RESPONSIVENESS SUMMARY

WHATCOM WATERWAY SITE
Bellingham, Washington

Engineering Design Report
Cleanup in Phase 1 Site Areas

November, 2013

ISSUED BY:

WASHINGTON STATE DEPARTMENT OF ECOLOGY

TOXICS CLEANUP PROGRAM

1. Introduction

On February 26, 2013, the Draft Engineering Design Report for Cleanup in Phase 1 Site Areas (EDR) for the Whatcom Waterway site (Site) in Bellingham was issued for a 30-day public comment period. Public involvement activities related to this public comment period included:

- Distribution of a fact sheet describing the Site and the documents through a mailing to more than 5,700 people, including neighboring businesses and other interested parties;
- Publication of one paid display ad in *The Bellingham Herald*, dated February 22, 2013;
- Publication of notice in the Washington State Site Register, dated February 21 and March7;
- A public meeting held on March 6, 2013;
- Announcement of the public comment period and posting of the documents on the Ecology web site; and,
- Providing copies of the documents through information repositories at the Washington State Department of Ecology's (Ecology's) Bellingham Field Office and Northwest Regional Office, and the Bellingham Public Library – Downtown Branch.

A total of five people and organizations submitted written comments on the EDR. The commenters are listed in Table 1-1. Comment letters are organized alphabetically by commenter in Appendix A.

Section 2 of this document provides background information on the Site and Site cleanup activities, and Section 3 presents anticipated next steps. Section 4 summarizes the comments received and Ecology's responses to those comments. To review a comment in its original form, refer to Appendix A.

Table 1-1. Summary of Commenters

Letter	Commenter
1	Edrehi, Carole
2	Johannessen, Jim
3	RESources
4	Rubash, Bert
5	Weis, Gaythia

2. Background

The Site includes about 200 acres on the downtown Bellingham waterfront. Contamination at the Site is the result of historic releases from industrial waterfront activities, including mercury discharges from the former Georgia Pacific (G-P) Chlor-Alkali plant. The Chlor-Alkali plant was constructed by G-P in 1965 to produce chlorine and sodium hydroxide for use in bleaching and pulping wood fiber. The Chlor-Alkali plant discharged mercury-containing wastewater into the Log Pond (an industrially constructed pond open to the Whatcom Waterway) between 1965 and 1971. Between 1971 and 1979, pretreatment measures were installed to reduce mercury discharges. Chlor-Alkali plant wastewater discharges to the Log Pond were discontinued in 1979 following construction of a waste water treatment lagoon. The pulp mill closed in 2001.

Initial environmental investigations of the Site identified mercury in sediment at concentrations that exceeded Model Toxics Control Act (MTCA) standards (Chapter 173-340 Washington Administrative Code [WAC]) and Sediment Management Standards (SMS; Chapter 173-204 WAC). These are the state standards that govern the cleanup of contaminated sediment sites. The MTCA regulations specify criteria for the evaluation and conduct of a cleanup action. The SMS regulations dictate the standards for cleanup.

In 1996, G-P entered a legal agreement (agreed order) with Ecology to complete an environmental study of the Site (Remedial Investigation) and evaluate cleanup options (Feasibility Study) given the company's continued industrial land use.

In 2005, the Port of Bellingham (Port) acquired 137 acres of waterfront property from G-P, including property within the Site. The Port joined G-P on the agreed order with Ecology and completed a Supplemental Remedial Investigation and Feasibility Study (RI/FS) since their land use plans differed from G-P's plans. The Draft Supplemental RI/FS and a Draft Supplemental Environmental Impact Statement (DSEIS) were issued for public review in 2006. The Supplemental RI/FS was accepted by Ecology as final in July 2007.

In 2007, after public notice and opportunity to comment, Ecology entered into a legal agreement (called a Consent Decree) with the Port of Bellingham, the City of Bellingham (City), the Department of Natural Resources (DNR), and Meridian Pacific LLC to implement a cleanup plan for the Site. The legal agreement and cleanup plan were amended in 2011 after new contamination was found during remedial design activities.

Under the terms of the legal agreement, the Port developed the current EDR describing the first of two phases of cleanup work to be performed at the Site. The first phase of work will include cleanup of the Bellingham Shipping Terminal, Log Pond and Inner Waterway areas of the Site. This phase of work will:

- Remove up to 159,000 cubic yards of contaminated sediment, with that material transported to an existing upland disposal facility
- Remove approximately 263 tons of creosote-treated timber

- Remove concrete and asphalt rubble and other debris from 46,950 square feet of shoreline and intertidal areas
- Open 4,300 square feet of shoreline and intertidal area by removing unused structures
- Place 126,600 cubic yards of clean materials
- Remove three vertical creosote bulkheads and build flatter shorelines
- Increase the quality and quantity of intertidal and shallow sub-tidal habitat for a variety of fish, including Chinook salmon and other marine invertebrates.

The project is expected to cost $25 million. Ecology will reimburse up to half the Port's costs through the state's remedial action grant program, which helps pay to clean up publicly owned sites. The state Legislature funds the grant program with revenues from a tax on hazardous substances.

3. Next Steps

Ecology has reviewed and considered the comments received and no changes have been made to the Phase 1 EDR. The EDR will be finalized after completion of project permitting. Cleanup activities will begin after selection of a contractor by the Port. Ecology will provide oversight during construction of the cleanup, and the work will be documented in a Phase 1 As-Built Report.

Design and permitting for the second phase of cleanup work will be initiated following completion and Ecology approval of the Phase 1 As-Built Report. The second phase of work will focus on the Outer Whatcom Waterway and the Wastewater Treatment Lagoon. A separate Phase 2 EDR will be made available for public review and comment. Construction of Phase 2 is expected to take 3 to 4 years following completion of remedial design and permitting.

Cleanup activities include long-term monitoring to document that cleanup standards are achieved and maintained.

4. Summary of Comments and Responses

This section provides a detailed summary of the individual comments received, and Ecology's responses to those comments.

4.1 Commenter #1 (Edrehi, Carole)

Carole Edrehi submitted written comments to Ecology on March 26, 2013 (Commenter #1, Appendix A).

Comment #1: Ms. Edrehi questioned why BP, Intalco Aluminum Corporation and Peabody Coal and Mining were not considered in the agreement for cleanup responsibility at the Site. She stated that taxes should not be used to clean up and stop known businesses from polluting.

Response: Ecology is not aware of any relationship between the three businesses referenced in your letter (BP, Intalco and Peabody Coal and Mining) and the contamination at the Site. The cleanup work at the Site is being implemented by the Port in coordination with the City of Bellingham, the Washington Department of Natural Resources and Meridian Pacific Highway, LLC. The Port assumed leadership of the cleanup as part of its acquisition of waterfront properties from Georgia Pacific West, Inc. Ecology will reimburse up to half of the Port's eligible costs through the state's remedial action grant program, which helps pay to clean up publicly owned sites. The state Legislature funds the grant program with revenues from a tax on hazardous substances.

Comment #2: Ms. Edrehi requested that Ecology consider the length of the legal actions that followed the Exxon Valdez oil spill, and further expressed concerns that workers conducting the cleanup be appropriately educated and trained regarding safety risks during site cleanup. Ms. Edrehi requested that Ecology pay workers well and provide lifelong healthcare coverage for workers engaged in environmental cleanup activities.

Response: The Port and other liable parties are currently implementing the cleanup of the Site in accordance with the terms of a legal agreement with Ecology called a Consent Decree. All work is being performed consistent with MTCA regulatory requirements, including requirements that all investigation and cleanup work be performed consistent with state and federal worker safety regulations. Contractor compensation and healthcare programs are the responsibility of the individual companies that may be selected through the Port's public bid process to implement the work.

Comment #3: Ms. Edrehi expressed solidarity with indigenous peoples as caretakers of the earth, and expressed concern that treaties with First Nations and Indigenous peoples have been abused. She requested that Ecology do no harm and be accountable.

Response: The cleanup is designed to prevent people, plants and animals from exposure to harmful levels of contamination. Ecology has specifically evaluated potential tribal exposure scenarios. In addition, the cleanup provides ancillary benefits by improving aquatic habitat for fish and wildlife. Potential short-term impacts associated with the cleanup are minimized through the use of best management practices, and through extensive monitoring. Compliance with existing tribal treaties is reviewed by the Corps of Engineers as part of the federal permitting for the project.

Comment #4: Ms. Edrehi expressed concern that Wall Street, banks and businesses be held accountable for actions that result in pollution or other harm. She expressed appreciation for Ecology's role in the cleanup solution.

Response: The Site cleanup is being implemented in accordance with the MTCA regulations, which include strict liability provisions for potentially liable parties that cause or contribute to pollution.

4.2 Commenter #2 (Johannessen, Jim)

Jim Johannessen provided written comments to Ecology by electronic mail dated March 27, 2013 (Commenter #2, Appendix A).

Comment #1: Mr. Johannessen criticized the cleanup plan for incorporating extensive shoreline armoring as part of the containment measures. He noted that sloping rip rap shores are preferable to vertical walls, creosoted wood and debris, but are less preferable to other types of habitat.

Response: The use of stone armoring in nearshore cap areas is necessary to achieve cleanup objectives and provide for long-term remedy performance. The cleanup design must protect against shoreline and cap erosion. Sloping armored shorelines provide macroalgae attachment points and improved fish habitat in comparison to existing conditions. As noted, the design also incorporates bulkhead removal, shoreline cutbacks, debris removal, and flattening of shoreline slopes where practicable to achieve cleanup objectives, protect against future erosion, and to optimize habitat values achieved during the cleanup action.

Comment #2: Mr. Johannessen requested that the Log Pond be treated differently (with respect to armoring) than the other more exposed portions of the Whatcom Waterway.

Response: The armoring incorporated into the project design is a necessary measure to protect the cleanup and the habitat gains that have been achieved in this area. Armoring cannot be eliminated in this area, because the shoreline is exposed to significant westerly storms, and significant erosion of the existing shoreline has been observed in the past. The Log Pond design as described in the EDR minimizes potential erosion due to wind waves, while preserving the emergent tide-flat habitat that was created during the Log Pond interim action. The project also includes

extensive removal of creosote-treated bulkheads, pilings and debris and the removal of concrete debris in the Log Pond area, resulting in improvements to habitat in this area. The cleanup work does not preclude future projects from applying additional habitat substrate in these areas. For example, a future project could apply additional substrate over the armor layers if desired to further diversify habitat conditions.

Comment #3: Mr. Johannessen requested that several fine-grained beach areas within the Log Pond be retained without armor placement, because these beach areas offer opportunities for future public use and potential use by fish and wildlife, and they are located centrally in an area that will be both usable and visible from a large portion of the site.

Response: These beach areas and the adjacent upland shoreline stretches are currently subject to ongoing erosion that could compromise the habitat gains achieved within the Log Pond. The armor is required to ensure protection of the tideflat area and prevent erosion of the adjacent upland areas. The extent of armoring has been minimized to the extent practicable. The armoring will not preclude future projects from applying other finer-grained substrate on the surface if desired to diversify habitat or enhance public access qualities of the area.

Comments #4 & #5: Mr. Johannessen requested that alternate methods be used to remediate the areas near the pocket beaches in the Log Pond, potentially including additional debris removal and partial removal of the upland containment berm. He was concerned that covering the shore of the Log Pond with armor stone would eliminate options for shore enhancement and access in this area.

Response: The design for the Log Pond includes extensive debris removal, and minimizes the placement of armor to the extent practicable. See response to comment #3 regarding the need for the shoreline armoring and the ability to place other finer-grained substrate on the surface if desired in the future to diversify habitat or enhance public access qualities of the area.

4.3 Commenter #3 (RESources)

Ms. Wendy Steffensen of RESources submitted written comments to Ecology in a letter dated March 27, 2013 (Commenter #3, Appendix A).

Comment #1: Ms. Steffensen commented that notwithstanding her organizations desire for a more extensive cleanup, she felt that moving forward on the cleanup is a major step forward in addressing contamination and rehabilitating habitat, and that RESources is pleased with the habitat improvements in the Waterway, the removal of some of the hard vertical edges, and the removal of many creosote pilings.

Response: Comment noted.

Comment #2: Ms. Steffensen commented on the wave modeling and coastal engineering assumptions described in Section 2.5.4 of the EDR. Specifically she questioned whether potential increases in the frequency of storms and in wave heights associated with climate change have been incorporated in the modeling for wind-waves.

Response: As described in Section 2.5.4, the design storms used for evaluating potential wind-wave erosion effects was based on a 100-year return period storm as calculated from current weather data. At the time of publication of the EDR (2013) predicting impacts of climate change of storm patterns and intensity is still an area of active research within academic and governmental institutions and no formal engineering design guidance is available.

Therefore, predictions of extreme wave heights at the site were developed using industry standard practice, including methods defined in the US Army Corps of Engineers Coastal Engineering Manual (2003), along with available long-term wind data in the project vicinity and conservative assumptions when developing design criteria for project elements.

Existing and available long term wind data was used to develop predictions of extreme wave speeds in Bellingham Bay from directions of concern for the site; from north-west to due south. Hourly wind data from Bellingham International Airport from 1973 to 2006 and Sandy Point Shores (2004-2006) were used to predict over-water wind speeds for return periods from 2 years to 100 years. Based on these data; 15-minute average sustained wind speeds for the 100-yr return period event vary from 40 to 48 miles per hour, depending on direction.

Caps designed to be stable under the modeled conditions (i.e., the 100-year storm events) would not be affected by an increase in the frequency of these storms, as the frequency does not affect wave height. Whereas a higher maximum sustained wind speed could increase erosional forces beyond those modeled.

As noted in your comment, potential changes in water surface elevation were considered in designing the capping and shoreline stabilization measures for upper bank areas. But to be conservative, the higher predicted future water levels were not incorporated into the wind/wave modeling for intertidal/subtidal capping evaluations. The lower existing water levels result in higher potential wind-wave erosive forces (because the wave effects occur closer to the mud-line elevation under low-water conditions).

To provide additional protectiveness to the cleanup design, multiple conservative assumptions were incorporated into the coastal engineering evaluations including the following:

- 100-yr return period sustained wind speeds were used to develop wave conditions used to size armor rock and cap materials. Storms were assumed to

last indefinitely; which results in higher wave predictions than if the actual duration of the wind event were taken in to account.

- The 100-year storm was assumed to occur at either the lowest expected astronomical tide over the year or the highest expected astronomical tide over the year. This results in a storm event that is less likely to occur than the 100-yr storm event (has a higher return period).
- Armor stone size for shoreline protection and cap materials are based on an assumption of "no-damage," which results in a conservatively large armor rock size for a particular wave condition or vessel operation (USACE 2002).

Comment #3: Ms. Steffensen expressed concern that an NPDES permit seems insufficient to address process water, and that dewatering water as process water should be covered by a separate permit, with opportunity for the public to comment on its sufficiency.

Response: The Port's existing NPDES permit for the GP West Mill Site and ASB specifically addresses the management of water generated during the handling and dewatering of dredged sediments. That permit remains in effect through 2017 and is sufficient for the management of dredged materials handled on the GP West Mill Site. The work will also be covered by a Construction General Stormwater Permit which includes additional requirements for work practices and discharge monitoring. Both permits will be overseen by Ecology.

If dredged materials are handled in other areas, then a separate permit or discharge authorization would be required for management of waters produced during sediment handling and dewatering.

Note that the Port has not discharged to the bay under the existing NPDES permit since October of 2008 and is operating the ASB in a manner that minimizes the need for discharges until the ASB is remediated under Phase 2 of the Whatcom Waterway cleanup.

Comment #4: Ms. Steffensen requested that an additional assessment be made of whether the armoring is necessary for the shoreline in the clarifier cutback area along the southern shoreline of the Whatcom Waterway. She expressed her understanding that there is no contamination present in this specific area, and requested a second assessment by a firm experienced in softshore armoring in order to maximize habitat in this location if possible.

Response: While petroleum contaminated soil in the clarifier cutback area was removed as part of a previous upland interim action at the GP West Site, soil containing other contaminants (including PAH compounds and dioxin/furans) remains. Appendix I of the EDR provides soil and groundwater data for the cutback area. As a result, the cap in this area must be stable over the long-term, both under anticipated wind-wave conditions and under anticipated prop-wash conditions.

Application of soft-bank technology for the environmental cap design is not appropriate in this area. This does not preclude the placement of additional materials overlying the cap as part of a separate future habitat enhancement project.

Comment #5: Ms. Steffensen expressed concern that groundwater source control measures to be installed along the Central Waterfront shoreline could cause changes in groundwater flow either downward or laterally, but that groundwater would still reach the marine system. She questioned what monitoring and contingency plans are in place to track and treat contaminated groundwater.

Response: Changes to groundwater flow patterns were evaluated as part of the on-going investigation of the Central Waterfront site Based on those evaluations, groundwater in this area will be diverted around the eastern and western ends of the containment walls rather than flowing directly south into the waterway. Flow beneath the wall will be minimal because the walls will be seated into the clay of the glacial marine drift beneath the site. Because of the longer groundwater flow path created by the walls and the thick cap being placed by the Whatcom Waterway cleanup, recontamination of the new sediment cap is not expected. However, this will be evaluated further as part of completing the RI/FS for the Central Waterfront site. If additional measures are required to prevent recontamination, these will be taken as part of implementing the final cleanup action for the Central Waterfront site.

Comment #6: Ms. Steffensen requested that the amount of armoring used within the Log Pond shoreline area be minimized in order to maximize the existing habitat. She requested that if it is necessary to armor some of the existing sandy beach, this armoring should be placed further landward and a fine grain beach be installed on top of it.

Response: Armoring has been included in the design for the Log Pond shoreline in order to prevent erosion of both the intertidal cap area and the adjacent shoreline. Both types of erosion have been observed in this shoreline area, and these could compromise the environmental cap and habitat restoration work that has been accomplished in this area. The extent of armoring has been minimized to the extent practicable while achieving the required level of erosion protection. As you note in your comment, the cap armoring does not preclude the potential future placement of a finer-grained substrate over the surface of the cap and armor. However, placement of additional material of this type is beyond the scope of the federal Nationwide Permit 38 that covers cleanup work.

Comment #7: Ms. Steffensen stated concerns about the efficacy of institutional controls, citing the lack of a study demonstrating their effectiveness. She requested that the institutional control plan to be developed for the site be made available for public review, including any institutional controls developed for monitored natural recovery areas.

Response: Institutional controls are required under MTCA whenever contamination remains managed on-site as part of a cleanup remedy. They are typically a component of sediment cleanup actions and effectively maintain the integrity of the

cleanup actions over time. For example institutional controls at the Scott Paper Mill site have proven to be effective overtime.

Institutional controls are used in conjunction with engineering controls (i.e., appropriately designed caps that address anticipated natural and anthropogenic disturbances) to maintain the integrity of the cleanup. The cap design for the Waterway has considered reasonably foreseeable navigation uses within the waterway, and armoring has been incorporated to withstand associated prop wash forces. This minimizes the reliance on measures such as vessel speed limits. An institutional controls plan will be prepared following construction of the Phase 1 work and will primarily document the location of remaining contamination, to ensure that any future construction activities incorporate measures to prevent interference with the cleanup measures. Institutional controls are expected to include both restrictive covenants filed with the County for fee-owned aquatic lands (such as those that were filed for the Log Pond interim action), and easement agreements filed with the Department of Natural Resources for state-owned aquatic lands. These institutional controls are in addition to the permit reviews conducted by state and federal agencies for any proposed in-water construction work. The institutional controls plan will be posted for public review on Ecology's web site.

Note that long-term monitoring and subsequent 5 yr periodic review provide a mechanism to review the integrity of the cleanup action, including institutional controls, and implement contingency actions as necessary.

Comment #8: Ms. Steffensen expressed concern that no assessment was made of potential project impacts to marine mammals and birds.

Response: Project permitting included review of potential habitat impacts and construction-related impacts to birds and marine mammals as well as to fish species. These evaluations were summarized in the biological evaluation submitted along with the Joint Aquatic Resources Permit Application (JARPA).

Comment #9: Ms. Steffensen stated that the Log Pond is used by seals as a haul-out, and that the usage of the area must be addressed. She requested that the usage of the area by seals not be diminished, but remain the same or be increased by the plans put forward.

Response: The project is not expected to adversely impact the use of the Log Pond by seals or birds. The area remains in use as a habitat restoration site, and the changes to the shoreline geometry and shoreline substrate are not expected to prevent use of the area as a haul-out by seals.

Comment #10: Ms. Steffensen commented on the reuse of soils as described in sections 3.1, 6.6 and 8.3.3 of the EDR. She requested that only soils that comply with unrestricted use guidelines be reused.

Response: As described in the EDR, reusable soil may be generated during trenching along the Central Waterfront shoreline and during the cutback of the clarifier-area shoreline. Testing of soil quality was previously conducted in each area. Central Waterfront area soils generated during this trenching activity and containing petroleum contamination will not be reused, but will be sent off-site for disposal. Existing data for soil in the clarifier area (EDR, Appendix I) indicate that it is similar to other subsurface soils located throughout the former pulp mill area of the GP West site. As a result it is suitable for filling the clarifier foundation, and may be suitable for use as sub-grade fill within the GP West site. Excess soil remaining after filling the clarifier foundation will be stockpiled and tested as described in the EDR. Final disposition of this soil (expected volume approximately 3,000-4,000 cubic yards) will be consistent with the cleanup requirements for the pulp mill area of the GP West site.

4.4 Commenter #4 (Rubash, Bert)

Bert Rubash submitted written comments to Ecology by electronic mail on March 18, 2013 (Commenter #4, Appendix A).

Comment #1: Mr. Rubash commented on the modeling work described in Appendix C and Appendix D of the EDR. He requested additional information on the software (HWAVE and HWAVE Spectral) used by Coast and Harbor Engineering to conduct that modeling to enable reviewers to comment on that work.

Response: References for peer reviewed publications that describe applications of the HWAVE model are provided below:

Shepsis, Ph.D., P.E. J.D. Carter, PE, S. Fenical, PE, M. Tirindelli, PhD, 2007. "Recent Experience in Analysis and Design of Perforated Vertical Breakwaters," PIANC PORT, San Diego.

Woosuk Ahn, Robert F. Henry, Vladimir Shepsis, C. J. Garrison. 2009. Design and Construction of the Large Size Concrete Floating Wave Attenuator at Bremerton, IAH Congress, Vancouver, BC, September 2009.

4.5 Commenter #5 (Weis, Gaythia)

Gaythia Weis submitted written comments to Ecology by electronic mail on March 27, 2013 (Commenter #5, Appendix A).

Comment #1: Ms. Weis stated her concerns that the development plan seems to be ahead of what logically can be designated for cleanup until the cleanup plan is implemented and evaluated.

Response: The cleanup of the Whatcom Waterway site must be implemented in order to prevent people, plants and animals from potential exposure to harmful levels of

contamination in marine sediment, according to the MTCA and SMS regulations. The cleanup activities as defined in the Consent Decree considered the land and navigation uses contemplated in the Waterfront District planning, and appropriate measures have been incorporated into the cleanup design to ensure protectiveness under those uses. Similarly, the waterfront redevelopment activities being led by the Port and City anticipate that the Whatcom Waterway Phase 1 cleanup work will precede development.

Comment #2: Ms. Weis stated her concern that a multifaceted remediation project such as this one is likely to encounter unexpected complications along the way. She requested more detail as to how such new information could be detected and included in the cleanup process.

Response: The MTCA cleanup process includes provisions for monitoring implementation of the work and for responding to unexpected complications. Appendix G of the EDR is a Compliance Monitoring and Contingency Response Plan that describes how unexpected conditions will be addressed. Ecology and the PLPs also have the ability to develop additional amendments to the Consent Decree and Cleanup Action Plan if necessary to address unexpected conditions. Any amendments to the CAP and Consent Decree would be subject to public review and comment.

Comment #3: Ms. Weis questioned how the cleanup would address potential future requirements if they should arise. Her questions included the following: When existing structures change, what will need to be taken into consideration? How will dredging be constrained? What is the expected lifespan of structures put into place as part of the work? How can developed areas be accessed if new issues are found?

Response: As described in the CAP and in Section 3.6 of the EDR, the cleanup includes institutional controls to help ensure the long-term protectiveness of the remedy.

Any changes to shoreline conditions or structures placed within the cleanup areas will be subject to Ecology review to ensure that appropriate measures are taken and the cleanup is not adversely impacted. This Ecology review is in addition to the normal reviews conducted by state and federal permitting agencies for any in-water construction project.

As described in the EDR, dredging within the waterway has been anticipated and the caps have been designed to accommodate such dredging. A vertical offset of the top of cap has been included within the Inner Waterway to provide for over-dredge allowances during such future dredging, and the transition area cap adjacent to the federal channel has been designed with appropriate horizontal and vertical offsets to avoid restricting the maintenance of the federal channel and berth areas. Any dredging beneath the sediment caps would be prohibited unless Ecology approves the work, including measures necessary to maintain the protectiveness of the cleanup.

The sediment caps constructed as part of the project are intended to be permanent. The designed minimum lifespan of the structures (e.g., containment walls along the Central Waterfront site) placed during the project is 50 years. The Consent Decree and Cleanup Action Plan for the Central Waterfront Site will address any long-term requirements (i.e., beyond 50 years) for addressing soil and groundwater contamination in these areas.

Appendix G of the EDR describes the process for implementing contingent response actions. In the event that new conditions are discovered that require additional work to ensure protection of human health and the environment, Ecology will work with the Port and the other PLPs to take necessary actions. Under the Consent Decree, Ecology also has reservations of rights known as reopener provisions by which the agency can require additional measures if necessary to respond to new discoveries and protect human health and the environment. These provisions can be implemented in developed or undeveloped areas.

Comment #4: Ms. Weis stated her concern that the potential sea level rise could be greater than the 2.4 feet (by 2100) value estimated in the EDR. She provided a citation to a 2012 NOAA document summarizing ranges of Global Sea Level rise, and also questioned whether subsidence of sediments would affect the sea level rise prediction.

Response: Predictions for sea level rise vary from study to study. As noted in the 2012 NOAA report, recent estimates of average global sea level rise by the year 2100 range from 0.7 ft to 6.6 ft. In addition, predictions of sea level rise can be site specific depending on land subsidence and other factors in the local area. The National Research Council has published a report called "Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present and Future (NRC, 2012) that provides predictions of sea level rise for these areas. This publication projects that sea level will rise 24 inches (2 ft) by 2100 (with a range of 4 inches to 56 inches). The sea level rise assumed as part of this study was 2.4 ft; which is higher than the projection stated in the NRC report for the State of Washington. A summary of the findings for the NRC publication (including sea level rise predictions for Washington) is provided on the WA Department of Ecology Website: https://fortress.wa.gov/ecy/publications/publications/1201013.pdf
Potential uncertainties regarding sea level rise were considered during design of the cleanup action. For sediment caps, an increase in sea levels actually would reduce the effective erosional forces associated with wind waves as evaluated using existing sea levels. Therefore the existing cap designs are conservative under potential future sea level rise conditions. For shoreline areas, the caps and shore protection measures were extended to the top of bank to avoid potential erosion under either sea level rise or other high-water conditions (e.g., tsunami conditions).

Comment #5: Ms. Weis stated her belief that a safety margin greater than that of 100-year events ought to be built into the design criteria for caps as delineated in the document.

Response: There is some level of uncertainty in prediction and analysis of wind-driven waves, tidal currents, and water velocities due to vessel operations. These uncertainties and how they were handled in the design process for the project are discussed in Section 4.6 of Appendix C (waves, currents) and Section 5.4 of Appendix D (vessel operations).

The sources of uncertainty and considerations for margin of safety in design of armor (rock) sizes for shoreline protection and cap materials were taken into account through the use of conservative assumptions on hydrodynamics (waves, water levels, etc.) and vessel operations. Conservative assumptions used in the coastal engineering and propwash evaluations include the following:

- 100-yr return period sustained wind speeds were used to develop wave conditions used to size armor rock and cap materials. Storms were assumed to last indefinitely; which results in higher wave predictions than if the actual duration of the wind event were taken in to account.
- The 100-year storm was assumed to occur at either the lowest expected astronomical tide over the year or the highest expected astronomical tide over the year. This results in a storm event that is less likely to occur than the 100-yr storm event (has a higher return period).
- Armor stone size for shoreline protection and cap materials are based on an assumption of "no-damage," which results in a conservatively large armor rock size for a particular wave condition or vessel operation (USACE 2002).
- For prop wash evaluations, vessel operations were assumed to occur at mean lower low water; which will results in a conservatively high value of propwash velocity (near the seabed) for all other tidal levels.
- Operational parameters for the propwash evaluation (% engine power and water depths) were established at conservative values that may overestimate typical or upper probable propwash forces.

Comment #6: Ms. Weis requested more specific plans for the monitoring of things such as the de-watering process to ensure that cleanup efforts do not redistribute contaminants to new areas.

Response: Sediment de-watering on the adjacent GP West Mill Site will be regulated by the Port's existing NPDES permit and also by the project Construction General Stormwater Permit. Both permits include measures for monitoring and for preventing discharges of untreated water that might otherwise spread contamination. Both permits are overseen by Ecology.

The NPDES permit coverage includes the storm drains on the GP West Mill Site that drain to the ASB, which ultimately discharges to Bellingham Bay. However, the Port has not discharged to the bay under this permit since October 2008 and is operating the

ASB in a manner that minimizes the need for discharges until the ASB is remediated under Phase 2 of the Whatcom Waterway cleanup

Comment #7: Ms. Weis stated her concern that groundwater from land areas can be expected to move upwards if sea levels rise, and that contaminants in groundwater can also move downward and outward as a plume and thus may travel under barriers.

Response: Groundwater in areas adjacent to the Whatcom Waterway site has been extensively evaluated as part of ongoing studies at the Central Waterfront site and at the GP West site. These sites are subject to ongoing investigation and cleanup under existing Agreed Orders.

In support of Whatcom Waterway project engineering design evaluations, the behavior of the groundwater contaminants at the GP West site were evaluated under existing and future capping conditions (Appendix J of the EDR). Future conditions were found to be more protective.

For the Central Waterfront site where containment walls are to be installed to address groundwater source-control requirements, changes to groundwater flow patterns were evaluated as part of the ongoing investigation of that site. Based on those evaluations, groundwater in this area will be diverted around the eastern and western ends of the containment walls rather than flowing directly south into the waterway. Flow beneath the wall will be minimal because the walls will be seated into the clay of the glacial marine drift beneath the site. Because of the longer groundwater flow path created by the walls and the thick cap being placed by the Whatcom Waterway cleanup, recontamination of the new cap surface is not expected. However, this will be evaluated further as part of completing the RI/FS for the Central Waterfront site. If additional measures are required to prevent recontamination, these will be taken as part of implementing the final cleanup action for the Central Waterfront site.

The final cleanup plans for the GP West and Central Waterfront sites will include provisions for long-term groundwater monitoring and contingency measures to be implemented if cleanup levels are not met.

Comment #8: Ms. Weis stated her belief that stringent monitoring procedures need to be implemented that can be carried out into the future, and that this should include explicit plans for a system of groundwater wells throughout the site. She requested that a timeline be set to evaluate monitoring results and to see if future work is necessary.

Response: As described in Appendix G of the EDR, the cleanup of the Whatcom Waterway site includes an extensive compliance monitoring and contingency response plan. The plan addresses sediment monitoring throughout the site and pore-water monitoring within the Log Pond area. The plan includes a monitoring timeline and measures to be implemented if cleanup levels are not met.

Groundwater monitoring in adjacent areas of the GP West and Central Waterfront sites will be components of the upland cleanup actions for these sites. The cleanup plans for each site will include provisions for long-term groundwater monitoring and contingency measures as needed to prevent recontamination of the new sediment placed as part of the cleanup of the Whatcom Waterway site. Like the monitoring plan for the Whatcom Waterway site, these plans will include specific timelines for monitoring, and measures to be implemented if cleanup levels are not met.

Comment #9: Ms. Weis stated her appreciation for the effort that has gone into preparation of the EDR, and her happiness that cleanup will commence.

Response: Comment noted.

APPENDIX A – Comments

March 26, 2013

State of Washington Department of Ecology
3190 160th Avenue SE
Bellevue, WA 98008-5452
Attention: Lucy McInerney, Manager
Regarding: **Whatcom Contaminated Toxics Waterway Clean Up Project**

Dear Ms. McInerney,
First and foremost, with gratitude I sincerely THANK YOU and ALL who are part of the clean up project. As a senior resident living in view of our beautiful waterfront, I am extremely aware and grateful that the highly toxic contaminates noted in Publication #13-09-121, will be cleared, and hopefully maintained. I was unable to attend the Public Meeting on March 6, 2013, so expressed my concerns to authorities at the Port and Department of Ecology by phone. As a former employee of the City of Long Beach, California, working in the Port of Los Angeles during the 1980's, I witnessed firsthand damage done by greedy, unethical businesses that totally appalled me to my very core as a human being:: Those businesses practices were, and still are, unjustly allowed and protected by governments globally; while the Environmental Movement got almost totally destroyed then in the process of doing their best to stop abuse, corruption and simply INSANE way of living.
These are my absolute concerns and suggestions for the Toxic Cleanup Program of Whatcom Waterway:

1) Pollution now exists from businesses currently operating along the waterfront that were surprisingly not considered in the agreement for clean up responsibility: Please do not omit those businesses: BP Oil, Intalco Aluminum Corporation and Peabody Coal and Mining, all three have global reputations for being aggressive, dishonest and corrupt. Facts are Peabody continues to do irreversible damage coal mining, yet has enormous plans to expand in spite of overwhelming objections, protests, litigation and major environmental concern to stop. Also, Peabody confiscates Indigenous lands by abusing treaty rights to aggressively mine for profit, including nuclear warfare and nuclear energy which is not safe (ref: Hanford, Fukashima, etc): Their heartless businesses cause cancers and other serious health abnormalities; however, more lucrative business opportunities are rippling effects because cancer is Big Business! (Don't be too shocked when you check out the breast cancer postage stamp and read where the money for medical research goes!) All three corporations blatantly lie to the public to promote business and so called "job opportunities", using unlimited financial resources to payoff and lobby those in high places who insure their proliferation and protection by law. I am outraged by it all and join with others worldwide to stop the insanity from continuing. Taxes should not be used to clean up and stop known businesses for polluting, corrupting, damaging and killing: Those businesses and insurance companies that insure them must pay ALL costs for damage done nationally and internationally, with absolutely NO bankruptcy and bail outs allowed, as has been allowed in the past. Since insurance companies are backed by bonded banks, they should be jointly held accountable and responsible by law for their part in the commerce equation. 1

2) Please use the March 24, 1989 Exxon Valdez disaster and cover up, under the Nixon Administration, as a guide because, it remains as the longest legal battle in U.S. history against ExxonMobil, the world's most powerful oil company: ExxonMobil has done there best to destroy and discredit the U.S. Environmental Movement with this case in the legal system for the past 24 years. Today in Alaska, damaging rippling effects continue from the disaster for all people and life itself there. The Exxon Valdez disaster clean up crews were not educated, or warned of possible dangers from chemicals used for the clean up process, which has resulted in major illnesses followed by outrageous medical bills: They have not been compensated , some have died or have committed suicide after deep depressions from the whole incident. The highest courts in Washington D.C. have sadly proved to be a mockery of justice. Please do not repeat those clean up mistakes: Pay workers well and provide full lifelong healthcare coverage for those who do environmental clean up, especially since we do not have National Healthcare: Educate workers regarding hazardous materials used in various stages of clean up and monitor them for safety: 2
3) First Nations/Indigenous People treaties have always been totally and heartlessly abused, **to say the least**, and that must STOP! Real history and current events must be unfiltered public knowledge for truth and justice to exist! I am in solidarity with my Indigenous brothers and sisters locally and globally, as peacefully CARETAKERSof Mother Earth. In Canada, Chief Theresa Spence's hunger strike recently sparked worldwide awareness and ignited the Idlenomore Movement, which collectively, is bringing global awareness and unity to Stop Slave/Owner mentality by governments who abuse power with unscrupulous acts that cause dehumanization, endless legal battles, wars for profit, and that do absolute destruction to our beloved Mother Earth: DO NO HARM AND BE ACCOUNTABLE. 3
4) The misuse of power by Wall Street and World Banks must be held accountable for all businesses globally, that are destructive, pollute, profit from Slave Labor and wars for profit. 4

Sadly, most Americans do not know that solar panels were on the White House during the Carter Administration, when the Environmental Movement then was at a vital turning point for the better; but was tragically destroyed by corruption, greed and businesses that were threatened by it spreading without them profiting. We are not learning from history, and toxic water is proof of that reality! Again, thank you for being part of the clean up solution.

Sincerely,

Carole Edrehi

Carole Edrehi, 901 N. Forest Street, #125, Bellingham, WA 98225

C: President Obama/Congressman/Senator/Chief Theresa Spence/United Nations/Press

From: jim j [mailto:jimj701@gmail.com]
Sent: Wednesday, March 27, 2013 9:59 PM
To: McInerney, Lucy (ECY)
Subject: Whatcom Waterway cleanup plan comments

Lucy Mcinerney, Dept. of Ecology:

I have reviewed the plans and reports addressing coastal processes and the proposed cleanup actions and I am providing comments on the current Whatcom Waterway cleanup plan in Bellingham. The current plans put forth include large amounts of new shore armor and offer little habitat gain--other than the needed and obvious containment of contamination. Sloping riprap shores are preferable to vertical walls, creosoted wood and debris, but should not be considered installation of new shoreline habitat as presented. The shore protection plan is generally characterized as more filling of an already filled and heavily impacted shore. This is certainly the cheapest way to to deal with this area, and is likely the most reasonable course of action for much of this industrialized shore; however, the Log Pond in particular needs to be treated differently than the more exposed portions of the Whatcom Waterway. **1** **2**

While most of the cleanup area is composed of filled, steep shores that are in need of shore protection in order to contain contaminated soils, not all shores of this site should be treated the same. The Log Pond currently contains 3 fine-grained beach areas. These more protected portions of the Log Pond shore should not be further filled and hardened with a large quantity of new riprap over gravel over what is existing for the sake of simplicity and ease of implementation. These existing beach areas offer tremendous opportunity for future public use and potential use by fish and wildlife and need to be treated as such. They are located in the center of the larger site shore and also in am embayed area that will be both usable and visible from a large portion of the site. **3**

While containment of the contaminated soils is required, this is an area where removal of some of the debris and portions of the berm and a different means of containment seem appropriate in order to preserve and/or recreate beach areas. This is the only area for multiple, viable pocket beaches in the entire Whatcom Waterway. This is due to both the partial wave shelter and geometry of the shore that creates and sustains the conditions for these pocket beaches. Covering the entire shore of the lagoon with riprap would eliminate options for shore enhancement and access in this entire section of the waterway. I believe this portion of the plans needs to be revised by not filling waterward in this area and instead using less ares for containment in order to preserve/recreate beaches in these areas where conditions allow them to exist. **4** **5**

Thank you for your consideration of these important issues to the citizens of Bellingham.

Jim Johannessen

Bellingham, WA

RE Sources
for Sustainable Communities

2309 Meridian Street • Bellingham, WA 98225 • (360) 733-8307 • fax (360) 715-8434 • resource@re-sources.org

Lucy McInerney, site manager
Department of Ecology
3190 160th Ave. SE
Bellevue, WA 98008-5452
Phone: 425-649-7272
[Via e-mail: Lucy.Mcinerney@ecy.wa.gov]

March 27, 2012

Subject: Comments on the Whatcom Waterway Engineering Design Report

Dear Ms McInerney:

The North Sound Baykeeper Team is a project of RE Sources. Our goal is to safeguard the waters and habitats in Whatcom and Skagit Counties. RE Sources has approximately 800 members, the majority of whom live and recreate in Whatcom County. On behalf of these members, RE Sources North Sound Baykeeper Team submits these comments.

Firstly, let me congratulate you and the Department of Ecology on moving forward with the Whatcom Waterway cleanup. I know it has been a long and slow process. Notwithstanding RE Sources previous comments desiring a more extensive cleanup, we do feel that moving forward on the cleanup is a major step forward in addressing contamination and rehabilitating habitat. We are very pleased with the habitat improvements in the Waterway, the removal of some of the hard vertical edges, and the removal of many creosote pilings. **1**

We do have some substantive concerns with the cleanup. These are described below.

- Section 2.5.4 details coastal design considerations, where a potential rise in sea level of 2.4 feet by 2100 and wave conditions based on results of numerical modeling for 100-year recurrence interval events was considered as part of remedial design. These considerations are important ones. As global warming increases, the frequency of storms has increased, and along with it, wave heights have also increased. We hope that the newer predictions for wave conditions, taking into account global warming predictions were used in the modeling. If not, please take these into account. **2**

- Section 3.1 on work area describes some of the permits that will be needed. For the dewatering process, it is stated that, “water generated on the GP West site will be covered by the Port’s existing NPDES permit.” An NPDES permit seems **3**

insufficient to address process water. Dewatering water as process water should be covered by a separate permit, with opportunity for the public to comment on its sufficiency.

- Section 3.3.3 describes an engineered cap that will be used on the south shore. To help establish habitat, we are glad that the engineered cap with a rock armor layer will not be used between the clarifier bulkhead cutback and Central Avenue. We request, however, an additional assessment of whether the rock armor is necessary in the remaining area where the clarifier has been cut away. Obviously, we do not want to expose any contamination, but my understanding is that there is no contamination present in this specific area. A second assessment by a firm experienced in softshore armoring would be desirable, with an aim to maximize habitat in this location if possible. **4**

- Section 3.3.4 on the Central Waterfront describes numerous methods to contain groundwater by sheet piling and to remove some preferential pathways, by caulking sheet pile seams and filling a barge ramp. While these are good measures, groundwater will still be in the system. It seems that if groundwater flow is blocked by sheet piling it will either flow downward or laterally, and still reach the marine system. What monitoring and contingency plans are in place to track and treat contaminated groundwater? **5**

- 3.4.2 describes capping and structure removal in the log pond. Necessary capping and armoring to prevent re-contamination is paramount. It appears, however, that cap material will be comprised of gravel and rock over an existing sandy beach and habitat. While the cap is said to be eroding at the edges, this would not seem to imply that such a large extent of sandy beach is at risk. My understanding is that the sandy beach is accreting and therefore not in need of armoring. Please minimize the amount of hard armoring necessary to prevent erosion and contain contamination, while maximizing existing habitat. If it is necessary to armor some of the existing sandy beach, we request that it be armored further landward and a fine grain beach be installed on top of it. **6**

- 3.6 describes the use of Institutional Controls (ICs). The efficacy of these controls is not known. Recently, when RE Sources staff asked the Department of Ecology for a study on the efficacy on these controls, there was not one available, nor was there any anticipated. In an ideal case, all of the necessary remediation would entail on-the-ground cleanup and not be relegated to the honor system of deed restrictions and speed limits. The IC plan will be developed shortly; we ask that this be made available for public review. We also note that the ICs will be developed in areas where “monitored natural recovery” is the cleanup remedy; it seems that ICs would have already been developed for these areas. **7**

- Section 4.1 describes fisheries and invertebrates in the area. It is very interesting that no assessment was made of marine mammals and birds that will be affected by this remedial action. Please address these two important groupings. Seals, for **8**

example, use the log pond as a haulout. How the planned remediation will affect their usage of the area must be addressed. We request that the usage of the area by seals not be diminished, but remain the same or be increased by the plans put forward. Please address. **9**

- The reuse of soils is described in sections 3.1, 6.6, and 8.3.3. While it is specified that soils from the Central Waterfront area will be clean, cutback soils from the South Shoreline may or may not be clean. We request that all reuse soils be clean, per unrestricted use guidelines. **10**

Thank you again for this opportunity to comment. We look forward to further discussion on these issues and to seeing a cleaner waterway, revitalized for both people and critters.

Sincerely,

Wendy Steffensen
Lead Scientist, North Sound Baykeeper Team
RE Sources for Sustainable Communities

From: Bert Rubash [mailto:kilaruba@copper.net]
Sent: Monday, March 18, 2013 7:17 AM
To: McInerney, Lucy (ECY)
Subject: References for software used in Whatcom Waterway cleanup plan

Lucy McInerney,

Appendix C and Appendix D in the Whatcom Waterway cleanup plan mention software named HWAVE and HWAVE Spectral used to determine water wave energy along the shorelines of the waterway, but there are no references in the documents to enable reviewers to comment on Coast and Harbor's work using that software. 1

The nearest reference I can find is to a module named HWAVE in software called COASTOX that has been used to trace radioactive contamination in water bodies in Eastern Europe.

Bert Rubash
Raincoast GeoResearch
kilaruba@copper.net

Lucy McInerney, site manager

Department of Ecology

3190 160th Ave. SE

Bellevue, WA 98008-5452

Phone: 425-649-7272

March 27, 2012

Re: Whatcom Waterway Cleanup.

Dear Ms McInerney;

My name is Gaythia Weis. I am a Bellingham resident with a background in chemistry and geology. I moved to Bellingham only a year ago.

I have read the document: Draft Engineering Design Report Whatcom Waterway Cleanup in Phase 1 Site Areas.

I know that the waterfront clean up has been a long delayed and drawn out process. I recognize that determining how safe is "safe enough" s a complex decision. It is hard to know whether or not it makes sense to proceed with cleanup that urgently needs to be done, as opposed to waiting for a more ideal solution. Since I am unfamiliar with the details of the particular structures and shoreline processes involved at this site, I feel that I can not comment here regarding the details of much of this project. I do have some comments of a more general nature.

Future Development

I have concerns as to the manner in which this proposal, still in it's draft state, is segueing with Port of Bellingham plans for waterfront development. That plan seems to me to be particularly ahead of what logically can be designated for development until this plan is implemented and evaluated. 1

In my experience, a multifaceted remediation project such as this one is very likely to encounter unexpected complications along the way. I would like to see more detail as to how such new information could be detected and included into the clean up process as it unfolds. I would also like to see future benchmarks and plans as to what would be probable outcomes of the implementation of this plan going forward. The Bellingham waterfront seems to have a number of "fixes" that are, when implemented, considered temporary in nature. I think that more explicit details as to outcomes and time frames for such outcomes would be valuable. Some of the decisions made here will put limitations on what can be done and expectations on what will still need to be done. When existing structures change, what will need to be taken into consideration? For example, how will dredging need to be constrained? What is the expected lifespan of structures put into place as part of this work? How can developed areas be accessed if new issues are found? 2 3

Sea Level Rise

This report seems to rely on a previous (2010) Port of Bellingham document for a figure for sea level rise: 4

"A potential rise in sea level of 2.4 feet by 2100 was considered as part of remedial design. This potential sea level rise is consistent with the evaluation documented in the Waterfront District Redevelopment Final Draft EIS (Port of Bellingham 2010)"

I wish to call your attention to the very recent NOAA documentation (Dec. 6, 2012) on Global Sea Level Rise as given here:

http://cpo.noaa.gov/Home/Home/AllNews/TabId/315/ArtMID/668/ArticleID/80/Global-Sea-Level-Rise-Scenarios-for-the-United-States-National-Climate-Assessment.aspx

Figuring out a "number" for this particular location would also be highly complicated by the tendency of the sediments below to subside. I believe that the 2.4 feet by 2100 figure given in this document ought to be revised upwards.

Safety Margin

Given the sorts of development plans that the Port of Bellingham is preparing for this site I believe that a safety margin greater than that of 100 year events ought to be built into the design criteria delineated in this document. 5

Ongoing Monitoring

6

Standards for toxic materials do change over time.Standards for toxic materials do change over time.It seems to me that more specific plans are needed to monitor such things as the de-watering process described, to ensure that cleanup efforts do not redistribute contaminants to new areas. Groundwater from land areas can be expected to peculate upwards if sea levels rise. Contaminates in groundwater can also move downward and outward as a plume and thus travel under barriers. It is also true that standards for toxins do change over time. I also believe that stringent monitoring procedures need to be implemented that can be carried out into the future. This should include explicit plans for a system of groundwater wells throughout the site. I believe that a timeline after completion of this clean up needs to be set to evaluate results and to see if future work is necessary. 7 8

Thank you for this opportunity to provide input. I moved to Bellingham to take advantage of the wonderful environment here and to be in an area where governmental agencies function well in serving the common good. I do appreciate the efforts that have gone into preparing this plan and am happy that clean up will commence. 9

Sincerely,

Gaythia Weis

InfoPteryx LLC

1713 Edwards Ct.

Bellingham WA