Response to Comments

Draft Cleanup Action Plan, Agreed Order, and State Environmental Policy Act – Determination of Non-Significance

Boeing Isaacson Thompson Cleanup Site Tukwila, WA

Toxics Cleanup Program

Washington State Department of Ecology

Northwest Regional Office

Shoreline, Washington

April 2025

DEPARTMENT OF ECOLOGY
State of Washington

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[1] www.ecology.wa.gov/contact

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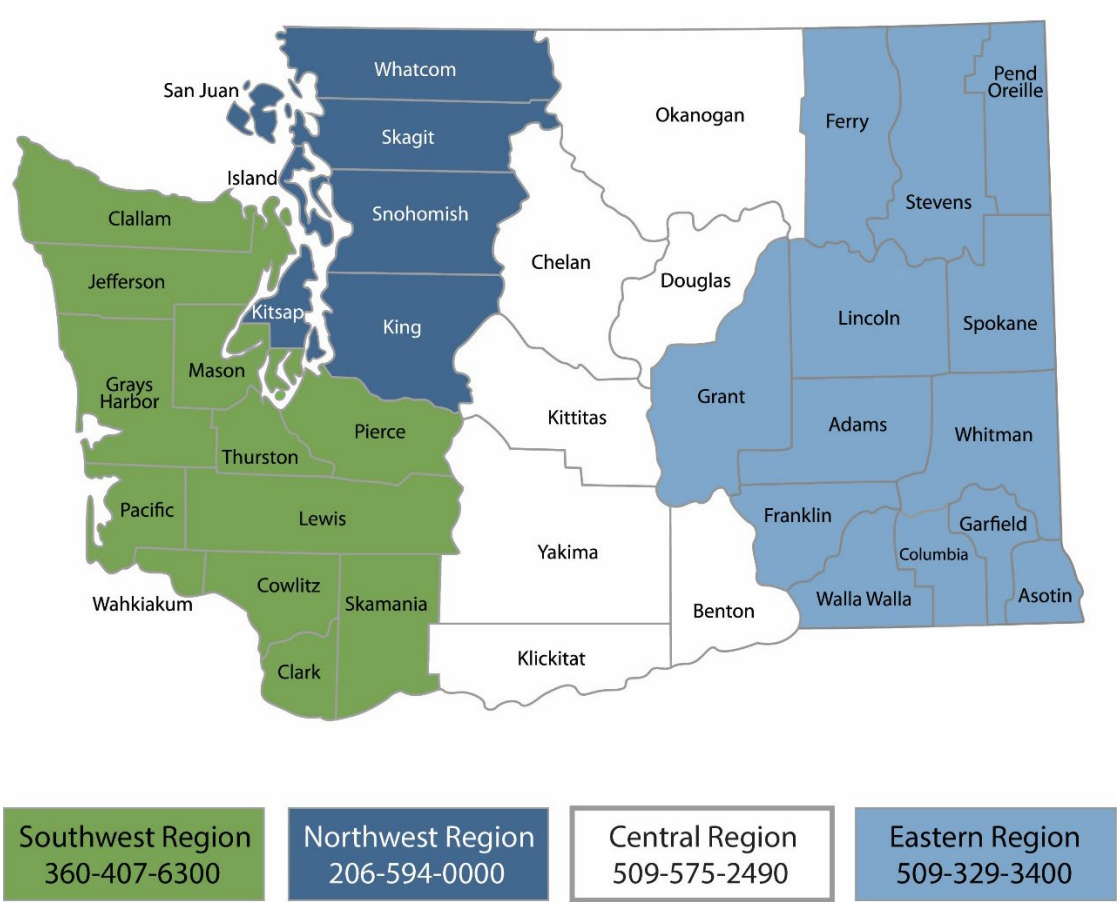
Map of Counties Served



Region	Counties served	Mailing Address	Phone
Southwest	Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Mason, Lewis, Pacific, Pierce, Skamania, Thurston, Wahkiakum	PO Box 47775 Olympia, WA 98504	360-407-6300
Northwest	Island, King, Kitsap, San Juan, Skagit, Snohomish, Whatcom	PO Box 330316 Shoreline, WA 98133	206-594-0000
Central	Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, Yakima	1250 W Alder St Union Gap, WA 98903	509-575-2490
Eastern	Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman	4601 N Monroe Spokane, WA 99205	509-329-3400
Headquarters	Across Washington	PO Box 46700 Olympia, WA 98504	360-407-6000

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Public Outreach Summary

The Boeing Isaacson Thompson cleanup site (Site), located in Tukwila is continuing Washington State's formal cleanup process[2] as directed under the Model Toxics Control Act (MTCA[3]). The Boeing Company (Boeing) is addressing contamination at the Site under a legal agreement called an Agreed Order with Ecology.

The Agreed Order requires Boeing to address contamination at the Site, located in Tukwila on the Lower Duwamish Waterway (LDW) near Seattle's South Park Neighborhood and the King County International Airport.

Ecology invited input on the following documents:

- **Draft Cleanup Action Plan:** Ecology's plan describing the cleanup work to address contamination at the Site.
- **Agreed Order:** Legal agreement between Ecology and Boeing requiring design of the work described in the cleanup action plan.
- **State Environmental Policy Act – Determination of Non-Significance:** Ecology's determination that the cleanup work is not likely to harm the environment.

The Department of Ecology's public involvement activities related to this Site's 30-day comment period (October 21, 12:00 a.m. – November 19, 11:59 p.m., 2024) included:

- **Postcard and Fact Sheet:**
  - US mail distribution of a fact sheet providing information about the cleanup documents and the public comment period, to approximately 2278 addresses including neighboring businesses and other interested parties.
  - Email distribution of the fact sheet to 68 people, including interested individuals, local/county/state/federal agencies, neighborhood associations, and interested community groups.
  - The postcard and fact sheet were available digitally through Ecology's cleanup site webpage[4].
- **Legal Notices:**
  - Publication of one paid display ad in *The Seattle Times*, dated October 18, 2024
  - Publication of our fact sheet in the November newsletter of the Duwamish River Community Coalition, dated November 1, 2024
- **Site Register:**
  - Publication of 4 notices in Ecology's Toxics Cleanup Site Register:
    - Comment Period Notice:
      - October 17, 2024
      - October 31, 2024

[2] https://ecology.wa.gov/Spills-Cleanup/Contamination-cleanup/Cleanup-process
[3] https://ecology.wa.gov/mtca
[4] https://apps.ecology.wa.gov/cleanupsearch/site/1944

        - November 14, 2024
    - Response Summary Notice:
        - April 17, 2025
    - Visit Ecology's Site Register website[5] to download PDFs.
- **In-person office hours event:**
    - Ecology hosted a community 'office hours' event at the Duwamish River Community Hub (8600 14th Ave S, Seattle, WA) on Tuesday, October 24th, 2024 at 4:00 p.m. Interpretation was available in Spanish, Vietnamese, Khmer, and Chinese. Ecology and Boeing presented details on the Site and the review documents, and then answered questions.
- **Websites**:
    - Ecology announced the public comment period, posted the fact sheet, and made the review documents available on Ecology's Boeing Isaacson Thompson webpage[6] and Ecology's Public Inputs & Events webpage[7].
- **Document Repositories:**
    - Ecology made the documents at the South Park Branch of the Seattle Public Library at 8604 8th Ave S, Seattle, WA 98108. Documents were also available at the Northwest Regional Office in Shoreline, WA.

Comment Summary

From October 21, 12:00 a.m. – November 19, 11:59 p.m., 2024, Ecology solicited public comments on a Draft Cleanup Action Plan, Agreed Order, and State Environmental Policy Act – Determination of Non-Significance for the Site.

Ecology received 4 comments during the 30-day comment period.

Table 1: List of Commenters

	First Name	Last Name	Agency/Organization/Business	Submitted By
1	Heidi	Watters	City of Tukwila	Individual
2	Emerson	Christie	WA State Dept. of Health	Individual
3	N/A	N/A	Port of Seattle	Individual
4	Paulina	López	Duwamish River Community Coalition	Individual

[5]https://apps.ecology.wa.gov/publications/UIPages/PublicationList.aspx?IndexTypeName=Program&NameValue=Toxics+Cleanup&DocumentTypeName=Newsletter
[6] https://apps.ecology.wa.gov/cleanupsearch/site/10376
[7] https://10ecology.wa.gov/Events/Search/Listing

Next Steps

Ecology has reviewed and considered the public comments received on the Draft Cleanup Action Plan, Agreed Order, and State Environmental Policy Act – Determination of Non-Significance for the Site. Based on Ecology's evaluation of the comments, a few minor changes were made to the documents and are discussed in the comment responses below.

Ecology will finalize the documents and proceed with the cleanup for this site. See graphic below and visit Ecology's cleanup process webpage[8] to learn more about Washington's formal cleanup process.

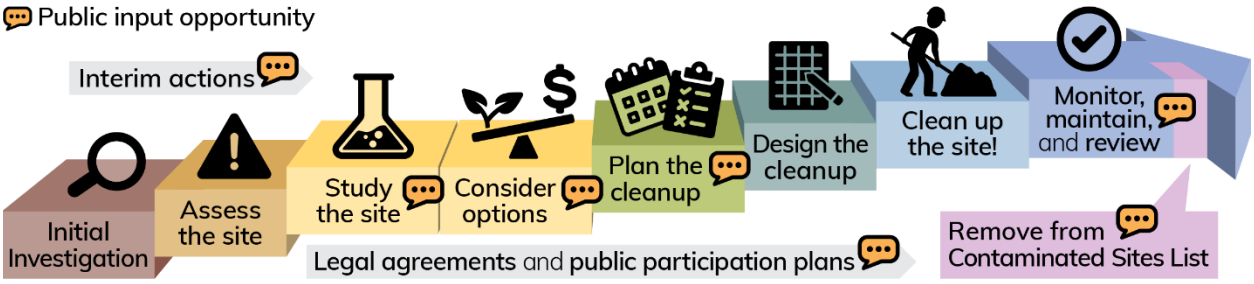

Figure 1: Washington's formal cleanup process

[8] https://ecology.wa.gov/Spills-Cleanup/Contamination-cleanup/Cleanup-process

Comments and Responses

The public comments are presented below, along with Ecology's responses. Appendix A, page 24, contains the comment in its original format.

Comment from: Heidi Watters (City of Tukwila)

Would like a shorter summary version of the draft plan, including a robust discussion of why complete removal is considered infeasible and more information on the expected lifespan of the barrier/s.

Response:

Thank you for your comment.

A summary of the selected cleanup action includes the following tasks:

- Installation of a permeable reactive barrier (PRB).
    - A PRB is a barrier composed of materials like carbon and iron that allow groundwater to flow through while cleaning the groundwater of contaminants (like a Britta filter).
- Targeted excavations of contaminated soil.
    - The shoreline area will be excavated to remove contaminated soil directly adjacent to the river.
    - An area where a tar-like substance was observed at the surface will also be excavated.
- Contaminated soil that will remain in-place at the site will be capped and monitored to prevent human contact and limit infiltration of precipitation.
    - The cap will include asphalt, concrete, and/or existing buildings.
- An environmental covenant will be deed recorded with the county to ensure only industrial land uses at the site and place restrictions on any future excavation within the capped site.

The selection of the proposed cleanup action described above was documented in the 2023 Feasibility Study (FS). The purpose of the FS is to develop and evaluate cleanup action alternatives to enable a cleanup action to be selected for the site. The cleanup alternatives that were evaluated did include site-wide excavation.

Cleanup alternatives were evaluated to ensure that they:

- Protect human health and the environment;
- Comply with cleanup standards;
- Comply with applicable state and federal laws;

- Provide for compliance monitoring; and
- Provide a reasonable restoration time frame.

Cleanup alternatives were compared and contrasted for each of the following criteria:

- Protectiveness
- Permanence
- Cost
- Effectiveness over the long-term
- Management of short-term risks
- Technical and administrative implementability
- Consideration of public concerns

As part of the long-term monitoring of the remedy, the groundwater will be monitored and will indicate when and if the PRB needs to be replaced. Additional information on why the remedy described in the dCAP was selected can be found in the Feasibility Study.

Comment from: Emerson Christie (WA State Dept. of Health)

The Department of Health (DOH) has reviewed the Boeing Isaacson-Thompson Draft Cleanup Action Plan. We are pleased to see another cleanup action in the Duwamish River.

DOH would encourage the Department of Ecology to coordinate sampling efforts with the United States Environmental Protection Agency to monitor potential off-site impacts associated with the cleanup. While DOH acknowledges that the probability of human health impacts due to these activities are low, we recommend that they be monitored to ensure data are available.

DOH recommends that fish tissue monitoring for resident species and non-resident salmonids occur during and after the in-water work associated with shoreline excavation and bulkhead removal. It is not uncommon for contaminant concentrations in fish tissue to temporarily increase during remediation activities and fish consumption is the primary exposure route for humans to contamination in the waterway.

DOH looks forward to working with the Department of Ecology on evaluating fish tissue data and other relevant data sets generated during this process for the health and safety of Washingtonians.

Response:

Fish tissue monitoring will be conducted as part of long-term monitoring of the Lower Duwamish Waterway (LDW) Superfund Site under the direction of EPA Region 10. The specifics of this sampling will be determined and coordinated between Ecology and EPA, but this sampling will likely be predicated on the in-water cleanup, not the upland cleanup described in the dCAP.

Comment from: Port of Seattle

[See original formatted comment letter attachment in Appendix A. The comment below has been divided into comment sections to better organize responses.]

General Comments I:

Please see attached Port of Seattle comments regarding the Boeing Isaacson Thompson: Draft Cleanup Action Plan and Agreed Order

November 19, 2024

Please see below for comments from the Port of Seattle ("Port") on the Boeing Isaacson-Thompson Site ("Site") Agreed Order ("AO") and Cleanup Action Plan ("CAP") draft documents out for public comment. First, we provide general comments regarding the Site and the draft documents. Following that is a table providing specific comments, identified by sections within the documents. Above all, the Port emphasizes that the Port Sliver bulkhead or physical landmass need not be reconstructed following remediation.

A. The Port Sliver Should Not be Reconstructed

As previously explained to Ecology during the public comment period on the Remedial Investigation/Feasibility Study (RI/FS), the Port did not construct the Port Sliver, nor has it ever conducted operations on, or contributed contamination to, the property. And insofar as the Port Sliver will be excavated as part of Site remediation, from the Port's perspective, the property should not be reconstructed following remediation. The Sliver falls within the 500-foot right-of-way that should be part of the Lower Duwamish Waterway (LDW). If Boeing or another party wishes to utilize the area for their own purposes in a way that does not interfere with navigation or other public rights, the Port cannot and would not oppose such efforts, but reconstruction of the Sliver is not necessary for protection of human health or the environment, or for navigational purposes. The Port has previously communicated this position to Boeing and Ecology.

Response:

Thank you for your comment.

The dCAP proposes that the Port Sliver will be excavated to a depth of approximately 18 feet below ground surface. The purpose of the excavation is to remove contaminants of concern in soil until concentrations are below applicable cleanup levels. Clean fill will be placed to fill the excavated area to an elevation above the high-water line to protect the exposed areas of the shoreline from erosion and to support the permeable reactive barrier.

Ecology has taken note of the Port's comment regarding the potential for using less fill to reduce the footprint of the Port Sliver. The excavation limits and backfill design will be refined during the remedial design stage of the project, which will be informed by the Pre Remedial Design Investigation (PRDI) and presented in the Engineering Design Report (EDR).

General Comments II: dCAP Section 2.0

Update text to explain that the chain-link fence was installed between 1998 and 2002 based upon available imagery. See provided aerials from 1985 (USGS), 1998 (WA DNR), 2002 (Google Earth), and 2023 (Google Earth) [See Appendix A for photos].

Response:

Ecology has noted the additional site history; Site background is previously discussed in other documents including the FS and therefore inclusion in the CAP is not warranted.

Comment Section 2: dCAP Section 2.1

The summary of site background makes no mention of the history of the Port Sliver and its relationship to historical operations at the Site. Suggest additional context to be added such as the following:

"The Port Sliver falls within the 500-foot LDW right-of way granted to the CWD in 1911 in the effort to straighten, widen, and deepen the lower 5 miles of the Duwamish River. Based on aerial photographs, it appears that the origin of the sliver can be divided into approximate thirds: the northern section was a portion of the CWD-dredged channel that was later filled by Isaacson; the middle section was within the CWD right-of-way and either filled before the 1930s or never dredged; and the southern section was part of the original meander of the Duwamish River and was historically the mouth of Slip 5 before it was filled. A small central portion of the sliver is visible in aerial photographs from the 1930s, during which time the Duwamish Lumber Company (operating on what is today the Boeing Isaacson property) appears to have used the area as part of its operations. This portion of the sliver appears to be within the 500-foot right-of-way granted to the CWD. It is unclear whether Duwamish Lumber Company or another entity created this area with fill, or if it instead represents an area that was never dredged as part of the LDW construction. Aerial photos from the 1940s to 1950s show that the northern portion of the sliver was beginning to be filled, presumably by Isaacson Iron Works, then operator of the Site. By 1960, the southern portion of the sliver had been filled, connecting by 1969 with the Boeing Thompson property to the south, which had been constructed on fill replacing Slip 5 (one of the former Duwamish River meanders). With respect to the Port Sliver specifically, neither the CWD nor the Port constructed or ever used the sliver. The Port inherited the sliver from the former CWD upon its dissolution in 1963."

<u>Citations for Fill History and Historical Use of the Sliver</u>:

• Dames & Moore. 1983. Report of Evaluation of Site Contamination Isaacson Steel Property for the Boeing Aerospace Company. 4 October.

• Floyd|Snider. 2023. Isaacson-Thompson Port of Seattle Sliver Property Site History and Aerial Photographs. September. (Provided as an attachment to comment submission).

• Foster, Richard F. 1945. Sources of Pollution in the Duwamish-Green River Drainage Area. Pollution Control Commission Survey. 6 December.

• Landau Associates. 2009. Data Summary Report Thompson-Isaacson Property, Tukwila, Washington. Prepared for The Boeing Company. 2 September.

• Leidos. 2018. Lower Duwamish Waterway, Inventory of Lower Duwamish Waterway Slivers. Prepared for the Washington State Department of Ecology. May.

• Wicks and Sweet, Edwards & Associates, Inc. 1983. Evaluation of Potential Soil and Ground Water Contamination at the Isaacson Corporation Property, Seattle, Washington. Submitted to Isaacson Corporation and Graham & Dunn. 21 December.

Response Section 2:

Ecology acknowledges the Port's comment regarding additional historical context of the Port Sliver property; however the Site history has been included in previous documents, including the ones referenced by the Port, and therefore will not be added to the CAP.

Comment Section 3: dCAP Section 2.4.1.1

Based on Ecology's response to Port comments provided on the Feasibility Study, it is our understanding that elevated arsenic concentrations at the northern boundary of the site (Fig 2–9, MW-20, 21, and 22) that may extend north into the neighboring property will be resolved during the pre-remedial design investigation phase.

Response Section 3:

Beau Johnson is also the Ecology cleanup site manager for the north-adjacent property, the Jorgensen Forge site. Ecology acknowledges the extent of arsenic in groundwater along the property boundary. Arsenic concentrations at the northern portion of the Site will be evaluated during the PRDI phase of the project.

Comment Section 4: dCAP Section 5.1.1

Can you clarify if potential remedial actions may extend north of the property boundary for a groundwater remedy? Similar to the previous comment (Section 2.4.1.1), it is our understanding that further characterization of arsenic in groundwater will be addressed during the pre-remedial design investigation phase.

Response Section 4:

Ecology acknowledges the Port's comment regarding the northern property boundary. As mentioned in the response for Section 3 above, this area will be further evaluated as part of the PRDI.

Comment Section 5: dCAP Section 5.1.2

The proposed remedial alternative involves excavating the Port Sliver, filling the excavated area with clean fill to an elevation above the high-water line, and replacing the existing bulkhead.

However, the Port does not support returning the Port Sliver to grade or replacing the existing bulkhead.

As previously explained to Ecology during the public comment period on the RI/FS, the Port did not construct the Port Sliver, nor has it ever conducted operations on, or contributed contamination to, the property. And insofar as the Port Sliver will be excavated as part of Site remediation, from the Port's perspective, the property should not be reconstructed following remediation. The Sliver falls within the 500-foot right-of-way that should be part of the LDW. If Boeing or another party wishes to utilize the area for their own purposes in a way that does not interfere with navigation or other public rights, the Port cannot and would not oppose such efforts, but reconstruction of the Sliver is not necessary for protection of human health or the environment, or for navigational purposes. The Port has previously communicated this position to Boeing and Ecology.

If the Port Sliver is not reconstructed, the bulkhead would not need to be replaced. For shoreline stability purposes, consider extending the wooden/steel bulkhead that exists along the Boeing Thompson shoreline northward along the Boeing Isaacson property and Port Sliver boundary.

This recommendation was Provided by the Port to Ecology during the public comment period for the RI/FS on January 11, 2024. Ecology response was the following: "Assuming that the Port Sliver would be backfilled with clean material following excavation was a conservative assumption made for the purposes of completing the FS-level cost estimate. The final design for the remedy will be discussed between Ecology, Boeing, and the Port."

Details regarding the fate of the Port Sliver should be decided at this time in the CAP and before initiation of the pre-remedial design investigation.

Response Section 5:

Ecology acknowledges the Port's comment regarding not reconstructing the Port Sliver. The PRDI results will inform the final remedy design that will be presented in the EDR, not the CAP. Though the MTCA remedy selected in the FS does not require removal of the Port Sliver, Boeing is currently looking at post-remediation alternatives for the shoreline other than reconstruction of the existing bulkhead.

Comment Section 6: dCAP Section 5.1.4 (Paragraphs 1 and 2)

The Port does not support reconstructing the Port Sliver or replacing the existing bulkhead along this extent of shoreline. If the Port Sliver is not reconstructed, there would be no need for an environmental covenant (EC) in this area. The Port does not consent to an EC on the Sliver; in the event the Sliver were reconstructed, it would need to be free of any remaining contamination and not subject to an EC.

Response Section 6:

Ecology acknowledges the Port's comment regarding the option of not reconstructing the Port Sliver and the potential effect that change may have on future environmental covenants. The PRDI results will inform the final remedy design that will be presented in the EDR. The need for an environmental covenant on the Port Sliver will be evaluated following cleanup based on MTCA criteria.

See also response to Section 5 above.

Comment Section 7: dCAP Section 5.1.5

Recommend detailing a contingency action should the PRB experience breakthrough at various concentrations (low, medium, high). Recommend that contingency requirements be tied more directly to attainment of groundwater cleanup levels at compliance locations within the estimated restoration time frame of 5 years, based on performance monitoring.

Response Section 7:

Ecology acknowledges the Port's comment regarding contingency actions. Additional detail on the performance monitoring and the corresponding contingency actions will be provided in the EDR.

Comment Section 8: dCAP Section 5.3.3

Recommend including a Compliance Monitoring Plan (CMP) figure that presents recommended compliance well locations to review in context of the proposed PRB remedy. The CMP layout is integral to ensuring an effective PRB performance.

Response Section 8:

Ecology will review and determine the appropriate figures to depict the Compliance Monitoring Program (CMP) as part of the EDR.

Comment Section 9: dCAP Section 7.0

Are any elements of the implementation schedule tied to Ecology's sufficiency evaluation and the greater LDW cleanup?

Response Section 9:

Ecology is working with Boeing to ensure that the cleanup components are coordinated with the cleanup activities for the LDW Site.

Comment Section 10: Agreed Order sections 5.2.2 and 5.5

With respect to Draft Agreed Order No. 22391, the Port objects to Sections 5.2.2 and 5.5 to the extent that they are inconsistent with the Port's analysis laid out in its February 16, 2024, letter to David Butler (Ecology) and Ivy Anderson (Attorney General's Office) regarding the Site. Specifically, for the reasons set forth in that letter, the Port disputes that "[t]he Port property is

owned by the Port of Seattle" (5.2.2), that "[t]he Port property was part of the land the Commercial Waterway District No. 1 (CWD) acquired in the early 1990s" (5.5), and that "the Port is an 'owner or operator' as defined in RCW…" (5.5).

Response Section 10:

Ecology has previously reviewed information related to the Port ownership of the Sliver Property and issued its conclusion in the June 26th 2024 letter titled *Final Determination of Liability for Release of Hazardous substances at the Boeing Isaacson-Thompson Site*.

Comment from: Duwamish River Community Coalition

[See original formatted comment letter attachment in Appendix A. The comment below has been divided into comment sections to better organize responses.]

Comment Section 1:

Beau Johnson, Site Manager
WA State Department of Ecology

Dear Mr. Johnson ,

Please the see our comments attached on behalf of the DRCC for the Boeing Isaacson Thompson Cleanup Site.

We look forward to hearing from you.

Best regards,

Paulina López
Executive Director
Duwamish River Community Coalition

Cc- DRCC Coalition members

November 19, 2024

Beau Johnson
beau.johnson@ecy.wa.gov
Site Manager
Washington Department of Ecology

RE: Boeing Isaacson Thompson Draft Cleanup Action Plan (dCAP)

To Mr. Johnson,

Thank you for the opportunity to comment on the Boeing Isaacson Thompson Draft Cleanup Plan. It is vitally important that community voices are heard on the issues that directly impact them. The Duwamish River Community Coalition (DRCC) has long been a community steward for environmental justice in the Duwamish Valley, which is one of the most polluted areas in the entire Pacific Northwest following over a century of industrial dumping and release of toxic waste. We seek to amplify the will and voices of community members harmed by the combined impacts of environmental, economic, and health inequities present in the Duwamish Valley.

Response Section 1:

Thank you for your comment and commitment to the Duwamish Valley.

Comment Section 2:

Public Participation

It is not clear to what extent public involvement occurred during the development of the plan or will occur during the cleanup. The US EPA and LDWG developed a Community Impacts Mitigation Plan which outlines a series of actions that will be taken to improve transparency, community involvement, monitoring, and communications during the cleanup, including community reporting of violations. We advocate for Ecology using this model and have attached it as an Appendix to this letter.

Incorporating environmental justice considerations by complying with HEAL Act: For the next stage of the MTCA process, all cleanup decisions should include an environmental justice analysis, especially for MTCA sites in overburdened communities, as required by the HEAL Act. Ecology should explain in detail in that document how the Healthy Environment For All (HEAL) Act informed and guided the creation of the FS as mandated by law. Additionally, the Department of Ecology should provide examples of how planning for this site meaningfully prioritizes vulnerable environmental justice communities outlined in the HEAL Act, which were absent from previous site plans created prior to the passage and implementation of the Act.

Response Section 2:

Ecology will continue to maintain an ongoing dialogue with the public throughout the cleanup process. The Public Participation Plan (PPP) outlines the methods we'll use for this project, and you can also find this information as part of the broader engagement strategy for the Lower Duwamish Waterway site. While the actual construction associated with the cleanup of the site does not require a 30-day comment period under the Model Toxics Control Act, Ecology may make announcements at community meetings and post notices and photos about cleanup construction on the site's webpage. We understand that cleanup construction impacts those living closest to cleanup sites. We are always happy to answer questions or concerns from the community regarding the construction process, especially as we move towards that milestone.

While this site's activities do not trigger a formal Environmental Justice Assessment under the HEAL Act, our Public Participation Plans for all sites along the Lower Duwamish Waterway are designed to enhance engagement within this community because of the environmental justice

concerns this community faces. For an individual cleanup site, a consideration of impacts on environmental justice communities (in MTCA, overburdened communities and vulnerable populations) is required at multiple steps in the cleanup process – the Remedial Investigation, Feasibility Study, and Cleanup Action Plan. Since the draft Remedial Investigation was completed for this site before that requirement was instituted, this section was inadvertently left out of the draft cleanup action plan. This section will be added before the document is finalized.

Comment Section 3:

Future Use of Shoreline

The conceptual remedy design assumes the Permeable Reactive Barrier (PRB) wall to be 5 ft thick, 25 ft deep, and 700 ft long, set back from the shoreline/western Boeing property line approximately 50–100 ft to allow space to evaluate the performance of the PRB in treating groundwater contamination. The Shoreline Area excavation will include soil excavation of the entire Port Sliver property to 18 feet below ground and between the property and the PRB to prevent recontamination of treated groundwater, which includes removal of 15,000 cubic yards of soil. Based on this and Figure 5-1, the excavation includes a width of at least 100 feet from the water's edge inland.

- The future use of the shoreline is in the interest of the public trust and cleanup should reflect this. We disagree with the construction of a replacement bulkhead along the shoreline and request instead that the shoreline be used for habitat restoration. If a bulkhead is pursued, we request long-term bond (100 yrs) for protection and maintenance of any constructed bulkhead to ensure that remains protective for the long term and is maintained through unanticipated changes to sea level rise and other river dynamics resulting from climate change.

- We believe that, at a minimum, the cleanup should designate this 100 foot shoreline buffer as terrestrial and/or aquatic habitat that will be in the best interest of the public trust. Additional rationale for this request are below.

Policies that prioritize the public trust and ecological benefits

In the January 2024 comments from the Port of Seattle on the Boeing Isaacson-Thompson Site Remedial Investigation ("RI") and Feasibility Study ("FS") Port states they have " no power to lease [or alienate] any area within the 500-foot right of way," and adjacent landowners have a right of access to the extent that neither 2 navigation ***nor any other right of the general public*** is interfered with." Commercial Waterway Dist. No. 1 v. Permanente Cement Co., 61 Wn.2d 525 (1963).

- Further, Washington State Shoreline Management Act of 1971 (SMA) considers the basic policy areas: shoreline use, environmental protection, and public access. It establishes the concept of preferred shoreline uses that are consistent with controlling

pollution, preventing damage to the natural environment, and promoting water-dependent industrial and commercial developments, ports, developments that provide public access opportunities, recreational uses, and single-family residences. The SMA is intended to ensure the development of shorelines in a manner that will ***promote and enhance the public interest and that will protect shorelines of the state, including the land, vegetation, wildlife, and aquatic habitats, against adverse environmental effects***. Additionally, the SMA (RCW 90. 58) establishes a hierarchy of preference for uses in shorelines of state-wide significance: recognizing and protecting the state-wide interest over local interest; preserving the natural character of the shoreline; resulting in long term over short term benefit; protecting the resources and ecology of the shoreline; increasing public access to publicly owned areas of the shorelines; increasing recreational opportunities for the public in the shoreline; and providing for any other element as defined in RCW 90. 58. 100 deemed appropriate or necessary.

Support for a bioengineered shoreline

The dCAP states that the costs of Alternatives 4 and 5 are disproportionate to their benefits, and the benefits of Alternatives 1 and 2 were disproportionately lower than for Alternative 3, and thus Alternative 3 uses permanent solutions to the maximum extent practicable. It is not clear if Ecology fully took into consideration the public trust benefits of more thorough remedial action alternatives that would meet the requirements of the SMA. The public trust benefits to the State and aquatic and terrestrial habitat is a critical consideration along the Duwamish.

The State of Washington should consider the public trust and interest and the needs of the State's wildlife in the cleanup of the site. The current Port Sliver is 60 feet wide, and the proposed soil excavation would add an additional width of about 40 feet. At a bare minimum, and to meet the standards and intent of the SMA, Ecology should design for habitat restoration in this 100 foot buffer. The Boeing 2-122 site was able to successfully create both marsh and upland habitat, as well as provide public viewpoints with only a 150 foot buffer and provide pollution control, meeting the State requirements to serve the public trust. Because the Port Sliver has been left unmaintained for a number of 3 years, it is clear that the property is not needed to meet other needs identified in the SMA such as industrial or commercial development or single-family residences. In addition, habitat restoration could help buffer noise and air pollution impacts from the airport and other industrial activities for neighboring communities, including South Park. In this way, taking public benefits into account can support the intent of the HEAL Act.

The dCAP states "Focused excavation of soil along the shoreline permanently removes contaminated soil along the Site's shoreline and protects sediments from migration of contaminated soil." Because of this it seems that the site would be primed for any future use, including habitat restoration. However, the dCAP proposes to remove the bulkhead and replace it with a steel bulkhead or other engineered shoreline. We advocate for development of an ecologically engineered shoreline that supports aquatic and terrestrial habitat.

Response Section 3:

Ecology does not have the regulatory authority under MTCA to require Boeing to include habitat restoration as a component of their cleanup remedy; however, Boeing has committed to evaluating an alternative that includes restoration components as part of the final cleanup remedy design. The final design of the shoreline will be presented in the EDR.

Comment Section 4:

Cleanup Process

Alternative 3 physically removes some of the Site soil contamination; however, the ***majority of the contaminated soil (including the stabilized soil area and most of the former Slip 5 fill material)*** will remain in place.

The dCAP notes that dissolved arsenic exceedances occurred in groundwater throughout the Site (Figure 2-14), with the highest exceedances occurring north of the former Slip 5 area and mostly within and downgradient of the Stabilized Soil Area. Additionally, the dCAP notes that the highest arsenic concentrations in the shoreline area occurred at wells MW-19, MW-20, and I-104(s), which are located downgradient of the Stabilized Soil Area. Considering that the soil from these areas will be left in place, and that dissolved arsenic is highest in these locations, we question whether the proposed cleanup will lead to future recontamination. ***We would like to see a thorough recontamination analysis for this Alternative. If Ecology does not require this, we expect sampling to happen more frequently often and for a longer duration.***

The dCAP proposes the alternative to full excavation of contamination is the installation of a PRB containing a mix of ZVI and granular activated carbon to provide long-term groundwater treatment for Site COCs and reduce the risk of contaminant migration from Site groundwater to the LDW. While PRB systems have been utilized for decades, these systems have had mixed outcomes. Certain characteristics can clog pores of PRBs such as nitrates in the groundwater that lead to a 41% reduction in effectiveness at the Oak Ridge National Laboratory site.[9] Considering the levels of contaminants that will be left in place, and controlled by the PRB, the pilot technology evaluation will be important, and there should be an evaluation of potential long term chemical reactions that could lead to changes in absorption, adsorption, and/or porosity that could affect long term performance of the PRB.

Response Section 4:

As stated in the dCAP, the effectiveness of the proposed remedy (use of a PRB) will be first tested with a pilot study. Ecology will review the pilot study data to assess whether the use of a PRB will remediate groundwater to concentrations below applicable cleanup levels. Ongoing compliance groundwater monitoring will confirm the effectiveness of the PRB.

[9] https://link.springer.com/article/10.1007/s13762-022-04536-7

Comment Section 5:

Climate Change Vulnerability Assessment

To our knowledge a Climate Change Vulnerability Assessments (CCVA) was not conducted. Revised MTCA (WAC 173-340) regulations call for attention to climate change at MTCA clean up sites. Please provide any documents related to this analysis that were reviewed regarding potential climate change impacts and vulnerabilities. The following climate impacts and vulnerabilities need to be taken into account to assume long term stability of the site and protection of human health and the environment.

Ecology developed a guidance document for Addressing Sea Level Rise in Shoreline Master Programs that includes:

- Taking into account the effects of rising sea levels on existing and projected development.
- Recognizing the role that shoreline erosion and accretion play in preserving ecological functions, and to encourage softer armoring techniques where appropriate.
- Sea level rise predictions should be factored into restoration planning, perhaps including larger inland areas in restoration or habitat protection efforts to accommodate increasing inundation and to allow the shoreline to shift farther inland.

According to Seattle Public Utilities Sea Level Rise Viewer, impacts from sea level rise could occur at the site and adjacent properties within two to three feet of rise. However, note that this viewer does not account for rising groundwater levels that are often exacerbated with sea level rise. This will be a necessary consideration at this site.

In 2024, the U.S. Geological Survey (USGS), in cooperation with the Washington State Department of Ecology (Ecology), conducted a study to describe the surface-water interactions in the lower Duwamish Waterway.[10] This study evaluated shallow and deep groundwater wells and responses to tides and precipitation, both of which will be affected by climate change.

The shallow wells had a pronounced seasonal variability, with high water levels in winter and low water levels in summer. Data from the deep wells showed far less seasonal variability, with slight increases in winter and a near-constant water level from spring to autumn. In general, shallow wells indicate a downward vertical gradient and deeper wells indicate an upward direction. The downward vertical gradient was greatest in winter when water levels in the shallow wells rose owing to increased rainfall. In addition to the seasonal increase in water levels, water levels in the shallow and deep wells showed a similar short-term increase following heavy precipitation.

Because of this, the CCVA and the subsequent remedial design needs to consider the complex climate interactions with groundwater at the site related to changes in amount and intensity of

[10] https://pubs.usgs.gov/publication/sir20245046

precipitation combined with changes in sea level rise and coastal wave dynamics. This should address seasonal impacts, extreme events, and interactions between shallow and deep groundwater and the nearshore mixing zone.

A mixing zone forms at the interface between discharging groundwater and receiving surface water and also extends inland by a few feet to a few tens of feet. Recirculating surface water in the mixing zone introduces oxygen to the aquifer materials, thereby modifying geochemical conditions (such as redox) and the amounts and types of organic matter, major ions, nutrients, and bacteria. These conditions, in turn, can modify the characteristics of contaminant transport; for example, the conditions under which sorption and biodegradation occur can be episodically or permanently altered. Furthermore, preferential flow paths can exist that route fresh groundwater directly to the receiving surface water (for example, some groundwater seeps), or, conversely, allow seawater to infiltrate farther inland than the mixing zone and interact with previously uncontacted aquifer materials. Dynamic redox conditions in the mixing zone (e.g., created by redox potential, dissolved oxygen, iron and sulfate, dissolved organic carbon, etc.) strongly influence the role of contaminant sorption and transformation processes in this zone. The USGS cites a number of studies showing how the mixing zone affected the movement of arsenic and zinc such as mobilization due to chemical reactions in the mixing zone and mobilization caused by higher salinity.

- Ecology should evaluate the mixing zone at the site, and the potential influence of historical flow paths such as the former channel and former Slip 5. As noted in the dCAP the Site includes 2 to 19.5 ft of fill overlying river deposits with the thickest layers of fill occurring in the former Slip 5 area. The fill generally consists of silty sand to sandy gravel. Fill materials within the former Slip 5 area include bricks, wood debris, and slag material from unknown sources. This likely provides additional opportunities for surface-groundwater interactions, and the 6 USGS noted that these types of conditions can serve as places where exchange between groundwater and the river increases.
- The dCAP notes that saltwater intrudes from the LDW to groundwater at properties along its shoreline, and saltwater of the LDW tends to concentrate the outflow of the surficial aquifer into the intertidal areas. The dCAP further notes that tidal fluctuations generally do not occur more than 400 ft from the LDW. However, this could increase inland with future sea level rise and extreme events, and should be taken into account in the design. This would support greater setbacks from the river for the PRB.

Response Section 5:

As discussed in the response to Comment Section 4 above, Ecology will review the pilot study results and ongoing groundwater monitoring results to ensure that the PRB is effective at reducing groundwater concentrations to below applicable cleanup levels. While a climate change vulnerability assessment (CCVA) is not required for this site, an evaluation of potential climate change vulnerability will be included as part of the final remedial design documents.

Comment Section 6:

Coordination

The dCAP notes that the RI found Site related contamination in the adjacent sediments. Since MTCA defines a Site as "where contamination has come to be located", the adjacent sediments are a part of the Boeing Isaacson-Thompson Site. However, these adjacent sediments (below the mean higher high-water level) will be addressed under the US Environmental Protection Agency (EPA)-led LDW Superfund Site cleanup and are not addressed under this draft Cleanup Action Plan.

Additional details are needed to understand how coordination with EPA will occur and any risks of recontamination from the site will be reduced. Coordination regarding a bioengineered shoreline should also occur.

We appreciate this opportunity to provide comments. Please do not hesitate to contact us if you have any questions.

Paulina López
Executive Director
Duwamish River Community Coalition
paulina@drcc.org

Response Section 6:

Ecology and the EPA will work to integrate the uplands and in-water cleanup actions as appropriate, so they do not negatively impact each other.

Appendices

Appendix A. Public comments in original format

O-1: City of Tukwila, Heidi Watters

Comment O-1-1

Would like a shorter summary version of the draft plan, including a robust discussion of why complete removal is considered infeasible and more information on the expected lifespan of the barrier/s.

Port of Seattle

Please see attached Port of Seattle comments regarding the Boeing Isaacson Thompson: Draft Cleanup Action Plan and Agreed Order

P.O. Box 1209
Seattle, WA 98111-1209
Tel: 787-3000

www.portseattle.org

November 19, 2024

Please see below for comments from the Port of Seattle ("Port") on the Boeing Isaacson-Thompson Site ("Site") Agreed Order ("AO") and Cleanup Action Plan ("CAP") draft documents out for public comment. First, we provide general comments regarding the Site and the draft documents. Following that is a table providing specific comments, identified by sections within the documents. Above all, the Port emphasizes that the Port Sliver bulkhead or physical landmass need not be reconstructed following remediation.

I. General Comments

A. The Port Sliver Should Not be Reconstructed

As previously explained to Ecology during the public comment period on the Remedial Investigation/Feasibility Study (RI/FS), the Port did not construct the Port Sliver, nor has it ever conducted operations on, or contributed contamination to, the property. And insofar as the Port Sliver will be excavated as part of Site remediation, from the Port's perspective, the property should not be reconstructed following remediation. The Sliver falls within the 500-foot right-of-way that should be part of the Lower Duwamish Waterway (LDW). If Boeing or another party wishes to utilize the area for their own purposes in a way that does not interfere with navigation or other public rights, the Port cannot and would not oppose such efforts, but reconstruction of the Sliver is not necessary for protection of human health or the environment, or for navigational purposes. The Port has previously communicated this position to Boeing and Ecology.

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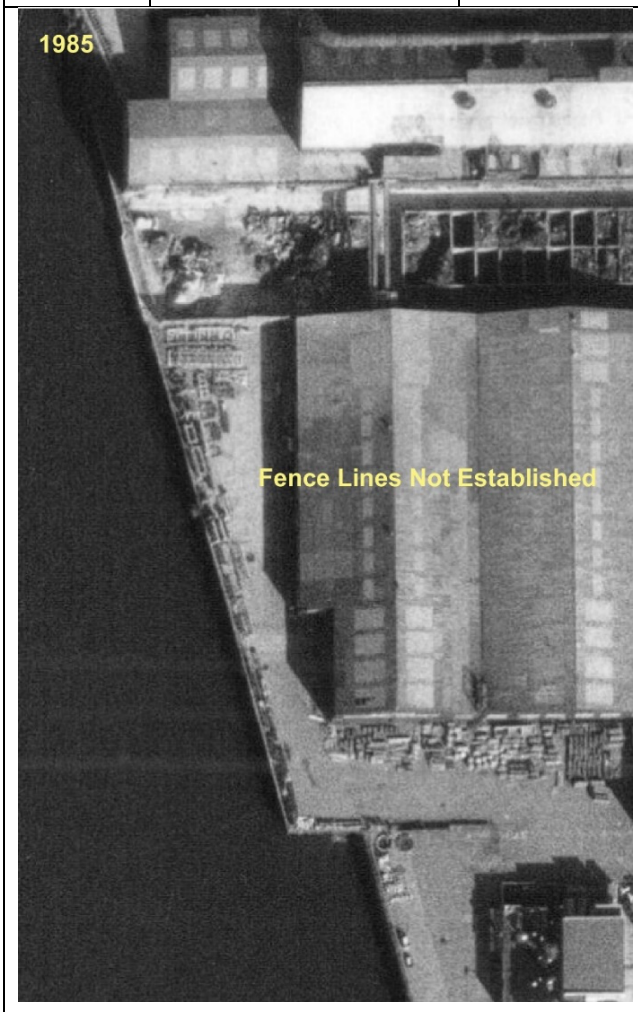
II. General Comments

Comment	Section	Comment
1	dCAP Section 2.0	Update text to explain that the chain-link fence was installed between 1998 and 2002 based upon available imagery. See provided aerials from 1985 (USGS), 1998 (WA DNR), 2002 (Google Earth), and 2023 (Google Earth).



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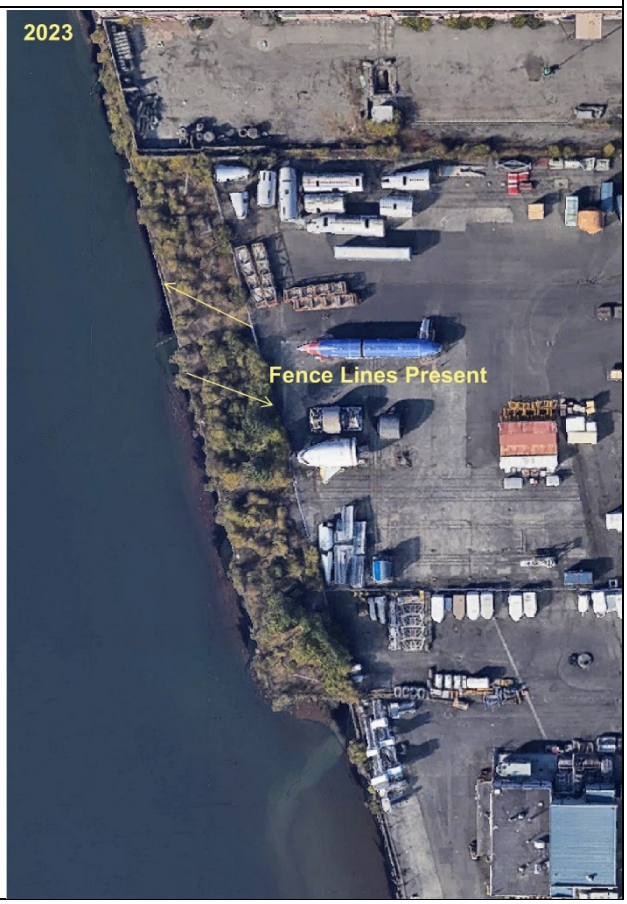
Comment	Section	Comment
		

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Comment	Section	Comment
2	dCAP Section 2.1	The summary of site background makes no mention of the history of the Port Sliver and its relationship to historical operations at the Site. Suggest additional context to be added such as the following: "The Port Sliver falls within the 500-foot LDW right-of-way granted to the CWD in 1911 in the effort to straighten, widen, and deepen the lower 5 miles of the Duwamish River. Based on aerial photographs, it appears that the origin of the sliver can be divided into approximate thirds: the northern section was a portion of the CWD-dredged channel that was later filled by Isaacson; the middle section was within the CWD right-of-way and either filled before the 1930s or never dredged; and the southern section was part of the original meander of the Duwamish River and was historically the mouth of Slip 5 before it was filled. A small central portion of the sliver is visible in aerial photographs from the 1930s, during which time the Duwamish Lumber Company (operating on what is today the Boeing Isaacson property) appears to have used the area as part of its operations. This portion of the sliver appears to be within the 500-foot right-of-way granted to the CWD. It is unclear whether Duwamish Lumber Company or another entity created this area with fill, or if it instead represents an area that was never dredged as part of the LDW construction. Aerial photos from the 1940s to 1950s show that the northern portion of the sliver was beginning to be filled, presumably by Isaacson Iron Works, then operator of the Site. By 1960, the southern portion of the sliver had been filled, connecting by 1969 with the Boeing Thompson property to the south, which had been constructed on fill replacing Slip 5 (one of the former Duwamish River meanders). With respect to the Port Sliver specifically, neither the CWD nor the Port constructed or ever used the sliver. The Port inherited the sliver from the former CWD upon its dissolution in 1963."

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Comment	Section	Comment
		<u>Citations for Fill History and Historical Use of the Sliver:</u> • Dames & Moore. 1983. *Report of Evaluation of Site Contamination Isaacson Steel Property for the Boeing Aerospace Company*. 4 October. • Floyd|Snider. 2023. *Isaacson-Thompson Port of Seattle Sliver Property Site History and Aerial Photographs*. September. (Provided as an attachment to comment submission). • Foster, Richard F. 1945. *Sources of Pollution in the Duwamish-Green River Drainage Area*. Pollution Control Commission Survey. 6 December. • Landau Associates. 2009. *Data Summary Report Thompson-Isaacson Property, Tukwila, Washington*. Prepared for The Boeing Company. 2 September. • Leidos. 2018. *Lower Duwamish Waterway, Inventory of Lower Duwamish Waterway Slivers*. Prepared for the Washington State Department of Ecology. May. • Wicks and Sweet, Edwards & Associates, Inc. 1983. *Evaluation of Potential Soil and Ground Water Contamination at the Isaacson Corporation Property, Seattle, Washington*. Submitted to Isaacson Corporation and Graham & Dunn. 21 December.
3	dCAP Section 2.4.1.1	Based on Ecology's response to Port comments provided on the Feasibility Study, it is our understanding that elevated arsenic concentrations at the northern boundary of the site (Fig 2–9, MW-20, 21, and 22) that may extend north into the neighboring property will be resolved during the pre-remedial design investigation phase.
4	dCAP Section 5.1.1	Can you clarify if potential remedial actions may extend north of the property boundary for a groundwater remedy? Similar to the previous comment (Section 2.4.1.1), it is our understanding that further characterization of arsenic in groundwater will be addressed during the pre-remedial design investigation phase.

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Comment	Section	Comment
5	dCAP Section 5.1.2	The proposed remedial alternative involves excavating the Port Sliver, filling the excavated area with clean fill to an elevation above the high-water line, and replacing the existing bulkhead. However, the Port does not support returning the Port Sliver to grade or replacing the existing bulkhead. As previously explained to Ecology during the public comment period on the RI/FS, the Port did not construct the Port Sliver, nor has it ever conducted operations on, or contributed contamination to, the property. And insofar as the Port Sliver will be excavated as part of Site remediation, from the Port's perspective, the property should not be reconstructed following remediation. The Sliver falls within the 500-foot right-of-way that should be part of the LDW. If Boeing or another party wishes to utilize the area for their own purposes in a way that does not interfere with navigation or other public rights, the Port cannot and would not oppose such efforts, but reconstruction of the Sliver is not necessary for protection of human health or the environment, or for navigational purposes. The Port has previously communicated this position to Boeing and Ecology. If the Port Sliver is not reconstructed, the bulkhead would not need to be replaced. For shoreline stability purposes, consider extending the wooden/steel bulkhead that exists along the Boeing Thompson shoreline northward along the Boeing Isaacson property and Port Sliver boundary. This recommendation was Provided by the Port to Ecology during the public comment period for the RI/FS on January 11, 2024. Ecology response was the following: "Assuming that the Port Sliver would be backfilled with clean material following excavation was a conservative assumption made for the purposes of completing the FS-level cost estimate. The final design for the remedy will be discussed between Ecology, Boeing, and the Port." Details regarding the fate of the Port Sliver should be decided at this time in the CAP and before initiation of the pre-remedial design investigation.

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Comment	Section	Comment
6	dCAP Section 5.1.4 Paragraphs 1 and 2	The Port does not support reconstructing the Port Sliver or replacing the existing bulkhead along this extent of shoreline. If the Port Sliver is not reconstructed, there would be no need for an environmental covenant (EC) in this area. The Port does not consent to an EC on the Sliver; in the event the Sliver were reconstructed, it would need to be free of any remaining contamination and not subject to an EC.
7	dCAP Section 5.1.5	Recommend detailing a contingency action should the PRB experience breakthrough at various concentrations (low, medium, high). Recommend that contingency requirements be tied more directly to attainment of groundwater cleanup levels at compliance locations within the estimated restoration time frame of 5 years, based on performance monitoring.
8	dCAP Section 5.3.3	Recommend including a Compliance Monitoring Plan (CMP) figure that presents recommended compliance well locations to review in context of the proposed PRB remedy. The CMP layout is integral to ensuring an effective PRB performance.
9	dCAP Section 7.0	Are any elements of the implementation schedule tied to Ecology's sufficiency evaluation and the greater LDW cleanup?
10	Agreed Order Sections 5.2.2 and 5.5	With respect to Draft Agreed Order No. 22391, the Port objects to Sections 5.2.2 and 5.5 to the extent that they are inconsistent with the Port's analysis laid out in its February 16, 2024, letter to David Butler (Ecology) and Ivy Anderson (Attorney General's Office) regarding the Site. Specifically, for the reasons set forth in that letter, the Port disputes that "[t]he Port property is owned by the Port of Seattle" (5.2.2), that "[t]he Port property was part of the land the Commercial Waterway District No. 1 (CWD) acquired in the early 1990s" (5.5), and that "the Port is an 'owner or operator' as defined in RCW…" (5.5).

STATE OF WASHINGTON
DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL PUBLIC HEALTH
PO Box 47820 • Olympia, Washington 98504-7820
(360) 236-3000 • 711 Washington Relay Service

To: Attn: Boeing Isaacson-Thompson Draft Cleanup Action Plan
c/o Beau Johnson
Washington State Department of Ecology
Northwest Regional Office: Toxics Cleanup Program
P.O. Box 330316
Shoreline WA 98133-9716

From: Site Assessment and Toxicology Section
Washington State Department of Health

RE: Boeing Isaacson-Thompson Draft Cleanup Action Plan

Date: 19 November 2024

The Department of Health (DOH) has reviewed the Boeing Isaacson-Thompson Draft Cleanup Action Plan. We are pleased to see another cleanup action in the Duwamish River.

DOH would encourage the Department of Ecology to coordinate sampling efforts with the United States Environmental Protection Agency to monitor potential off-site impacts associated with the cleanup. While DOH acknowledges that the probability of human health impacts due to these activities are low, we recommend that they be monitored to ensure data are available.

DOH recommends that fish tissue monitoring for resident species and non-resident salmonids occur during and after the in-water work associated with shoreline excavation and bulkhead removal. It is not uncommon for contaminant concentrations in fish tissue to temporarily increase during remediation activities and fish consumption is the primary exposure route for humans to contamination in the waterway.

DOH looks forward to working with the Department of Ecology on evaluating fish tissue data and other relevant data sets generated during this process for the health and safety of Washingtonians.

Sincerely,

/s/Emerson Christie

Emerson Christie
Toxicologist
Site Assessments and Toxicology Section

Cc: Lenford O'Garro, Department of Health

From: Paulina Lopez
To: Johnson, Beau (ECY); ECY RE LDW; Greg Ramirez
Cc: Sean Dixon; Emily Gonzalez; Chiyo Crawford; Greg Wingard; Nancy Sackman
Subject: Boeing Isaacson Thompson DRCC Comments
Date: Tuesday, November 19, 2024 9:00:09 PM
Attachments: DRCC Comments_ Boeing Isaacson Thompson dCAP.docx.pdf

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External Email

Beau Johnson, Site Manager
WA State Department of Ecology

Dear Mr. Johnson ,

Please the see our comments attached on behalf of the DRCC for the Boeing Isaacson Thompson Cleanup Site.

We look forward to hearing from you.

Best regards,

Paulina López
Executive Director
Duwamish River Community Coalition

Cc- DRCC Coalition members

DUWAMISH RIVER
COMMUNITY COALITION

Elevating the voices of those impacted by the Duwamish River pollution and other environmental injustices to advocate for a clean, healthy, and equitable environment for people and wildlife. Promoting place-keeping and prioritizing community capacity and resilience.

November 19, 2024

Beau Johnson
beau.johnson@ecy.wa.gov
Site Manager
Washington Department of Ecology

RE: Boeing Isaacson Thompson Draft Cleanup Action Plan (dCAP)

To Mr. Johnson,

Thank you for the opportunity to comment on the *Boeing Isaacson Thompson Draft Cleanup Plan*. It is vitally important that community voices are heard on the issues that directly impact them. The Duwamish River Community Coalition (DRCC) has long been a community steward for environmental justice in the Duwamish Valley, which is one of the most polluted areas in the entire Pacific Northwest following over a century of industrial dumping and release of toxic waste. We seek to amplify the will and voices of community members harmed by the combined impacts of environmental, economic, and health inequities present in the Duwamish Valley.

Public Participation

It is not clear to what extent public involvement occurred during the development of the plan or will occur during the cleanup. The US EPA and LDWG developed a Community Impacts Mitigation Plan which outlines a series of actions that will be taken to improve transparency, community involvement, monitoring, and communications during the cleanup, including community reporting of violations. We advocate for Ecology using this model and have attached it as an Appendix to this letter.

Incorporating environmental justice considerations by complying with HEAL Act: For the next stage of the MTCA process, all cleanup decisions should include an environmental justice analysis, especially for MTCA sites in overburdened communities, as required by the HEAL Act. Ecology should explain in detail in that document how the Healthy Environment For All (HEAL) Act informed and guided the creation of the FS as mandated by law. Additionally, the Department of Ecology should provide examples of how planning for this site meaningfully prioritizes vulnerable environmental justice communities outlined in the HEAL Act, which were absent from previous site plans created prior to the passage and implementation of the Act.

Future Use of Shoreline

The conceptual remedy design assumes the Permeable Reactive Barrier (PRB) wall to be 5 ft thick, 25 ft deep, and 700 ft long, set back from the shoreline/western Boeing property line approximately 50–100 ft to allow space to evaluate the performance of the PRB in treating groundwater contamination. The Shoreline Area excavation will include soil excavation of the entire Port Sliver property to 18 feet below ground and between the property and the PRB to prevent recontamination of treated groundwater, which includes removal of 15,000 cubic yards of soil. Based on this and Figure 5-1, the excavation includes a width of at least 100 feet from the water's edge inland.

- The future use of the shoreline is in the interest of the public trust and cleanup should reflect this. We disagree with the construction of a replacement bulkhead along the shoreline and request instead that the shoreline be used for habitat restoration. If a bulkhead is pursued, we request long-term bond (100 yrs) for protection and maintenance of any constructed bulkhead to ensure that remains protective for the long term and is maintained through unanticipated changes to sea level rise and other river dynamics resulting from climate change.

- We believe that, at a minimum, the cleanup should designate this 100 foot shoreline buffer as terrestrial and/or aquatic habitat that will be in the best interest of the public trust. Additional rationale for this request are below.

Policies that prioritize the public trust and ecological benefits

In the January 2024 comments from the Port of Seattle on the Boeing Isaacson-Thompson Site Remedial Investigation ("RI") and Feasibility Study ("FS") Port states they have " no power to lease [or alienate] any area within the 500-foot right of way," and adjacent landowners have a right of access to the extent that neither

navigation ***nor any other right of the general public*** is interfered with." Commercial Waterway Dist. No. 1 v. Permanente Cement Co., 61 Wn.2d 525 (1963).

- Further, Washington State Shoreline Management Act of 1971 (SMA) considers the basic policy areas: shoreline use, environmental protection, and public access. It establishes the concept of preferred shoreline uses that are consistent with controlling pollution, preventing damage to the natural environment, and promoting water-dependent industrial and commercial developments, ports, developments that provide public access opportunities, recreational uses, and single-family residences. The SMA is intended to ensure the development of shorelines in a manner that will ***promote and enhance the public interest and that will protect shorelines of the state, including the land, vegetation, wildlife, and aquatic habitats, against adverse environmental effects***. Additionally, the SMA (RCW 90. 58) establishes a hierarchy of preference for uses in shorelines of state-wide significance: recognizing and protecting the state-wide interest over local interest; preserving the natural character of the shoreline; resulting in long term over short term benefit; protecting the resources and ecology of the shoreline; increasing public access to publicly owned areas of the shorelines; increasing recreational opportunities for the public in the shoreline; and providing for any other element as defined in RCW 90. 58. 100 deemed appropriate or necessary.

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[1] https://link.springer.com/article/10.1007/s13762-022-04536-7

important, and there should be an evaluation of potential long term chemical reactions that could lead to changes in absorption, adsorption, and/or porosity that could affect long term performance of the PRB.

Climate Change Vulnerability Assessment

To our knowledge a Climate Change Vulnerability Assessments (CCVA) was not conducted. Revised MTCA (WAC 173-340) regulations call for attention to climate change at MTCA clean up sites. Please provide any documents related to this analysis that were reviewed regarding potential climate change impacts and vulnerabilities. Thefollowing climate impacts and vulnerabilities need to be taken into account to assume long term stability of the site and protection of human health and the environment.

Ecology developed a guidance document for Addressing Sea Level Rise in Shoreline Master Programs that includes:

- Taking into account the effects of rising sea levels on existing and projected development.
- Recognizing the role that shoreline erosion and accretion play in preserving ecological functions, and to encourage softer armoring techniques where appropriate.
- Sea level rise predictions should be factored into restoration planning, perhaps including larger inland areas in restoration or habitat protection efforts to accommodate increasing inundation and to allow the shoreline to shift farther inland.

According to Seattle Public Utilities Sea Level Rise Viewer, impacts from sea level rise could occur at the site and adjacent properties within two to three feet of rise. However, note that this viewer does not account for rising groundwater levels that are often exacerbated with sea level rise. This will be a necessary consideration at this site.

In 2024, the U.S. Geological Survey (USGS), in cooperation with the Washington State Department of Ecology (Ecology), conducted a study to describe the surface-water interactions in the lower Duwamish Waterway.[2] This study evaluated shallow and deep groundwater wells and responses to tides and precipitation, both of which will be affected by climate change.

[2] https://pubs.usgs.gov/publication/sir20245046

The shallow wells had a pronounced seasonal variability, with high water levels in winter and low water levels in summer. Data from the deep wells showed far less seasonal variability, with slight increases in winter and a near-constant water level from spring to autumn. In general, shallow wells indicate a downward vertical gradient and deeper wells indicate an upward direction. The downward vertical gradient was greatest in winter when water levels in the shallow wells rose owing to increased rainfall. In addition to the seasonal increase in water levels, water levels in the shallow and deep wells showed a similar short-term increase following heavy precipitation.

Because of this, the CCVA and the subsequent remedial design needs to consider the complex climate interactions with groundwater at the site related to changes in amount and intensity of precipitation combined with changes in sea level rise and coastal wave dynamics. This should address seasonal impacts, extreme events, and interactions between shallow and deep groundwater and the nearshore mixing zone.

A mixing zone forms at the interface between discharging groundwater and receiving surface water and also extends inland by a few feet to a few tens of feet. Recirculating surface water in the mixing zone introduces oxygen to the aquifer materials, thereby modifying geochemical conditions (such as redox) and the amounts and types of organic matter, major ions, nutrients, and bacteria. These conditions, in turn, can modify the characteristics of contaminant transport; for example, the conditions under which sorption and biodegradation occur can be episodically or permanently altered. Furthermore, preferential flow paths can exist that route fresh groundwater directly to the receiving surface water (for example, some groundwater seeps), or, conversely, allow seawater to infiltrate farther inland than the mixing zone and interact with previously uncontacted aquifer materials. Dynamic redox conditions in the mixing zone (e.g., created by redox potential, dissolved oxygen, iron and sulfate, dissolved organic carbon, etc.) strongly influence the role of contaminant sorption and transformation processes in this zone. The USGS cites a number of studies showing how the mixing zone affected the movement of arsenic and zinc such as mobilization due to chemical reactions in the mixing zone and mobilization caused by higher salinity.

- Ecology should evaluate the mixing zone at the site, and the potential influence of historical flow paths such as the former channel and former Slip 5. As noted in the dCAP the Site includes 2 to 19.5 ft of fill overlying river deposits with the thickest layers of fill occurring in the former Slip 5 area. The fill generally consists of silty sand to sandy gravel. Fill materials within the former Slip 5 area include bricks, wood debris, and slag material from unknown sources. This likely provides additional opportunities for surface-groundwater interactions, and the

USGS noted that these types of conditions can serve as places where exchange between groundwater and the river increases.

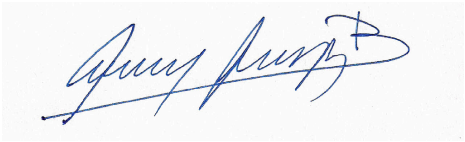
- The dCAP notes that saltwater intrudes from the LDW to groundwater at properties along its shoreline, and saltwater of the LDW tends to concentrate the outflow of the surficial aquifer into the intertidal areas.The dCAP further notes that tidal fluctuations generally do not occur more than 400 ft from the LDW. However, this could increase inland with future sea level rise and extreme events, and should be taken into account in the design. This would support
- greater setbacks from the river for the PRB.

Coordination

The dCAP notes that the RI found Site related contamination in the adjacent sediments. Since MTCA defines a Site as "where contamination has come to be located", the adjacent sediments are a part of the Boeing Isaacson-Thompson Site. However, these adjacent sediments (below the mean higher high-water level) will be addressed under the US Environmental Protection Agency (EPA)-led LDW Superfund Site cleanup and are not addressed under this draft Cleanup Action Plan.

Additional details are needed to understand how coordination with EPA will occur and any risks of recontamination from the site will be reduced. Coordination regarding a bioengineered shoreline should also occur.

We appreciate this opportunity to provide comments. Please do not hesitate to contact us if you have any questions.



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