminants to be mobilized and concentrated as part of an oily film atop a rising groundwater table surface. These mechanisms could cause concentrated levels of contaminants much closer to the surface and/or driven towards Whatcom Waterway and Bellingham Bay. The mechanism for such events could result from flooding, climate change driven increases in overall water table height, urbanization usage changes or sea level rise.

These mechanisms argue against implementation of Alternative A.

Under section 3.2 of the Cleanup Action Plan, contingent actions will be considered for implementation if the monitored natural attenuation of groundwater fails to restore groundwater at a reasonable rate and is determined not to be protective of human health and the environment.

Alternative 1 fails to account for how this would be accomplished if the area were to be developed. Especially if conditions changed in ways not modeled. Therefore, the lack of complete removal of contaminant sources, as in the area of the Acid Plant, makes alternative 1 not a permanent and practicable remedy.

Ecology Response: Soils in the Bunker C area with petroleum concentrations above cleanup levels protective of groundwater will be removed. cPAHs and dioxins have very low solubility, and soil concentrations of PAHs and dioxins do not exceed cleanup levels protective of groundwater. As a result, an increase in groundwater level will not affect petroleum, PAH and dioxin concentrations in groundwater.

Contingency actions and their locations along with long term monitoring will be defined in an Engineering Design Report anticipated to be available in late 2015/early 2016. Future development will not be allowed to preclude long-term monitoring or the implementation of contingency actions if they are found to be necessary.

TMDL, Bioconcentration and Tidal Mixing

The Draft Cleanup Plan lists tidal mixing as part of the natural attenuation of groundwater contamination levels. This is only true if such mixing into Whatcom Waterway and Bellingham Bay waters leads to dispersion, not bioconcentration. Bellingham Bay is a seafood source utilized by Lummi Nation for subsistence as well as by recreational shellfish gathers and fishermen.

Studies by Valerie Partridge and others document a decline in the benthic health of Bellingham Bay. http://www.ecy.wa.gov/news/2014/005.html

Further additions to Bellingham Bay of contaminants to Bellingham Bay as a result of tidal mixing and groundwater flows need to be evaluated in terms of the Total Maximum Daily Load (TMDL) levels, taking potentials for bioconcentration into account.

Ecology Response: *Bioaccumlative chemicals and seafood consumption were taken into consideration when evaluating contaminant screening levels. The evaluation, presented in Section 5 of the RI, identifies the most stringent values which are then adopted as cleanup levels or remediation levels in Table 1 of the Cleanup Action Plan. Also, please see our response to your Groundwater Flow From Upland Area Sources Not Controlled By Surface Capping comments.*

Regarding the work by Valerie Partridge of Ecology, the reason for the decline in the benthic health of Bellingham Bay is not known. As stated in the news release: "The decline could not be attributed to any significant chemical contamination that Ecology measured. Scientists believe that other environmental conditions are impacting the benthic communities.

Some of the factors that may influence the health of organisms at the bottom of Bellingham Bay include:

- *Changes in food resources that sink through the water and reach the sediments.*
- *Changes in dissolved oxygen, pH, and levels of ammonia and sulfides in the water above and within the sediments.*
- *Natural population cycles of sediment-dwelling organisms that may be influenced by oceanic cycles.*
- *Sediment movement and burial.*
- *Unmeasured contaminants, including contaminants of emerging concern, contaminant mixtures, and contaminants that may sicken but not kill marine life"*

Concerning TMDLs, these calculate the maximum amount of a pollutant allowed to enter a water body so that the water body will meet and continue to meet water quality standards for that particular pollutant. This loading capacity approach is used under water quality law to establish regulatory limits on point and nonpoint (does not include groundwater) discharges. Loading is measured in mass per day.

Under MTCA, rate is not a consideration. Analytical results (concentrations) are directly compared to protective standards or criteria to assess compliance. Protective criteria are determined through evaluation of potentially applicable criteria, with adoption of the most stringent values. This includes consideration of Washington State surface and groundwater quality standards. For the GP West Site, Section 5 of the RI presents the evaluation of potentially applicable criteria. The most stringent values are then adopted as cleanup levels or remediation levels as indicated in Table 1 of the Cleanup Action Plan for the Pulp & Tissue Mill RAU. Groundwater in the interior of the Pulp & Tissue Mill RAU exceeds cleanup levels for some contaminants, but concentrations are expected to decline over time based on the findings of the RI. Groundwater at the shoreline does not exceed cleanup levels.

Changes Resulting From Extreme Weather Events

The fact that this area is positioned as a lowland below the bluffs on which the "downtown" area of Bellingham is located increases its vulnerability.

"For much of the Puget Sound, a one foot sea level rise turns a 100 year flood event into a 10 year event." http://www.atmos.washington.edu/~dargan/111/111_14.pdf

Impacts of storms, now considered extreme need to be taken into account given climate change predictions. Such storms may lead to overwhelmed upland stormwater facilities. The potential impacts from such runoff running into contaminated soils beneath potential future development of this site needs to be taken into account.

Ecology Response: Please see response to your Groundwater Flow From Upland Area Sources Not Controlled By Surface Capping comments. The majority of the contaminated soil exceeds human direct contact clean up levels, but not cleanup levels protective of groundwater. As a result, a rise in the groundwater level (due climate change or extreme weather events) will not affect groundwater. However, there is an area of contaminated soils in the Acid Plant Subarea that contains low (acidic) pH and metals which are impacting groundwater; the elevated metals in groundwater are a result of the acidic groundwater pH. Groundwater pH and metals concentrations in this area are attenuating naturally over time, and down gradient shoreline groundwater concentrations are below cleanup levels and do not reach Bellingham Bay. The data indicate that the source of acidic pH is already below the water table, so raising the average water table elevation should not constitute a significant change to the current condition. Ultimately, long-term monitoring will document the future groundwater conditions and achievement of cleanup levels, and a contingency action will be implemented if protection of Bellingham Bay is not achieved.

Fill Material and Potential Gas Release

The documents mention that the fill beneath the GP West site is not completely known.

This is likely to contain woody materials from GP operations as well as previous lumber mill operations. It may contain slag from historic coal mining operations in the area. These materials could be expected to be in varying states of decay. Depending on groundwater levels, salt water intrusion, oxygenation levels, reducing conditions, and other changes in conditions such as the acid plume, chemical conditions could vary.

Additionally, volatilization is specifically mentioned in this cleanup action plan as part of the monitored natural attenuation of contaminants, such as the vinyl chloride and treterchloroethene of the Lignin Plant Subarea.

Alternative A relies on capping to contain much of the contamination. The capping itself could present new problems. Gases, previously at low levels seemingly not an issue in an open environment, could be directed towards and gather in foundations of buildings and be trapped at harmful concentrations in the build structures above.

> *Ecology Response:* *Section 4.2 of the RI describes the fill material at the Site. The fill consists of hydraulic (dredge) fill materials and fill from upland sources. It varies in thickness from about 10-20 feet thick and primarily consists of silty sand or sandy silt with occasional gravel. Localized areas of wood and construction debris (e.g., bricks, concrete tile, metal, and plastic) also exist. The construction debris has not been identified as a source of gas. However, Section 5 of the RI considers vapor intrusion associated with chlorinated solvents (degreaser) in groundwater as part of evaluating contaminant screening levels. The evaluation identifies the most stringent values which are then adopted as cleanup levels or remediation levels in Table 1 of the Cleanup Action Plan.*

Institutional Controls, Public Hazards, and Future Development

Currently Georgia Pacific West is under the control of one entity, the Port of Bellingham. After development, the pulp and tissue mill area could be divided into many different holdings.

I think that the following plan needs to be very mindful of what is now known about development plans for this area: http://www.portofbellingham.com/documentcenter/view/2606 and :http://www.bellinghamherald.com/2014/07/17/3753751/port-of-bellingham-continues-negotiations.html

Clearly, this area may become a mixed use area, with considerable public and even residential usage.

Under Alternative 1, groundwater cleanup levels are expected to undergo natural attenuation for years. For example, in the Acid Plant subarea anticipate restoration time frame is on the order of 20-30 years.

Development would limit ability to implement any contingency actions that might arise over that time period as called for under Alternative 1.

An appropriate analysis of alternative 1 ought to either call for the site to remain vacant over the time period necessary for "natural" remediation to take place, with appropriate monitoring and contingency plan implementation as needed. Or, alternatively, the potential costs to having to potentially undo the development to affect needed contingency actions needs to be factored into the economic analysis for this alternative.

Additionally, I do not believe that the exposure risks of future occupants of the pulp/tissue mill site as the directly contiguous chlor-alkali site is being remediated has been properly taken into account. Institutional controls to safely carry out remedial work of the chlor-alkali plant would entail not having people living, working and visiting in such close proximity.

Ecology Response: Please see our response to your Site Designation comments.

Development may limit the locations where contingency actions could be implemented, however contingency actions are required if found to be necessary. Note that potential contingency actions and long term monitoring requirements will be described in an Engineering Design Report expected to be available in late 2015/early 2016.

Leaving the Pulp & Tissue RAU vacant until monitoring confirms natural attenuation has met groundwater cleanup levels in the interior of the RAU vs. developing the area and incorporating contingency actions is a Port decision. Both options must meet cleanup requirements. Please note that groundwater discharging to the bay meets cleanup levels established to protect surface water and sediment. Since this is the highest beneficial use of groundwater (it will not be used for drinking water), it is unlikely that contingency actions will be necessary.

Soil Settling and Shifting

The Cleanup Action Plan states that new hard caps covering this contaminated site will be constructed to a minimum three inches of concrete, asphalt, paving blocks or building foundations.

Obviously such materials crack, and this thickness is not protective long term.

Ecology Response: Based on previous containment remedies, a 3-inch hard cap will be protective if it is kept intact. Long-term monitoring will require regular inspection, maintenance and repairs to the cap to ensure the long term integrity of the cap. As stated in previous responses, the purpose of surface capping is to eliminate human direct contact with contaminated soils and prevent these soils from being carried to the bay by overland flow of water. The surface capping does not serve to reduce infiltration as groundwater discharging to the bay meets cleanup levels protective of surface water and sediment.

Earthquake Potential

The SEPA document states that this area has been designated as a very high seismic risk area.

Soil liquefaction as a result of earthquakes is likely in this site which is composed of fill.
Bellingham area faults:
http://www.livescience.com/31374-washington-quake-faults.html

Discussion of liquefaction (based on San Francisco Bay examples)
http://earthquake.usgs.gov/regional/nca/qmap/

Designing buildings to withstand earthquakes is likely to be at odds with plans at this site to build without disturbing and mobilizing capped contaminants.

> *Ecology Response:* *The construction of future buildings, roadways, and utilities has been considered in the selection and implementation of the cleanup remedy. Future redevelopment will need to properly manage contaminated soils encountered during construction. Exhibit E of the Consent Decree, Contaminated Materials Management Plan, describes prohibitions on construction activities that may potentially spread contamination and requirements on how the protective cap and contaminated soils below can be safely disturbed and managed during Site development.*

Tsunami

Tsunami potential is only listed at 0-.5 meters for this area according to the sources below. However, effects here would be increased by tides and sea level rise and soils liquefaction if an earthquake occurred in the region.
http://www.pmel.noaa.gov/pubs/PDF/wals2795/wals2795.pdf

http://www.emd.wa.gov/plans/documents/ehmp_5.8_tsunami.pdf

This tsunami height data needs to be revisited based on what is now known about Bellingham area faults, as noted in the link above.

Potentials for issues arising from earthquakes related to the previous GP West contamination might be anticipated to be minor as compared to other effects at the time. But it does call into question the meaning of the word "permanent". If the contaminants were removed, subsequent earthquakes would not be an issue with regards to those contaminants.

The State of Washington is focusing on earthquake preparedness and the Washington State Seismic Safety Committee is beginning a 2-3-year effort entitled "The Resilient Washington State" Initiative.

Much of this has to be directed toward retrofitting existing structures and areas.
http://www.emd.wa.gov/hazards/haz_earthquakes.shtml

The GP West site offers an opportunity to "do right from the start".

Ecology Response: *Please see response to your Earthquake Potential comments.*

Site History

Bellingham Bay, including the tidelands now buried under the Georgia Pacific site, have been part of the a traditional area for Lummi Nation fishing and shellfish gathering rights.

None of the alternatives given in these documents take Lummi Nation rights into account.

Ecology Response: *The Lummi Nation asserts various treaty rights, including the right to fish and gather shellfish. Ecology and the tribes have an overlapping interest in taking actions to protect fish, wildlife, and habitat. For the purpose of this RI/FS and cleanup of this site, Ecology is acting under the authority of MTCA to address the release of hazardous substances and ensure that human health and the environment are protected.*

Also, see our response to your Site Designation comments.

Conclusion

In my opinion, Alternative 1 is not the permanent, reasonable and practicable solution to remediation of the Georgia Pacific West Site. While the other alternatives are improvements over alternative 1, I do not favor any of these either. In my opinion, a comprehensive, Georgia Pacific West site wide plan is needed. Such a plan would deal with the contamination issues presented by the site in its entirety. Such a plan would also need to fully evaluate impacts on the health of Bellingham Bay.

The idea that this contaminated site would be issued a document labeled a "SEPA Determination of Non-Significance" puts to shame the good intentions of the Washington State Environmental Policy Act, and calls into question the integrity of state efforts to protect our ecologically fragile shorelines.

According to the Department of Ecology website,
http://www.ecy.wa.gov/programs/sea/sepa/faq.htm#_Toc431007938

a DNS or "determination of non-significance" documents the responsible officials decision that a proposal is not likely to have significant adverse environmental impacts.

In my opinion the Cleanup Action Plan under Alternative 1 is not at all likely to meet these requirements.

Ecology Response: *Please see previous responses. In addition, the Feasibility Study presents an evaluation of remedial alternatives in accordance with WAC 173-340-360 Selection of Cleanup actions. The evaluation found Alternative 1 to be permanent to the maximum extent practicable.*

Regarding SEPA, proposals are evaluated to determine if they will have a significant environmental impact. In this case the cleanup proposal includes excavation, capping, monitoring, and institutional controls. Through completion of an environmental checklist, Ecology determined that these activities are unlikely to have a significant adverse environmental impact.

The adequacy of the proposal in terms of addressing contamination for protection of human health and the environment does not fall within the purview of SEPA, it falls under Ecology's MTCA authority.

Response to RE Sources Comments

1. **Miscellaneous dissolved metals exceedances in groundwater.** Data from the RI and statements in FS indicate that the area of dissolved metals exceedances is not well defined, and residual contamination exceeds cleanup levels for pH and selected metals. Additionally, the FS states that the levels of metals are declining based on three rounds of sampling. We request that 1) additional sampling be accomplished to confirm downward trends, 2) actions be taken to remove the contamination source.

   Ecology Response: The remedial investigation work performed for the Pulp & Tissue Mill RAU is sufficient for developing and evaluating remedial alternatives, and for Ecology to select a remedial alternative. Additional sampling will be performed following construction of the cleanup action to confirm groundwater concentrations are declining within the interior of the Pulp & Tissue Mill RAU. If levels are not declining, contingency actions may be taken. There is no source of metals identified for the Miscellaneous Dissolved Metals area. Removal of soil in the Acid Plant Subarea is not supported by the Disproportionate Cost Analysis (DCA), as required under MTCA (see WAC 173-340-360(3)(e) and presented in the Feasibility Study (FS). Note that groundwater discharging to Bellingham Bay from the Pulp & Tissue Mill RAU does not contain contaminant concentrations above levels established to protect surface water and sediment.

2. **The regulation requires proving a reasonable restoration time frame.** The restoration time frame for alternative 1 is expected to take between 16-40 years in the acid plant subarea. We request a more robust remedy that would result in a faster time frame. For this reason we favor Alternative 2 because the combination of a hydraulic cap and *in situ* buffering provide greater confidence for eliminating contaminant discharge to the Whatcom Waterway within a faster time frame.

   Ecology Response: The RI found that groundwater discharging from the Pulp & Tissue Mill RAU to Bellingham Bay does not contain contaminant concentrations above levels established to protect surface water and sediment. The RI further found that groundwater contaminant concentrations in the interior of the Pulp & Tissue Mill RAU are decreasing. As a result, the additional cost of Alternative 2 is not supported by the DCA presented in the FS.

3. **Ratings in the DCA**. We disagree with the ratings assigned to the alternative 1 criterions of overall protectiveness, permanence, long-term effectiveness, and considerations of public concerns. For overall protectiveness, the rating of 5 was assigned because there is no evidence that contaminant plumes are advancing. The evidence is based on very few sampling events. The rating should be lowered. Similarly, we think that natural attenuation is not a guarantee, and so the rating should be lower than 3. a rating of 3 for permanence is too high. Without removing and/or treating the most contaminated soils and groundwater, we feel the ratings are not accurate for long-term effectiveness. Finally, as evidenced by the large amount of questions and concerns posed by the public at our Forum, there is a high degree of concern about the adequacy of alternative 1. The rating should be adjusted downward.

   Ecology Response: The alternatives are ranked relative to each other with Alternative 4 receiving the highest rating of 9 for overall protectiveness because it is the most permanent remedy. Alternative 1 received a rating of 5 for overall protectiveness. This lower rating is appropriate for the reduction in the level of protectiveness (compared to Alternative 4). Alternative 2 was ranked slightly higher due to the use of hydraulic capping and passive buffering. Alternative 3

was ranked even higher to account for the removal of the contaminated vadose zone soils in the Acid Plant source area. The alternatives were appropriately ranked relative to each other for permanence and long-term effectiveness. Please note that removal is the selected remedy for the area containing the most contaminated soils (Bunker C Tank area) even though groundwater migrating to the bay from this area does not exceed concentrations that are protective of surface water and sediment. The FS has been revised with lower DCA rankings for consideration of public concerns for Alternatives 1-3 based on input received during the public comment period. The DCA benefit/cost ratios change for Alternatives 1-3 but Alternative 1 still has the highest ratio and remains the preferred cleanup alternative in accordance with MTCA.

Regarding the data supporting natural attenuation, Ecology determined that the data is adequate. This will be verified through compliance monitoring, and the remedy includes the provision for a contingency action if the monitoring indicates that natural attenuation is not protective.

Regarding concerns expressed at RE Sources' public forum, Ecology shares these concerns and they are reflected in the relative rankings of each alternative in the DCA.

4. **Reasonableness of Alternative 4.** Alternatives that included removal of soil to a depth of less than 15 feet should have been considered. 15' across the entire site is not reasonable. A combination of deep removal in some areas, and shallow removal in other areas should be considered.

   <u>Ecology Response:</u> The point of compliance for soils is from the ground surface to fifteen feet below the ground surface, and the RI data indicate scattered occurrences of contaminants at concentrations above cleanup levels throughout the fill which extends to a depth of about 15 feet. Alternative 4 evaluates removing all of the soil contamination in order to meet the soil cleanup level at the point of compliance. This remedy does not require capping or institutional controls. Regarding a shallow removal remedy, this approach would leave contaminated soils behind, and require capping the remaining contaminated soils and implementing institutional controls similar to Alternatives 1-3. The added cost of a shallow removal doesn't provide a substantial benefit since contamination would remain and was not evaluated in the FS. Note that the selected alternative includes deep excavation in the Bunker C Subarea targeted to remove a potential source of groundwater contamination.

5. **Use of Institutional Controls (ICs)**. For areas in the site where public access is planned, we request treatment and containment of source material to be the first defense, instead of ICs. In areas that are not planned for public use, please require use of an IC Implementation and Assurance Plan. This plan should establish and document the activities necessary to implement and ensure the long-term stewardship of ICs, and specify the persons and/or organizations that will be responsible for conducting these activities.

   <u>Ecology Response:</u> The entire site must meet the most stringent cleanup levels established for unrestricted land use. This assumes an exposure scenario that includes public access. A combination of source material removal, monitored natural attenuation, containment and institutional controls are planned. Institutional controls shall be used to limit or prohibit activities that may interfere with the integrity of the cleanup action and require inspection and maintenance of the RAU-wide cap to assure both the continued protection of human health and the environment. A Contaminated Materials Management Plan and a Model Environmental

Restrictive Covenant provide details on specific institutional controls and are exhibits to the Consent Decree. In addition, the Compliance Monitoring Plan will be developed under Exhibit C, Schedule of Deliverables.

6. **Capping and Institutional Controls, continued.** In a presentation titled "Waterfront Park Phase 1" given by the City of Bellingham (June 26, 2014), a promenade type feature is shown close to the Whatcom Waterway, within the Bunker C and dioxin-contaminated subareas. Examples of possible greenway designs are provided in the presentation. If a greenway and sloping waterfront access areas are planned for this portion of the site, we request that additional soil contaminated with Bunker C oil and dioxin be removed from the area adjacent to the waterfront. This will ensure safe use of the area for people, animals, and wildlife into the future.

   Ecology Response: The selected cleanup action will remove soils with petroleum concentrations above cleanup levels protective of groundwater and contain remaining contaminated soils under a protective cap. This will prevent direct contact with contaminated soil, ensuring safe use by people, animals, and wildlife.

   Additionally areas closest to the shoreline are those that are most vulnerable to sloughing and erosion, therefore they are those that should be cleaned to a greater extent. With the onset of climate change and increased storm and wave action, it would be prudent to remove contamination from the shoreline area to prevent it from becoming available to people and animals via wind or water erosion.

   Ecology Response: Most of the existing shoreline is currently developed with vertical bulkheads or armored beaches with over-water piers that are not vulnerable to sloughing and erosion. A section of the shoreline will be cut back by the Whatcom Waterway cleanup as shown in Figures 10 and 11 of the Whatcom Waterway Phase 1 Engineering Design Report (https://fortress.wa.gov/ecy/gsp/CleanupSiteDocuments.aspx?csid=219). This work will include capping and armoring to protect against storm and wave action. Also, under the requirements of the Whatcom Waterway cleanup, the area will be subject to long-term monitoring and institutional controls to ensure the integrity of the cleanup action.

7. **Removal of Bunker C Oil and Dioxin**

   We have concerns regarding the lack of active removal for Bunker C oil and dioxin and the standards chosen to evaluate them. By reference, the Feasibility Study accepts the standards developed in the Remedial Investigation.

   The Remedial Investigation states that, "the SQS based on protection of benthic organisms spending their full lifecycle in the sediment are also protective of higher trophic level organisms consuming those organisms, in our professional opinion." This reasoning is purely speculative.

   Standards are meant to apply to organisms for their entire lifecycle also; for humans, up to 70 years. The RI further reasons that the ecological exposure will be small because the footprint of the site groundwater discharge is small. Given this reasoning, limited hot spots of contamination could be

allowed around the Sound, although their contribution to a contaminated body burden would be cumulative, regardless of where they picked up the contamination.

Additionally, dioxin is not considered in RI section 5.2.1.2 as a concern in marine sediment nor as a concern to higher tropic levels. This is in part because the FS states that dioxin is present at level exceeding soil direct contact at a depth of 4-8 feet. However, sample BH-SB02-1 was collected at 0-4 feet, with a concentration of 2.2×10^{-5}, above the unrestricted soil screen level of 1.1×10^{-5}. Dioxin is also a bioaccumulative toxin and that has not been taken into account; there appears to be no screening level developed for it.

Please review the standards for cPAHs and dioxin in light of their nature to bioaccumulate, as well as their remediation solution. At present, the treatment of cPAHs and dioxin is insufficient. We believe that a more rigorous standard, which encompasses the bioaccumulative nature of these compounds, will lead to further removal of contaminated sediment at the shoreline.

Ecology Response: *The referenced RI language is found under Section 5.2.1 Groundwater Screening Levels, Protection of Marine Sediment. The entire text states: "The potential for food web/ecological exposure is limited because the footprint of the Site groundwater discharge to sediment is very small relative (to) the home ranges of higher trophic level organisms that could consume benthic organisms within that sediment. The sediment will also be capped as part of the Whatcom Waterway site cleanup. Therefore, the SQS based on protection of benthic organisms spending their full lifecycle in the sediment are also protective of higher trophic level organisms consuming those organisms, in our professional opinion." Since sediments are not part of the GP West Site, the objective of this language is to identify applicable sediment criteria to use in developing groundwater screening levels that are protective of sediment. Section 5.2.2 of the RI then develops soil screening levels that are protective of human direct contact and leaching to groundwater. Screening levels are developed for cPAHs and dioxins/furans, see Tables 5-1 and 5-2 of the RI. The groundwater cleanup levels are based on a 173 gram/day total fish consumption rate, from the Tulalip Tribe Seafood Consumption study (Toy et al, 1996).*

Regarding cleanup levels for cPAH and dioxins/furans at the Pulp & Tissue Mill RAU, Table 5-1 of the RI and Table 1 of the CAP indicates a cPAH groundwater cleanup level set at the 0.02 ug/L practical quantitation limit (PQL), which is the lowest concentration that can be reliably measured. The groundwater cleanup level for dioxins/furans is also set at the PQL (0.00001 ug/L (TEQ)). Concentrations of cPAHs in RAU groundwater are below the Table 1 values. As discussed in Section 7.9.2.3 of the RI, dioxins/furans are exceptionally hydrophobic compounds and thus have an extremely low affinity to dissolve into groundwater. Consistent with this immobility, dioxin/furan soil screening levels based on leaching to groundwater are less stringent than soil screening levels based on unrestricted direct contact (refer to RI Table 5-2). While the detected maximum soil concentrations of dioxins/furans are greater than the soil cleanup level based on unrestricted direct contact, they are less than the soil screening level based on leaching to groundwater.

The data indicate that neither constituent group is a contaminant of concern with respect to groundwater transport, and the proposed remedy will cap the soil to prevent potential for contaminant transport via soil erosion/runoff. Therefore, removal of cPAH- and dioxins/furans-contaminated soil/debris is not necessary to protect groundwater and sediment.

8. **NAPL.** Please explain why no further action is required for the area where NAPL was removed during the interim action. What monitoring has occurred to insure the removal was complete and effective? The FS states *petroleum-contaminated soils remain at depth adjacent to the former oil pipelines between the former storage tank and the steam plant and pier.* Why isn't this material going to be removed?

   Ecology Response: The remaining soils with Bunker C concentrations exceeding 10,000 mg/kg TPH are located in the vicinity of the pipelines, steam plant, and pier are scheduled to be removed as part of the cleanup of the Pulp & Tissue Mill RAU.

   The interim action removed debris and contaminated soils with Bunker C concentrations exceeding 10,000 mg/kg TPH. This remediation level was established to protect groundwater via dissolved-phase leachability, indoor air via soil vapor intrusion, and NAPL mobility (refer to derivation in RI Section 7.5.2.1). Details of the interim action activities including monitoring are described in the Bunker C Interim Action Report, dated Feb. 24, 2012 and are available on Ecology's web page at https://fortress.wa.gov/ecy/gsp/Sitepage.aspx?csid=2279.

9. **Stormwater and dewatering.** The FS states in several places that extracted water and stormwater will be pretreated prior to discharge. How will we ensure that all stormwater is collected when capping is planned to take place in a piecemeal fashion? A provision and plan for stormwater collection, treatment, and discharge limits should be included in the FS.

   Will the ASB be used for stormwater treatment? If the ASB is undergoing remediation, how will that affect stormwater treatment at GP West? We request that discharge limits be established for each batch of stormwater discharged. Furthermore, we request that Ecology review sampling data from each batch of stormwater that is pumped from the site.

   Ecology Response: Implementation of the Pulp & Tissue Mill RAU cleanup up will occur prior to remediation of the ASB. Extracted water and stormwater will be conveyed to the ASB, which is subject to NPDES permit requirements.

   Implementation of the RAU-wide capping will be independent of development activities and will not occur in a piecemeal fashion. The existing stormwater/ASB system will remain in place until new systems are installed as part of development.

10. **RAU-wide capping.** The CAP states *most of the RAU is currently capped with pavement and building foundations which, subject to long-term inspection and maintenance, should provide the required isolation of underlying contaminated soil to achieve environmental protection.* **Much** of the RAU has been subject to heavy demolition activities and placement of heavy machinery. Pavement and building foundations likely have many cracks and sumps. Replacing and repairing sections of

damaged pavement seems like a piecemeal approach. What insurance will we have that underlying soils are indeed isolated?

Ecology Response: *The Pulp & Tissue Mill RAU cleanup includes an initial survey of the condition of existing pavement and building floors/foundations, and development and implementation of a scope of work for necessary repairs or replacements. This RAU-wide soil containment will be subject to long-term inspection and maintenance, including after redevelopment, which will be detailed in the Compliance Monitoring Plan.*

11. **Recontamination.** Have records from GP's SWPPP been carefully reviewed? Is Ecology fully aware of locations on the site where toxic materials were stored or used? Have catch basins and underground stormwater conveyance pipes been cleaned or surveyed? Do they contain hazardous residues or sediment?

If answers to these questions indicate a lack of knowledge in some aspect of the site or indicate additional hazardous materials, we request that additional investigation and remedy occur to address them.

Ecology Response: *The storm water collection system for the GP West site discharges to the NPDES-permitted, 250 million gallon, Aeration Stabilization Basin (ASB). Since 2008 there have been two discharges from the ASB to Bellingham Bay, both in 2014 as part of a Pilot study in support of the Port's draft NPDES permit. The draft NPDES permit addresses sediment recontamination and is available on Ecology's web page at* https://fortress.wa.gov/ecy/wqreports/public/f?p=110:1000:2479519212750094::NO:RP:P1000_FACILITY_ID,P1000_FACILITY_NAME:14,GEORGIA%20PACIFIC%20WEST%20BELLINGHAM.

We are aware of where toxic materials were stored and used. Moreover, the extensive investigation work that has been performed at the Pulp & Tissue RAU shows where toxic substances are located in the soil and groundwater.

12. **RE-use of site soil.** Soils throughout the RAU contain scattered contaminant concentrations exceeding soil screening levels for unrestricted land use. Therefore, standards for acceptable "re-use" of soil should be defined as part of the contingency plan, especially if existing asphalt and foundations are left in place. Although preliminary plans for portions of the site may exist today, nothing is for certain. If the cap is disturbed for redevelopment, excavated material should be removed for off-site disposal. Rather than testing each batch of soil for contaminants, please require removal and disposal rather than re-use.

Ecology Response: *Proper handling of contaminated soils is required and outlined in Exhibit E – Contaminated Materials Management Plan of the Consent Decree. This document describes the protocols for managing contaminated materials generated during redevelopment-related*

activities to meet requirements of the Cleanup Action Plan and applicable laws, regulations, ordinances, and permits.

Appendix A

Original Comments Received for
Draft Feasibility Study
Draft Consent Decree/Cleanup Action Plan
Draft Public Participation Plan
SEPA Determination of Non-Significance

45-Day Public Comment Period
July 14 – August 27, 2014

From: wechslerlaw@comcast.net [mailto:wechslerlaw@comcast.net]
Sent: Tuesday, July 15, 2014 5:32 AM
To: Sato, Brian (ECY)
Subject: Georgia Pacific West

Please schedule a public hearing in Bellingham regarding the proposed cleanup action for the Georgia Pacific West site. Also, please add me to your list of interested parties to receive all future notices about this site.

Thank you.

Terry J. Wechsler
Bellingham, WA
360-656-6180 (r), 541-913-5976 (c)

From: Andrew Renaud [mailto:bay@plantasnativa.com]
Sent: Wednesday, August 13, 2014 10:03 AM
To: Sato, Brian (ECY)
Subject: Public Hearing - Pulp/Tissue Mill Remedial Action Unit

Hello,
We need another public meeting on this subject as it is complex and people are just coming up to speed on the latest proposals. Thank you.

Andrew Renaud
Bellingham, WA

Original Message-----
From: The Gabers [mailto:sndg@comcast.net]
Sent: Wednesday, August 13, 2014 5:58 PM
To: Sato, Brian (ECY)
Subject: Public Hearing - Pulp/Tissue Mill Remedial Action Unit

Please hold a public hearing on the "clean-up" debacle at the former Georgia Pacific site in Bellingham.

Thank you,
Deb Gaber

From: David Camp [mailto:dav.camp@yahoo.com]
Sent: Thursday, August 14, 2014 9:46 AM
To: Sato, Brian (ECY)
Subject: Public Hearing Request: Port of Bellingham GP SIte cleanup plan

HI, Brian,

This email is a formal citizen (and taxpayer) request for a formal public hearing on the Port of Bellingham's plans for cleanup of the GP site.

PLease let me know if you need anything else from me to proceed with this public hearing process.

Sincerely,

David Camp

David M. Camp
Highwater Consulting
PO Box 2655
Bellingham, WA 98227

360-332-6249

From: vilma camp [mailto:vilmacamp@yahoo.com]
Sent: Thursday, August 14, 2014 10:14 AM
To: Sato, Brian (ECY)
Subject:

Hi Brian,

I am a formal citizen (and taxpayer) and would like to request a formal public hearing on the Port of Bellingham's plans for cleanup of the GP site.

Please let me know if you require any further information from me to proceed with this process.

Thank you.

Vilma Camp
(360)332-6249

EARL G. L. CILLEY
POST OFFICE BOX 4010
BELLINGHAM, WASHINGTON 98227-4010

August 12, 2014

Dr Brian Sats
Washington Department of Ecology
Bellevue WA

Comment on Port of Bellingham's Proposals to Clean Up The Georgia Pacific pulp + tissue site in Bellingham.

Dear Mr. SATS:

I'm a private citizen born in 1935 and raised to Age 14 in Bellingham; returned to work here for a time in 1962, and retired here in 1990 where I've since lived, in a small house above the Bay, on 14th Street.

I offer these comments on the Port's proposal.

- Reserve a significant part of the area for development in the future rather than in the next 10 years to provide options for future uses; retaining in the meantime as open spaces as buffer to designated park + public recreation areas.
- Designate a major part of the shoreline for public access, park + recreation, boat launch, and docking.
- Relocate the BNSF tracks + yard areas so that the mainline runs beneath and next to the bluff, and the siding + storage areas adjacent to Cornwall Avenue at the head of Whatcom Waterway - West Holly Street be relocated either where to lower value real estate.
- Emphasize the areas to the north of Bonneville Park off Chestnut to be used for park, recreation, and low rise residential areas, with limited commercial uses for retail and office uses/development.
- Sharply constrain building heights in the overall area to prevent the high rise apartment + office buildings and preclude the kinds of commercial development as in Seattle's downtown area, Bellevue, and lower Manhattan.
- I favor Cleanup Option Alternative 3 as the remedial action choices and a faster action than the currently proposed timeline on Page 5, that I might live to see the results of the Program and enjoy its benefits.

Thank you for the chance to comment. Sincerely, Earl G. L. Cilley

To:

Brian Sato, PE, Toxic Cleanup Program

Washington State Department of Ecology

brian.sato@ecy.wa.gov

Re:

Georgia Pacific West

Draft Feasibility Study, Cleanup Action Plan, and Consent Decree

Public Comments

From:

Gaythia Weis

InfoPteryx LLC

Bellingham WA 98229

According to the Draft Cleanup Action Plan, Pulp/Tissue Mill Remediation Unit, for the Georgia-Pacific West Site in Bellingham, Washington, the plan designated therein as "Alternative 1" was selected in these draft documents by the Washington State Department of Ecology. It was stated in section 3.4 *Rationale for Selecting Cleanup Action*, that Alternative 1 met the criteria that this alternative is permanent to the maximum extent practicable.

I believe that this Feasibility Analysis is lacking in several key respects and that more stringent cleanup methods need to be applied to this site.

Site Designation

As defined in these documents, "the site", Georgia Pacific West, is divided into two remedial Action units. It is stated that this is to expedite cleanup and development. The remedial action unit to be considered here is the area that was the Georgia Pacific pulp/tissue mill. The remainder of the site, the Chlor-Alkali plant, is to be considered as a separate remedial action unit

The problem with this approach is that it betrays the idea that cleanup issues on Bellingham Bay would be dealt with in the whole, using a bay-wide approach: http://www.ecy.wa.gov/programs/tcp/sites_brochure/blhm_bay/blhm_bay.htm According to the

Feasibility Study, this report is predicated on the idea that the Whatcom Waterway cleanup will take place prior to, and/or during the time devoted to the pulp/tissue mill cleanup.

This simultaneous action plan needs to be the case with the chlor-alkali plant also.

Specifically, the presence of mercury contamination in the chlor-Alkali site directly adjacent to that of the pulp/tissue mill presents some serious problems with exposures if development on the pulp/tissue area commences before cleanup of the chlor-alkali plant is completed. Contaminants don't observe property boundaries, and further cleanup may reveal that the chlor-alkali contamination is greater in extent than currently acknowledged and documented.

The cleanup efforts at the chlor-alkali site may also pose health and safety risks to members of the public who may, by that time, be residing upon the site of the former pulp/tissue mill, as allowable under the unrestricted use designation.

It is noted in the feasibility study that remediation of the chlor-alkali plant is expected to be considerably more complex than that for the pulp/tissue area.

> **These two sites, the pulp/tissue mill and the chlor-alkali plant need to be cleaned up in conjunction with one another.**
>
> **Development on any portion of this site should not be allowed to commence until it is known that the remedial levels have been achieved for the entire site.**
>
> **Adjacent development opens the possibility of public exposures and might place limits on the cleanup actions at the chlor-alkali plant that could subsequently be accomplished.**

Impacts on Surrounding Sites and Bellingham Bay

The SEPA document states that approximately 10,000 gallons of water may be extracted and discharged to the Aerated Stabilization Basin (ABS). This further states that this basin is currently sealed with no discharge to Bellingham Bay.

However, the Port of Bellingham has applied for a permit to discharge water into Bellingham Bay from the aerated settling basin ASB) of the former Georgia Pacific papermill.

Furthermore, in my comments to that permit application, I noted that the ABS, by itself, not even including added collected discharges from the GP West site, would, according to pan evaporation data, be a net gainer of water. Thus, I conclude that there must be some seepage to the Bay currently.

> **Additional water collection, such as that described above, would more quickly lead to the need to exercise the ABS discharge permit. The idea that these waters would be safely contained within the ABS is thus questionable.**
>
> **This also points to the strong need for better Bellingham Bay wide coordination.**

Groundwater: Potential Changes in Groundwater Flow Regimes

In my opinion, this report lacks a thorough analysis of potentials for changes in groundwater levels and gradients as described below.

Changes in hydraulic pressures and flow do not necessarily lead to mixing, but could serve to drive a contaminated aqueous mass in new directions.

Groundwater Flow From Upland Area Sources Not Controlled by Surface Capping

This area is filled tidelands, well below the levels of the original bluffs. This report does not consider the need for cutting off the site from subsurface groundwater flows from the bluffs above. These flows are subject to change with changes in pervious/impervious surfaces in the city above, including more development there but also increased use of "raingarden" style stormwater facilities.

Sea level Rise Leading to Groundwater inundation

Anticipated sea level rise would change the height of the groundwater "water table" Contaminants could percolate upwards with rising groundwater levels. Or, in the case of oils, be floated as a top layer to the rising water table. In which case, a mg/kg level in soils as currently given might no longer apply.

The Feasibility study notes that petroleum contaminated soils (Bunker C concentrations exceeding 30,000 mg/kg) remain at depths adjacent to the former oil pipelines between the former storage tank and the steam plant and the pier. Concentrations of PAH's exceeded the unrestricted soil screening level (for direct contact) are described as "common throughout the [Bunker C] subarea". Dioxins are also an issue.

Sea Level Rise Leading to Groundwater Inundation

"Groundwater inundation is localized coastal-plain flooding due to a simultaneous rise of the groundwater table with sea level. Groundwater inundation is an additional risk faced by coastal communities and environments before marine flooding occurs because the groundwater table in unconfined aquifers typically moves with the ocean surface and lies above mean sea level at some distance from the shoreline."

http://www.eurekalert.org/pub_releases/2012-11/uoh-id110812.php and http://www.sciencedaily.com/releases/2012/11/121111153801.htm.

The potential exists for contaminants to be mobilized and concentrated as part of an oily film atop a rising groundwater table surface. These mechanisms could cause concentrated levels of contaminants much closer to the surface and/or driven towards Whatcom Waterway and Bellingham Bay. The mechanism for such events could result from flooding, climate change driven increases in overall water table height, urbanization usage changes or sea level rise.

These mechanisms argue against implementation of Alternative A.

Under section 3.2 of the Cleanup Action Plan, contingent actions will be considered for implementation if the monitored natural attenuation of groundwater fails to restore groundwater at a reasonable rate and is determined not to be protective of human health and the environment.

Alternative 1 fails to account for how this would be accomplished if the area were to be developed. Especially if conditions changed in ways not modeled. Therefore, the lack of complete removal of contaminant sources, as in the area of the Acid Plant, makes alternative 1 not a permanent and practicable remedy.

TMDL, Bioconcentration and Tidal Mixing

The Draft Cleanup Plan lists tidal mixing as part of the natural attenuation of groundwater contamination levels. This is only true if such mixing into Whatcom Waterway and Bellingham Bay waters leads to dispersion, not bioconcentration. Bellingham Bay is a seafood source utilized by Lummi Nation for subsistence as well as by recreational shellfish gathers and fishermen.

Studies by Valerie Partridge and others document a decline in the benthic health of Bellingham Bay. http://www.ecy.wa.gov/news/2014/005.html

Further additions to Bellingham Bay of contaminants to Bellingham Bay as a result of tidal mixing and groundwater flows need to be evaluated in terms of the Total Maximum Daily Load (TMDL) levels, taking potentials for bioconcentration into account.

Changes Resulting From Extreme Weather Events

The fact that this area is positioned as a lowland below the bluffs on which the "downtown" area of Bellingham is located increases its vulnerability.

"For much of the Puget Sound, a one foot sea level rise turns a 100 year flood event into a 10 year event." http://www.atmos.washington.edu/~dargan/111/111_14.pdf

> **Impacts of storms, now considered exptreme need to be taken into account given climate change predictions. Such storms may lead to overwhelmed upland stormwater facilities. The potential impacts from such runoff running into contaminated soils beneath potential future development of this site needs to be taken into account.**

Fill Material and Potential Gas Release

The documents mention that the fill beneath the GP West site is not completely known.

This is likely to contain woody materials from GP operations as well as previous lumber mill operations. It may contain slag from historic coal mining operations in the area. These materials could be expected to be in varying states of decay. Depending on groundwater levels, salt water intrusion, oxygenation levels, reducing conditions, and other changes in conditions such as the acid plume, chemical conditions could vary.

Additionally, volatilization is specifically mentioned in this cleanup action plan as part of the monitored natural attenuation of contaminants, such as the vinyl chloride and treterchloroethene of the Lignin Plant Subarea.

> **Alternative A relies on capping to contain much of the contamination. The capping itself could present new problems. Gases, previously at low levels seemingly not an issue in an open environment, could be directed towards and gather in foundations of buildings and be trapped at harmful concentrations in the build structures above.**

Institutional Controls, Public Hazards, and Future Development

Currently Georgia Pacific West is under the control of one entity, the Port of Bellingham. After development, the pulp and tissue mill area could be divided into many different holdings.

I think that the following plan needs to be very mindful of what is now known about development plans for this area: http://www.portofbellingham.com/documentcenter/view/2606 and :http://www.bellinghamherald.com/2014/07/17/3753751/port-of-bellingham-continues-negotiations.html

Clearly, this area may become a mixed use area, with considerable public and even residential usage.

Under Alternative 1, groundwater cleanup levels are expected to undergo natural attenuation for years. For example, in the Acid Plant subarea anticipate restoration time frame is on the order of 20-30 years.

Development would limit ability to implement any contingency actions that might arise over that time period as called for under Alternative 1.

An appropriate analysis of alternative 1 ought to either call for the site to remain vacant over the time period necessary for "natural" remediation to take place, with appropriate monitoring and contingency plan implementation as needed. Or, alternatively, the potential costs to having to potentially undo the development to affect needed contingency actions needs to be factored into the economic analysis for this alternative.

Additionally, I do not believe that the exposure risks of future occupants of the pulp/tissue mill site as the directly contiguous chlor-alkali site is being remediated has been properly taken into account. Institutional controls to safely carry out remedial work of the chlor-alkali plant would entail not having people living, working and visiting in such close proximity.

Soil Settling and Shifting

The Cleanup Action Plan states that new hard caps covering this contaminated site will be constructed to a minimum three inches of concrete, asphalt, paving blocks or building foundations.

Obviously such materials crack, and this thickness is not protective long term.

Earthquake Potential

The SEPA document states that this area has been designated as a very high seismic risk area.

Liquefaction

Soil liquefaction as a result of earthquakes is likely in this site which is composed of fill.
Bellingham area faults:
http://www.livescience.com/31374-washington-quake-faults.html

Discussion of liquefaction (based on San Francisco Bay examples)
http://earthquake.usgs.gov/regional/nca/qmap/

Designing buildings to withstand earthquakes is likely to be at odds with plans at this site to build without disturbing and mobilizing capped contaminants.

Tsunami

Tsunami potential is only listed at 0-.5 meters for this area according to the sources below. However, effects here would be increased by tides and sea level rise and soils liquefaction if an earthquake occurred in the region.
http://www.pmel.noaa.gov/pubs/PDF/wals2795/wals2795.pdf

http://www.emd.wa.gov/plans/documents/ehmp_5.8_tsunami.pdf

This tsunami height data needs to be revisited based on what is now known about Bellingham area faults, as noted in the link above.

Potentials for issues arising from earthquakes related to the previous GP West contamination might be anticipated to be minor as compared to other effects at the time. But it does call into question the meaning of the word "permanent". If the contaminants were removed, subsequent earthquakes would not be an issue with regards to those contaminants.

The State of Washington is focusing on earthquake preparedness and the Washington State Seismic Safety Committee is beginning a 2-3-year effort entitled "The Resilient Washington State" Initiative. Much of this has to be directed toward retrofitting existing structures and areas.
http://www.emd.wa.gov/hazards/haz_earthquakes.shtml

The GP West site offers an opportunity to "do right from the start".

Site History

Bellingham Bay, including the tidelands now buried under the Georgia Pacific site, have been part of the a traditional area for Lummi Nation fishing and shellfish gathering rights.

None of the alternatives given in these documents take Lummi Nation rights into account.

Conclusion

In my opinion, Alternative 1 is not the permanent, reasonable and practicable solution to remediation of the Georgia Pacific West Site. While the other alternatives are improvements over alternative 1, I do not favor any of these either. In my opinion, a comprehensive, Georgia Pacific West site wide plan is needed. Such a plan would deal with the contamination issues presented by the site in its entirety. Such a plan would also need to fully evaluate impacts on the health of Bellingham Bay.

The idea that this contaminated site would be issued a document labeled a "SEPA Determination of Non-Significance" puts to shame the good intentions of the Washington State Environmental Policy Act, and calls into question the integrity of state efforts to protect our ecologically fragile shorelines.

According to the Department of Ecology website,
http://www.ecy.wa.gov/programs/sea/sepa/faq.htm#_Toc431007938

a DNS or "determination of nonsignificance" documents the responsible officials decision that a proposal is not likely to have significant adverse environmental impacts.

In my opinion the Cleanup Action Plan under Alternative 1 is not at all likely to meet these requirements.

RE Sources
for Sustainable Communities

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Brian Sato, Site Manager
Toxics Cleanup Program
3190 160th Avenue SE
Bellevue, WA
[via email: Brian.sato@ecy.wa.gov]

RE: GP West; Pulp and Tissue RAU

August 27, 2014

Dear Mr. Sato:

The North Sound Baykeeper, a project of RE Sources, has a mission to safeguard marine and freshwater water quality and habitat in Whatcom and Skagit Counties. Our members reside primarily in Whatcom and Skagit Counties, and it is on their behalf that we submit these comments on the proposed GP West cleanup. We hope that these comments help Ecology develop a more robust and protective plan. We do appreciate the sustained efforts of you and the Bellingham Bay Action Team to clean up Bellingham Bay, and we look forward to a restored shoreline and healthier habitat in Bellingham Bay.

1. **Miscellaneous dissolved metals exceedances in groundwater.** Data from the RI and statements in FS indicate that the area of dissolved metals exceedances is not well defined, and residual contamination exceeds cleanup levels for pH and selected metals. Additionally, the FS states that the levels of metals are declining based on three rounds of sampling. We request that 1) additional sampling be accomplished to confirm downward trends, 2) actions be taken to remove the contamination source.

2. **The regulation requires proving a reasonable restoration time frame.** The restoration time frame for alternative 1 is expected to take between 16-40 years in the acid plant subarea. We request a more robust remedy that would result in a faster time frame. For this reason we favor Alternative 2 because the combination of a hydraulic cap and *in situ* buffering provide greater confidence for eliminating contaminant discharge to the Whatcom Waterway within a faster time frame.

3. **Ratings in the DCA**. We disagree with the ratings assigned to the alternative 1 criterions of overall protectiveness, permanence, long-term effectiveness, and considerations of

public concerns. For overall protectiveness, the rating of 5 was assigned because there is no evidence that contaminant plumes are advancing. The evidence is based on very few sampling events. The rating should be lowered. Similarly, we think that natural attenuation is not a guarantee, and so the rating should be lower than 3.a rating of 3 for permanence is too high. Without removing and/or treating the most contaminated soils and groundwater, we feel the ratings are not accurate for long-term effectiveness. Finally, as evidenced by the large amount of questions and concerns posed by the public at our Forum, there is a high degree of concern about the adequacy of alternative 1. The rating should be adjusted downward.

4. **Reasonableness of Alternative 4.** Alternatives that included removal of soil to a depth of less than 15 feet should have been considered. 15' across the entire site is not reasonable. A combination of deep removal in some areas, and shallow removal in other areas should be considered.

5. **Use of Institutional Controls (ICs)**. For areas in the site where public access is planned, we request treatment and containment of source material to be the first defense, instead of ICs. In areas that are not planned for public use, please require use of an IC Implementation and Assurance Plan. This plan should establish and document the activities necessary to implement and ensure the long-term stewardship of ICs, and specifiy the persons and/or organizations that will be responsible for conducting these activities.

6. **Capping and Institutional Controls, continued.** In a presentation titled "Waterfront Park Phase 1" given by the City of Bellingham (June 26, 2014), a promenade type feature is shown close to the Whatcom Waterway, within the Bunker C and dioxin-contamined subareas. Examples of possible greenway designs are provided in the presentation. If a greenway and sloping waterfront access areas are planned for this portion of the site, we request that additional soil contaminated with Bunker C oil and dioxin be removed from the area adjacent to the waterfront. This will ensure safe use of the area for people, animals, and wildlife into the future.

   Additionally areas closest to the shoreline are those that are most vulnerable to sloughing and erosion, therefore they are those that should be cleaned to a greater extent. With the onset of climate change and increased storm and wave action, it would be prudent to remove contamination from the shoreline area to prevent it from becoming available to people and animals via wind or water erosion.

7. **Removal of Bunker C Oil and Dioxin**
   We have concerns regarding the lack of active removal for Bunker C oil and dioxin and the standards chosen to evaluate them. By reference, the Feasibility Study accepts the standards developed in the Remedial Investigation.

   The Remedial Investigation states that, "the SQS based on protection of benthic organisms spending their full lifecycle in the sediment are also protective of higher

trophic level organisms consuming those organisms, in our professional opinion." This reasoning is purely speculative.

Standards are meant to apply to organisms for their entire lifecycle also; for humans, up to 70 years. The RI further reasons that the ecological exposure will be small because the footprint of the site groundwater discharge is small. Given this reasoning, limited hot spots of contamination could be allowed around the Sound, although their contribution to a contaminated body burden would be cumulative, regardless of where they picked up the contamination.

Additionally, dioxin is not considered in RI section 5.2.1.2 as a concern in marine sediment nor as a concern to higher tropic levels. This is in part because the FS states that dioxin is present at level exceeding soil direct contact at a depth of 4-8 feet. However, sample BH-SB02-1 was collected at 0-4 feet, with a concentration of 2.2×10^{-5}, above the unrestricted soil screen level of 1.1×10^{-5}. Dioxin is also a bioaccumulative toxin and that has not been taken into account; there appears to be no screening level developed for it.

Please review the standards for cPAHs and dioxin in light of their nature to bioaccumulate, as well as their remediation solution. At present, the treatment of cPAHs and dioxin is insufficient. We believe that a more rigorous standard, which encompasses the bioaccumulative nature of these compounds, will lead to further removal of contaminated sediment at the shoreline.

8. **NAPL.** Please explain why no further action is required for the area where NAPL was removed during the interim action. What monitoring has occurred to insure the removal was complete and effective? The FS states *petroleum-contaminated soils remain at depth adjacent to the former oil pipelines between the former storage tank and the steam plant and pier.* Why isn't this material going to be removed?

9. **Stormwater and dewatering.** The FS states in several places that extracted water and stormwater will be pretreated prior to discharge. How will we ensure that all stormwater is collected when capping is planned to take place in a piecemeal fashion? A provision and plan for stormwater collection, treatment, and discharge limits should be included in the FS.

   Will the ASB be used for stormwater treatment? If the ASB is undergoing remediation, how will that affect stormwater treatment at GP West? We request that discharge limits be established for each batch of stormwater discharged. Furthermore, we request that Ecology review sampling data from each batch of stormwater that is pumped from the site.

10. **RAU-wide capping.** The CAP states *most of the RAU is currently capped with pavement and building foundations which, subject to long-term inspection and maintenance, should provide the required isolation of underlying contaminated soil to achieve environmental protection.* **Much** of the RAU has been subject to heavy demolition activities and

placement of heavy machinery. Pavement and building foundations likely have many cracks and sumps. Replacing and repairing sections of damaged pavement seems like a piecemeal approach. What insurance will we have that underlying soils are indeed isolated?

11. **Recontamination.** Have records from GP's SWPPP been carefully reviewed? Is Ecology fully aware of locations on the site where toxic materials were stored or used? Have catch basins and underground stormwater conveyance pipes been cleaned or surveyed? Do they contain hazardous residues or sediment?

    If answers to these questions indicate a lack of knowledge in some aspect of the site or indicate additional hazardous materials, we request that additional investigation and remedy occur to address them.

12. **RE-use of site soil.** Soils throughout the RAU contain scattered contaminant concentrations exceeding soil screening levels for unrestricted land use. Therefore, standards for acceptable "re-use" of soil should be defined as part of the contingency plan, especially if existing asphalt and foundations are left in place. Although preliminary plans for portions of the site may exist today, nothing is for certain. If the cap is disturbed for redevelopment, excavated material should be removed for off-site disposal. Rather than testing each batch of soil for contaminants, please require removal and disposal rather than re-use.

Thank you again for responding to our concerns. We look forward to reviewing the final documents.

Sincerely,

Lee First, Pollution Prevention Specialist
Wendy Steffensen, North Sound Baykeeper