Port of Bellingham
Harris Avenue Shipyard RI/FS

April 17, 2019

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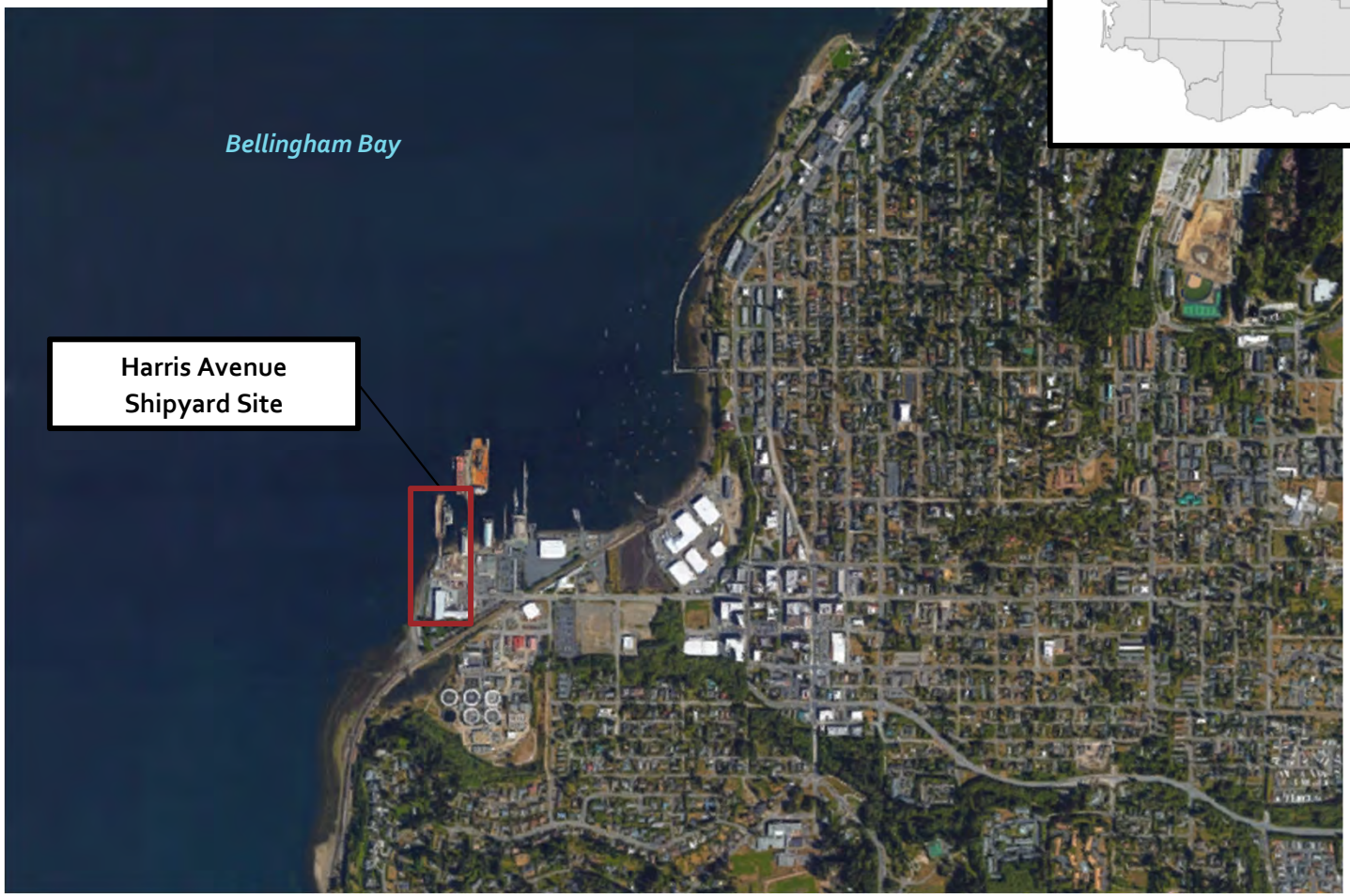
Site Location



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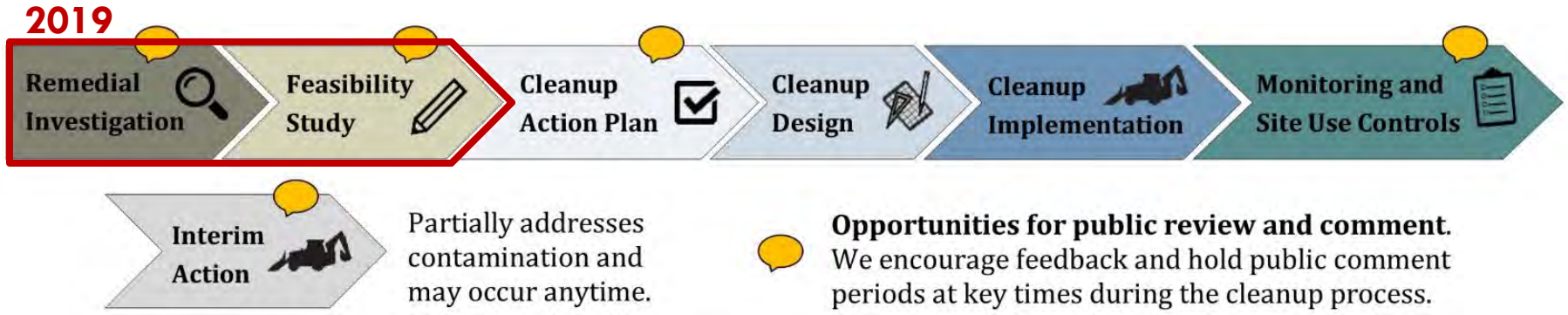
Cleanup Process

- The Model Toxics Control Act (MTCA) is Washington's environmental cleanup law.
  - **Direction**: MTCA directs the investigation, cleanup, and prevention of sites that are contaminated by hazardous substances.
  - **Protection:** It works to protect people's health and the environment and to preserve natural resources for the future.
  - **Funding:** Matching grant funding may be available for eligible parties. The Port of Bellingham is eligible for up to 50%.



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Site Background

- Site is about 10 acres in size: 5 acres of uplands, 5 acres of aquatic land
- Property ownership is a combination of State and Port-owned land
- More than 100 years of industrial activities including fish processing facilities, ship building, and ship repair
- Current site use: shipyard

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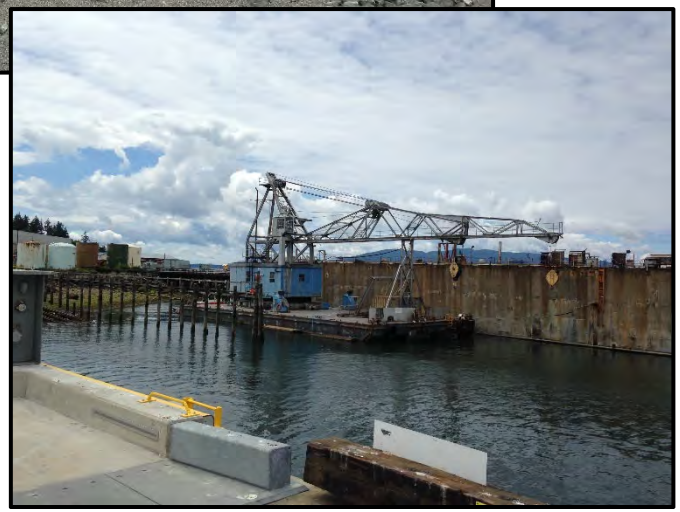
Current Site Use

- Used for dry docking and support services
- Vessel maintenance and repair activities



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Cleanup Management

- **March 2010—**Ecology and the Port entered into an Agreed Order (No. 7342) for site-wide cleanup of upland and sediment
- **July 2016—**Amended the Agreed Order to include implementation of an Interim Action
- **May 2017 to November 2018—**Interim Action conducted
- **December 2018—**Public Review Draft RI/FS submitted to Ecology
- **April 2019—**Public Comment Period for the Public Review Draft RI/FS

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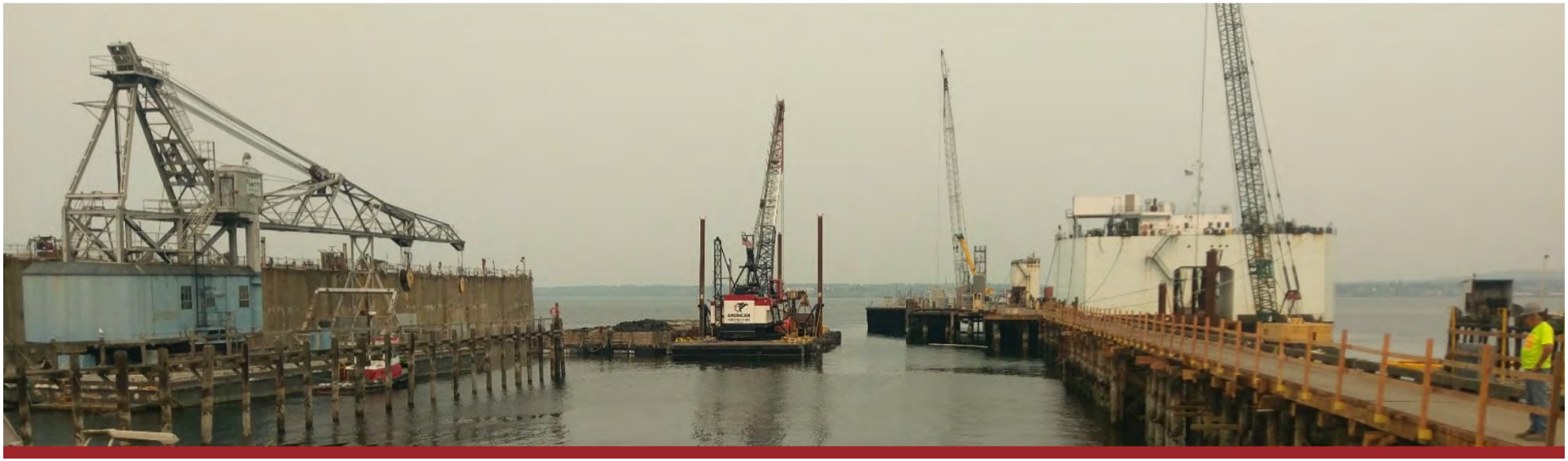
Interim Action

- Completed between May 2017 and November 2018
  - Excavated ~1,200 CY of contaminated soil
  - Dredged ~9,900 CY of contaminated subtidal and intertidal sediment
  - Demolished Carpenter Building and wooden portion of Harris Avenue Pier
  - Removed approximately 540 treated timber piles
  - Constructed new concrete pier with steel piling and installed new utilities

RI/FS Goals

- Identify and evaluate cleanup options that protect human health and the environment
- Identify the alternative that achieves cleanup goals to the maximum extent practicable
- Confirm the cost of the cleanup is not disproportionate to the benefit it provides
- Allow for shipyard operations to continue throughout design and construction of the cleanup



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Remedial Investigation Process

- By collecting samples and analyzing them in the lab, determine the types, concentration, and extents of chemicals in soil, groundwater and sediment
- Determine all the possible ways people, plants, and animals can be exposed to the chemicals
- Identify the Contaminants of Concern (COCs) and associated Cleanup Levels (CULS)
- Determine areas that require cleanup

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Contaminants of Concern

SOIL

- Metals
  - Arsenic
  - Copper
  - Zinc
- Total Petroleum Hydrocarbons
  - TPH

GROUNDWATER

- Metals
  - Arsenic
  - Copper
  - Zinc
- Total Petroleum Hydrocarbons
  - TPH
  - 1-Methylnaphthalene

SEDIMENT

- Metals
  - Arsenic
  - Cadmium
  - Copper
  - Zinc
- Semivolatile Organic Compounds
  - Fluoranthene
  - Pyrene
  - Polycyclic Aromatic Hydrocarbons
- Polychlorinated Biphenyls
  - Total PCBs

Exposure Pathways and Receptors

Protected Exposure Point:
- Human Inhalation

Groundwater

Sediment

Protected Exposure Point:
- Benthic Organisms
- Human Direct Contact
- Human Seafood Consumption
- Aquatic Life Seafood Consumption

Surface Water

Protected Exposure Point:
- Human Seafood Consumption
- Aquatic Life Direct Contact/Ingestion

Soil

Protected Exposure Point:
- Worker Direct Contact
- Ecological Species Direct Contact/Ingestion

Contaminant Transport Pathway →

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Extent of Contaminated Soil

- RIFS identified three Areas of Concern (AOCs) in soil
- AOCs are based on the contaminants present

AOC 2A:

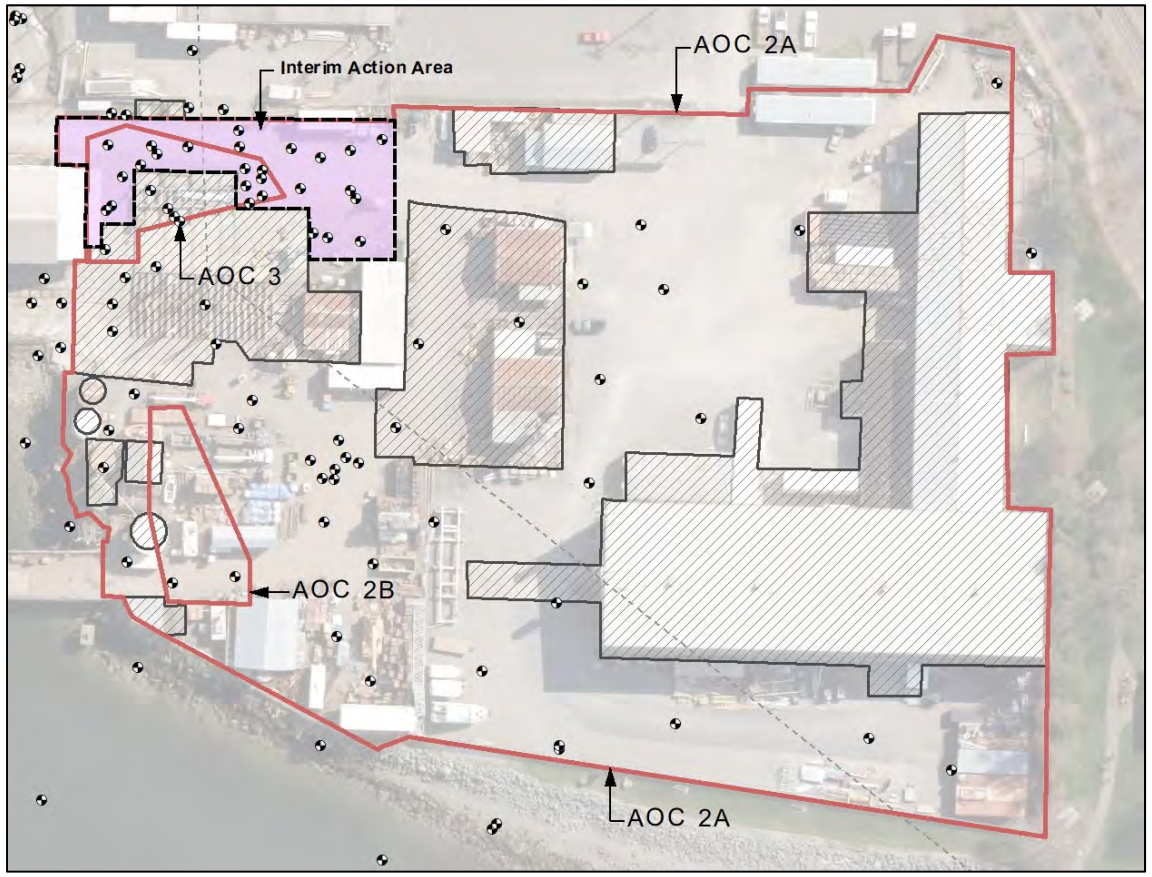
- Arsenic

AOC 2B:

- Arsenic
- Copper
- Zinc

AOC 3:

- Arsenic
- TPH



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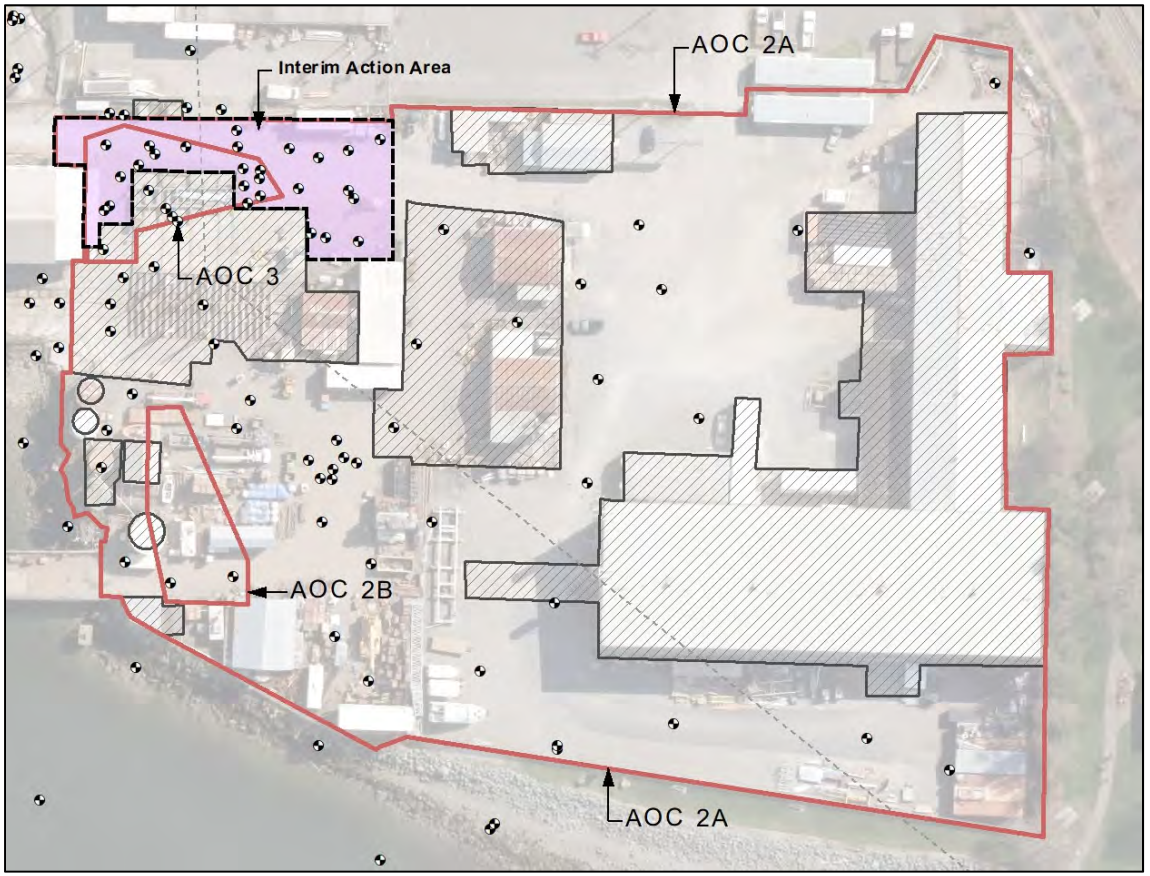
Extent of Contaminated Groundwater

- Groundwater compliance measured at the shoreline wells
  - Arsenic
  - Copper
  - Zinc
  - TPH
  - 1-Methylnaphthalene



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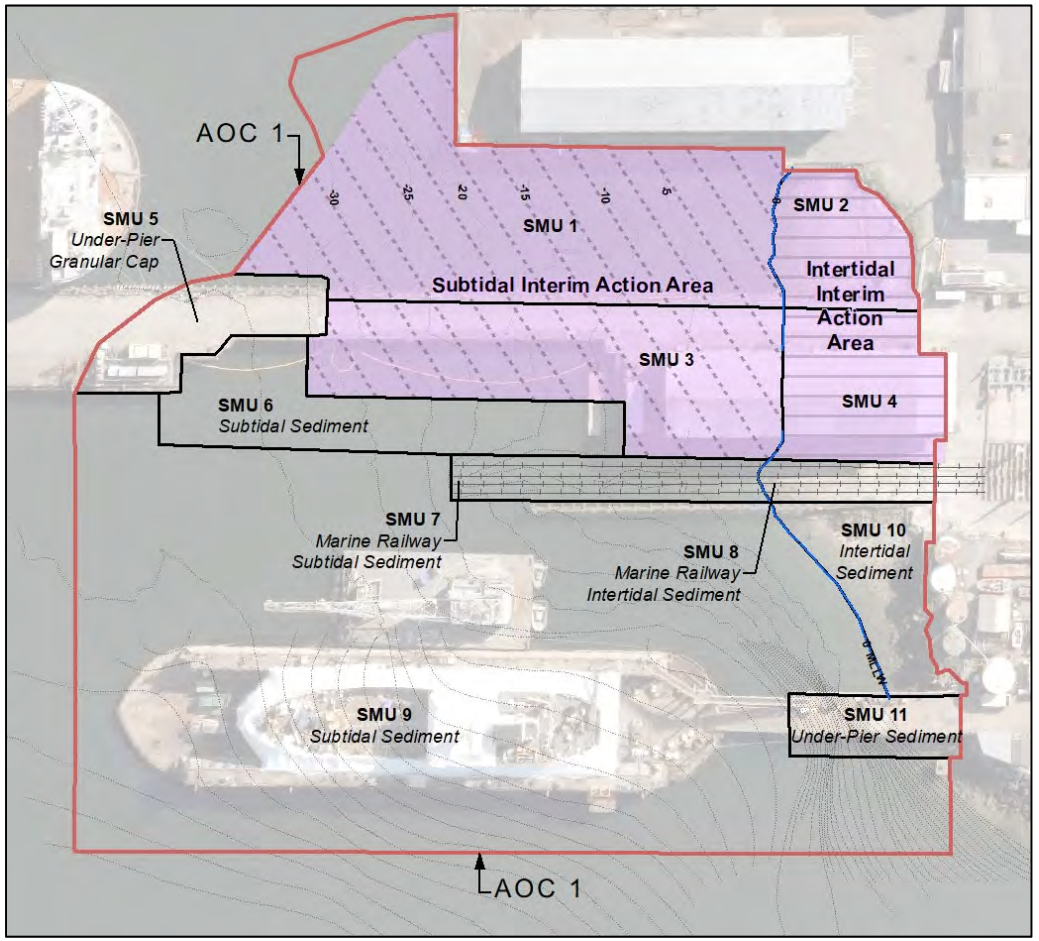
Extent of Contaminated Sediment

- Sediment area divided into 11 Sediment Management Units (SMUs)
- SMU delineation based on:
  - Extent of the Completed Interim Action
  - Intertidal vs. subtidal zones
  - Overwater structures and operational areas

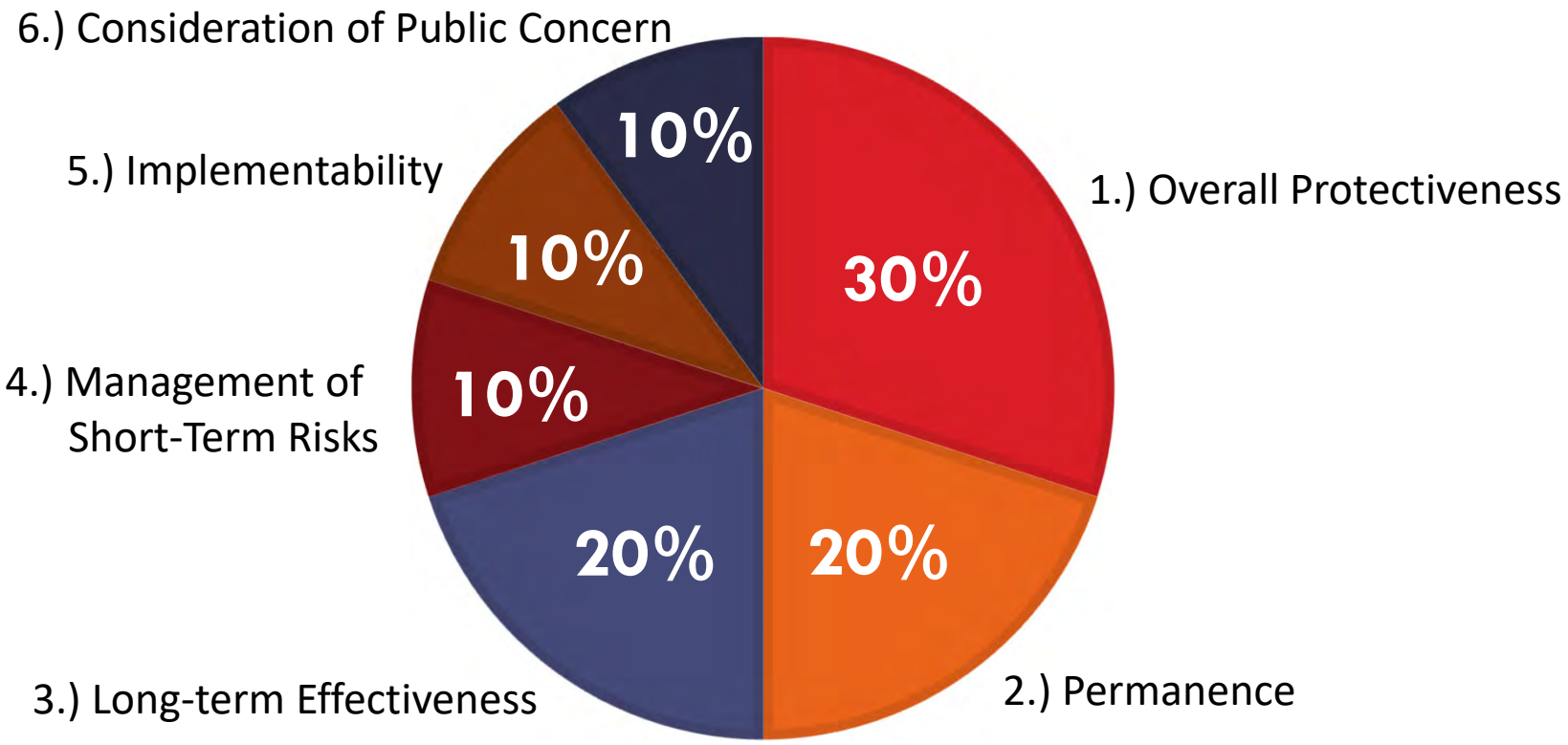


Feasibility Study Process

- Develop site-wide cleanup alternatives that comply with MTCA and SMS regulation.
- Determine the relative benefits for each alternative based on MTCA and SMS criteria.
- Estimate the cost to implement each alternative including construction, agency oversight, and long-term maintenance.
- Identify a preferred remedy that is the most practicable permanent solution.

Criteria for Disproportionate Cost Analysis

% = Criteria Weighting



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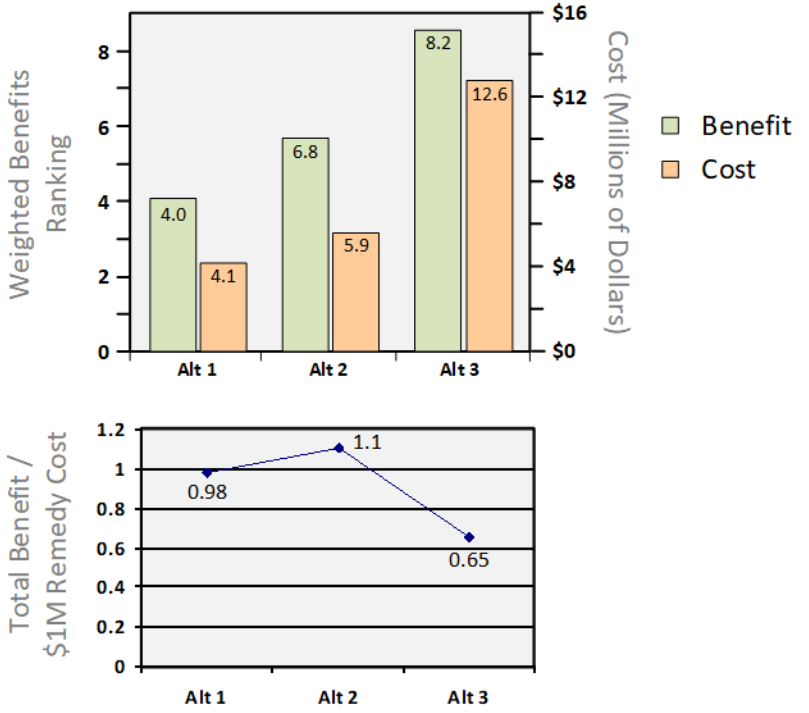
Upland Alternatives Evaluated

- Alternative 1: Containment—$4.1 million
  - Excavate 6 inches of contaminated soil across the site and replace with a gravel cap
  - Leave existing buildings and pavement in place as a cap

PREFERRED

- **Alternative 2: Partial Removal and Containment—$5.9 million**
  - **Excavate 2 feet of contaminated soil and place gravel cap or excavate 1 foot of contaminated soil and place asphalt cap (with stormwater collection)**
  - **Remove deeper contaminated soil in limited hot-spot areas**
  - **Leave existing buildings and pavement in place as a cap**

- Alternative 3: Full Removal—$12.6 million
  - Full removal of all contaminated soil (approx. 2–8 feet bgs) including demolition and rebuilding of all structures within the remediation area



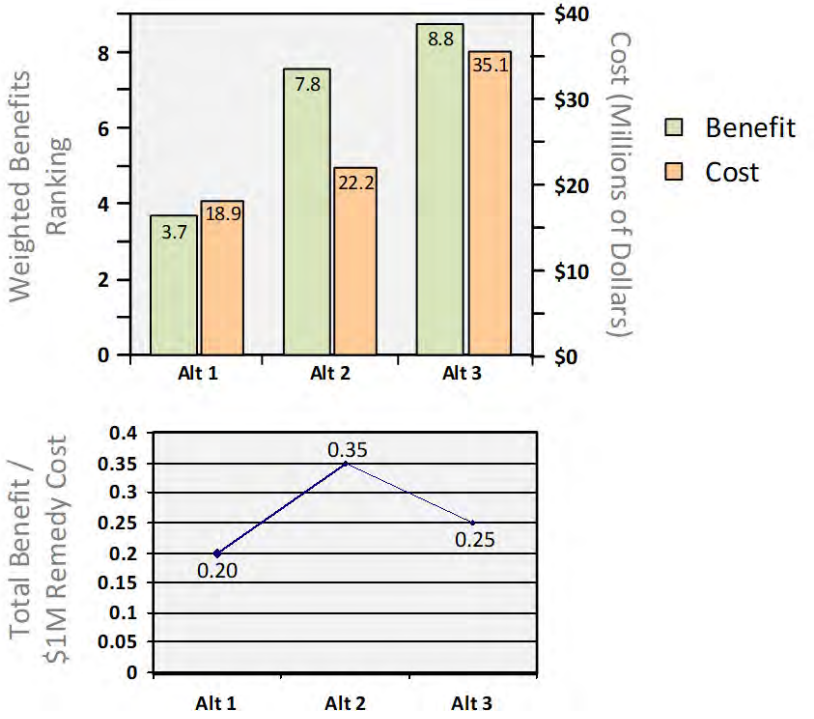
Sediment Alternatives Evaluated

- Alternative 1: Capping—$18.9 million
  - Place granular (sand) cap
  - Dredge as necessary in intertidal areas to maintain existing mudline

PREFERRED

- **Alternative 2: Dredging & Capping—$22.2 million**
  - **Dredge to cleanup levels in open water areas**
  - **If necessary, place a 6-inch layer of sand for Enhanced Natural Recovery**
  - **Place granular cap in SMUs with overwater/inwater structures**

- Alternative 3: Full Dredging—$35.1 million
  - Full removal of contaminated sediment including demolition and rebuilding of all structures within remediation area



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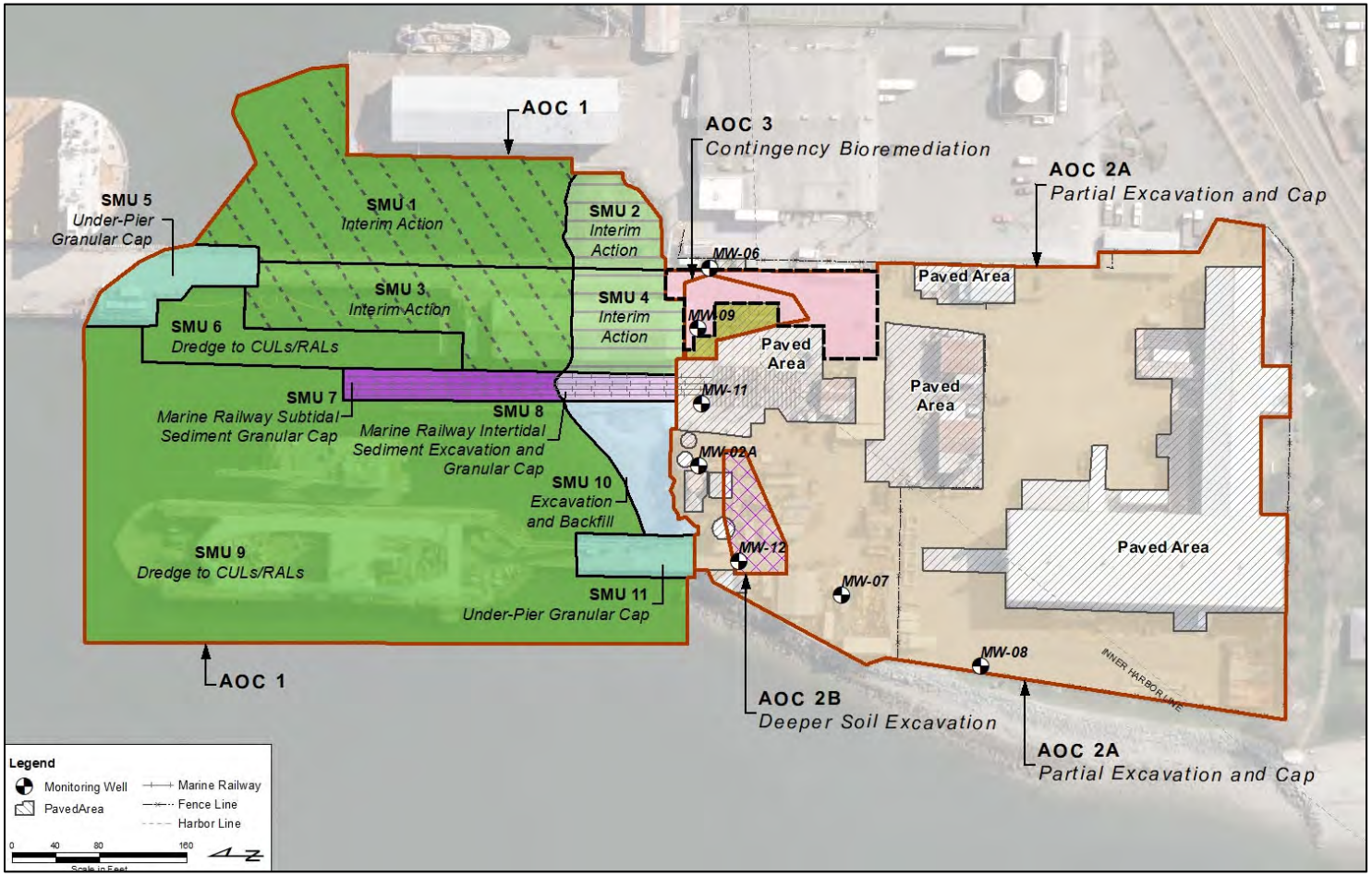
Preferred Alternative



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Next Steps

Timeframe	Task
Spring 2019	• Finalize RI/FS following public comment
Fall 2019–Spring 2020	• Prepare Cleanup Action Plan
2020	• Amend Agreed Order • Conduct Remedial Design Sampling
2021	• Prepare Engineering Design Report • Prepare Construction Documents • Acquire Permits
2022–2023	• Develop Consent Decree • Remedial Action Construction

Public Comment

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How to Comment

Comment Period: April 1 – 30, 2019

Go online: www.bit.ly/Ecology-HarrisAveShipyard-Comments
www.bit.ly/Ecology-HarrisAveShipyard

Use comment card on sign-in table

Mail to:

John Guenther, Site Manager
913 Squalicum Way, Unit 101
Bellingham, WA 98225

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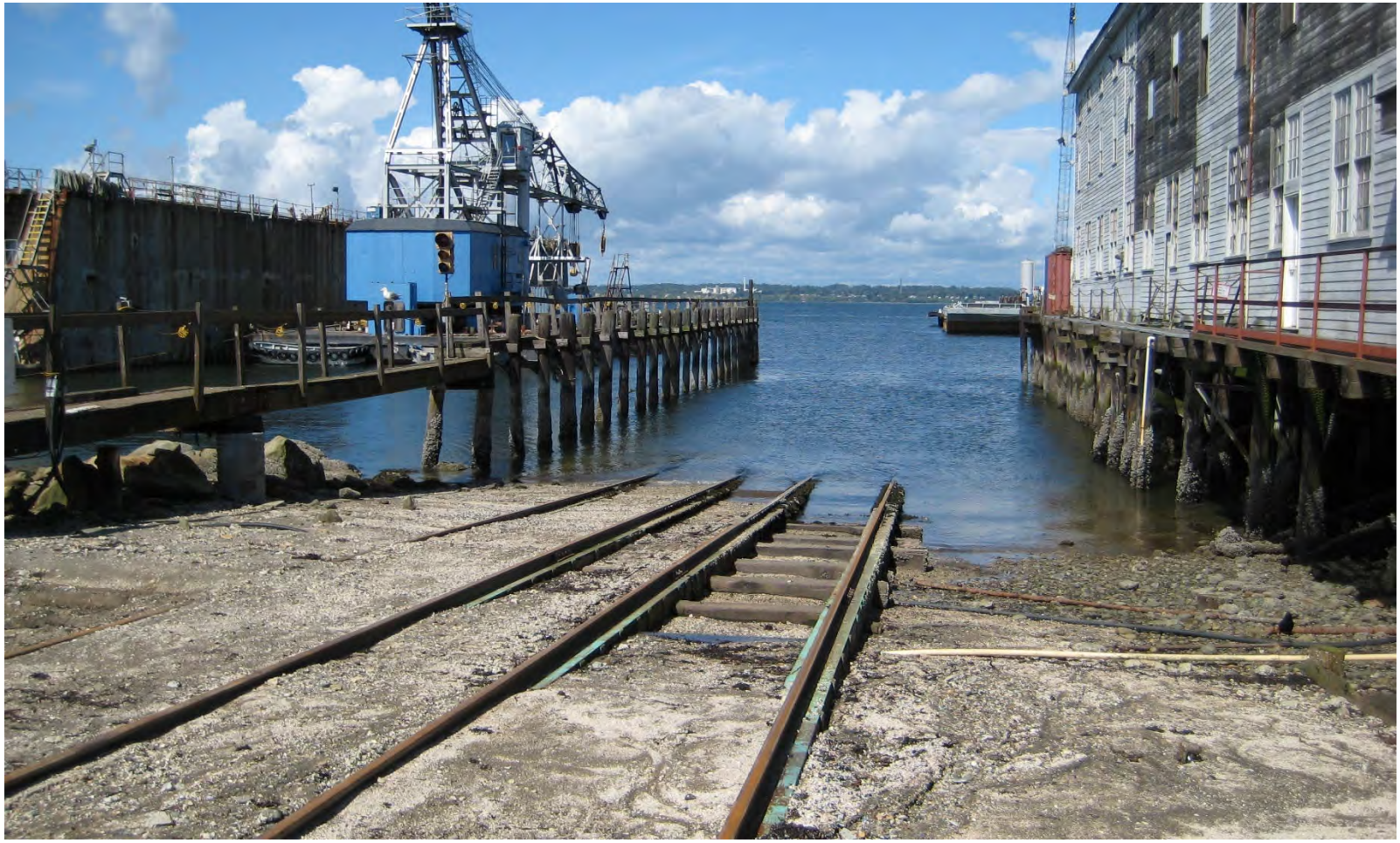

Questions?

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