Port Gardner
Regional Background
Sampling and Analysis Plan
Technical Workshop
March 12, 2013
Goals For Today

• Provide context for why we’re conducting sampling.

• Provide an overview of the SAP.

• Hear your feedback and issues you’ve identified.

• Discuss issues you’ve raised and your ideas for resolution.
Why is Ecology Determining Regional Background?

• **Sediment Management Standards Rule Provision:**
  • Adopted rule effective date: September 1, 2013.
  • WAC 173-204-505: Definition of regional background.
  • WAC 173-204-560(5): Criteria for establishing regional background.

• **Rule Advisory Group(s):** Members unanimously advised Ecology that it should be our responsibility to sample and establish Regional Background.
Regional Background: Establishing Cleanup Levels

**Cleanup Screening Level**

*Highest of:*

**Sediment Cleanup Level:**
Adjusted upwards from Sediment Cleanup Objective based on technical possibility & net adverse environmental impacts

**Sediment Cleanup Objective**

*Highest of:*

**Risk based criteria**

*Lowest of:*

- PQL

**Regional Background**

**Risk based criteria**

*Lowest of:*

- Natural Background
- PQL

**Benthic Cleanup Screening Level**

- Human Health Risk $10^{-5}$
- Ecological Risk Narrative
- ARARs

**Benthic Sediment Cleanup Objective**

- Human Health Risk $10^{-6}$
- Ecological Risk Narrative
- ARARs
How Regional Background fits with long term goals

**Cleanup Screening Level**

- 10^-5 Risk Based Concentration
- Highest of:
  - Regional Background
  - Practical Quantitation Limit

**Sediment Cleanup Objective**

- 10^-6 Risk Based Concentration
- Highest of:
  - Natural Background
  - Practical Quantitation Limit

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**Near - Term: Under the Cleanup Program Sediment Concentrations Significantly Reduced To Cleanup Levels**

**Long - Term: Baywide Sediment Concentrations Reduced to Sediment Cleanup Objective by:**

- Agency Wide Cleanup, Source Control, and Toxics Reduction Strategy Efforts

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**Site – Specific Sediment Cleanup Level**

- Adjusted upwards from the Sediment Cleanup Objective based on:
  1) Technical Possibility
  2) Net Adverse Environmental Impact

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**Existing Sediment Concentrations**

**TIME**

**SEDIMENT CHEMICAL CONCENTRATIONS**

- Near – Term (Within 10 years)
- Long – Term (Over several decades)
What was the process of SAP development?

- Finalized definition of Regional Background in rule.
  - Incorporated feedback from rule advisory groups and public comments received on the proposed rule.

- Researched approaches for determining sampling stations.

- Identified sources and potential sources of contamination in the bay.

- Determined appropriate buffer between sources and sampling locations.
How Were Sources Identified?

- Used historical data to identify sources.
  - Cleanup site data.
  - Baywide sediment investigation data.

- Used best professional judgment to identify potential sources of contamination in the bay:
  - Stormwater outfalls.
  - Highly urbanized areas draining to the bay.
Existing Sediment Chemistry Data

Figure 2. Existing Sediment Chemistry Data in Port Gardner Bay
Figure 3. Proposed Baseline Sediment Sampling Locations in Port Gardner Bay
Proposed Secondary Sampling Locations
Process for Determining Sampling Locations

• Boundaries for the Background Area of Interest (AOI) were established to exclude:
  • Areas adjacent to known or suspected source areas
  • Shallow areas (above -6ft MLLW).
  • Natural background (Saratoga Passage).
• Within the AOI, used a spatially balanced random sampling design:
  • GIS algorithm was used to evenly distribute samples across the site (avoid sample clusters).
  • Minimum separation of 500m between samples for spatial independence.
Sample Sizes

• Baseline Sample Size (n=25)
  • Minimum sample size for describing distributional characteristics (shape, mean, variance)

• Secondary Archived Samples (up to 20)
  • All samples tested for Mercury (short holding times)
  • Number of archived samples tested for other analytes based on a target precision of the mean
    • Precision of the mean estimate improves with sample size
    • Target precision: 95UCL within 25% of the mean
    • Determined separately for each analyte
Regional Background Timeline & Next Steps

**February - March 2013**
- Stakeholder and Tribal Review of Draft SAP
- SAP Technical Workshop
- Update Draft SAP based on feedback

**March – July 2013**
- Finalize SAP
- Field Sampling
- Data Analysis
- Draft Data Report

**Early Fall 2013**
- Stakeholder and Tribal Review of Draft Data Report & Technical Workshop

**Late Fall / Early Winter 2013**
- Finalize Data Report
- Ecology Determines Regional Background

Timeline:
- **February - March 2013**: Stakeholder and Tribal Review of Draft SAP
- **March – July 2013**: Finalize SAP, Field Sampling, Data Analysis, Draft Data Report
- **Early Fall 2013**: Stakeholder and Tribal Review of Draft Data Report & Technical Workshop
- **Late Fall / Early Winter 2013**: Finalize Data Report, Ecology Determines Regional Background
Next steps – Data Report Specifics

- Data Report Technical Workshop:
  - How would you like to be involved?

- Statistics and Calculating Values:
  - Feedback from you on suggested statistics.

- Data:
  - QA/QC issues
  - Practical quantitation limits
  - Method detection limits
Next steps – Context for Rule and Guidance

- Rule effective date September 1, 2013.
- Future Regional Background sampling:
  - Port Angeles: Field sampling scheduled for June 2013.
  - Elliott Bay/Lower Duwamish: Draft SAP for stakeholder review Late Summer 2013.
- Finalize guidance:
  - Considering a public comment period Summer 2013.
  - Finalize guidance Winter 2013.
  - Regional Background sampling as case studies in guidance.
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