SMARM

Sediment Policy Updates
Toxics Cleanup Program

Chance Asher

May 7, 2014

Goals For Today
Provide Updates on:

- Sediment Cleanup Users Manual II (SCUM II)
  - Public comments – what we've heard so far
  - Technical workshops.
  - Finalization of document.
- Regional Background Implementation.
  - Port Gardner
  - Port Angeles
  - Lower Duwamish Waterway

Revised Sediment Cleanup Users Manual II:

Guidance for Implementing **<u>Part V</u>**

"Sediment Cleanup Standards" of the SMS

Acknowledgements

- Laura Inouye, Ecology
- Russ McMillan, Ecology
- Dave Bradley, Ecology
- Pete Adolphson, Ecology
- Pete Kmet, Ecology
- Craig McCormack, Ecology
- Teresa Michelsen, Avocet Consulting
- Chris Waldron, Pioneer
- Lorraine Read, TerraStat Consulting
- Mike Ehlebracht & Roger McGinnis, Hart Crowser
- Taku Fuji, Anchor QEA
- Lon Kissinger, EPA
- Sediment Management Standards Advisory Group Members

A Tale of Two SCUMs

- **SCUM I**
  - Source Control Users Manual.
  - Published in 1993.
  - In need of updating.

- **SCUM II**
  - Sediment Cleanup Users Manual.
  - Published in 1991.
  - 2013 revised version includes:
    - Process of sediment cleanup from “start” to “finish”.
    - Focused mainly on implementation of Part V of the 2013 SMS rule.
    - Includes the information in the Sediment Sampling and Analysis Plan (SAPA).
    - The SAPA will become obsolete once SCUM II is final.

Draft SCUM II – Summary of Content

- Incorporated newer science, reorganized to follow the cleanup process from site identification to compliance monitoring, and reflects the 2013 SMS rule revisions.
- **Chapter 1**: SMS rule framework & guidance document organization.
- **Chapter 2**: Site identification of sites, screening CoCs, development of a conceptual site model.
- **Chapter 3**: Remedial investigation, sampling guidance.
- **Chapters 4 - 6**: Updated tests, lab analysis and QA/QC procedures, data analysis and reporting.

Draft SCUM II – Summary of Content

- **Chapter 7**: Cleanup standards framework
  - **Chapter 8**: Benthic criteria.
  - **Chapter 9**: Human health criteria.
  - **Chapter 10**: Higher trophic level criteria.
  - **Chapter 11**: Natural and regional background.
  - **Chapter 12**: Practical quantitation limits.
- **Chapter 13**: Sediment cleanup units.
- **Chapter 14**: Feasibility study & remedy selection:
- **Chapter 15**: Sediment recovery zones.
- **Chapter 16**: Compliance monitoring.
- **Chapter 17**: Applicable laws and authorizations required.

Appendices

- **Appendix A** Ecology Contact List
- **Appendix B** Sediment Management Annual Review Meeting (SMARM) papers
- **Appendix C** Marine Microtox Sediment Porewater Toxicity Assessment
- **Appendix D** Freshwater Microtox Sediment Porewater Toxicity Assessment
- **Appendix E** Conducting Bioassays on Sediments w/ PAHs Exposed to UV Radiation
- **Appendix F** Analytical Methods PQLs for Sediment and Tissue
- **Appendix G** Statistics for Addressing Non Detects and Evaluating Compliance
- **Appendix H** Human Health and Ecological Risk Information
- **Appendix I** Remedy Selection Case Studies
- **Appendix J** Determining Toxicity of Natural Chemicals
- **Appendix K** Elutriate Testing
- **Appendix L** Natural Background Data
- **Appendix M** Summing TEQs using Kaplan Meier and ProUCL

Public Comments – Big Picture Topics

- **Remedial Investigation:**
  - Sufficiency of data
  - How to screen CoCs

- **Statistics:**
  - Metric for establishing natural and regional background concentrations.
  - Determining compliance – metric and process:
    - Area weighted averaging
    - 95th UCL on the mean

- **Recontamination:**
  - How to settle with PLP for recontamination
  - How to address non PLP sources responsible for recontamination

Public Comments – Big Picture Topics

- **Bioavailability:**
  - Use of tissue data to:
    - Determine cleanup levels
    - Determine compliance with cleanup levels
  - Incorporate into assessment for selecting the preferred remedy

- **Remedy Selection:**
  - Alternative ideas for conducting the disproportionate cost analysis.
  - More emphasis on remedial technologies "preference" based on:
    - Bioavailability: bioaccumulation vs. acute/chronic benthic impact
    - Adverse environmental impacts from dredging

- **Sediment Recovery Zones:** How and what to monitor

Public Comments – Big Picture Topics

- **Human Health:**
  - Exposure parameters:
    - Fish consumption rate – more detail on how to establish
    - Site use factor – how this can or should be incorporated
    - Fish diet fraction – inclusion of salmon or other pelagic fish

- **QA / QC:**
  - Laboratory methods for bioaccumulative chemicals
  - Use of non approved methods

- **Regional Background:**
  - Conservative framework results in values below recontamination potential

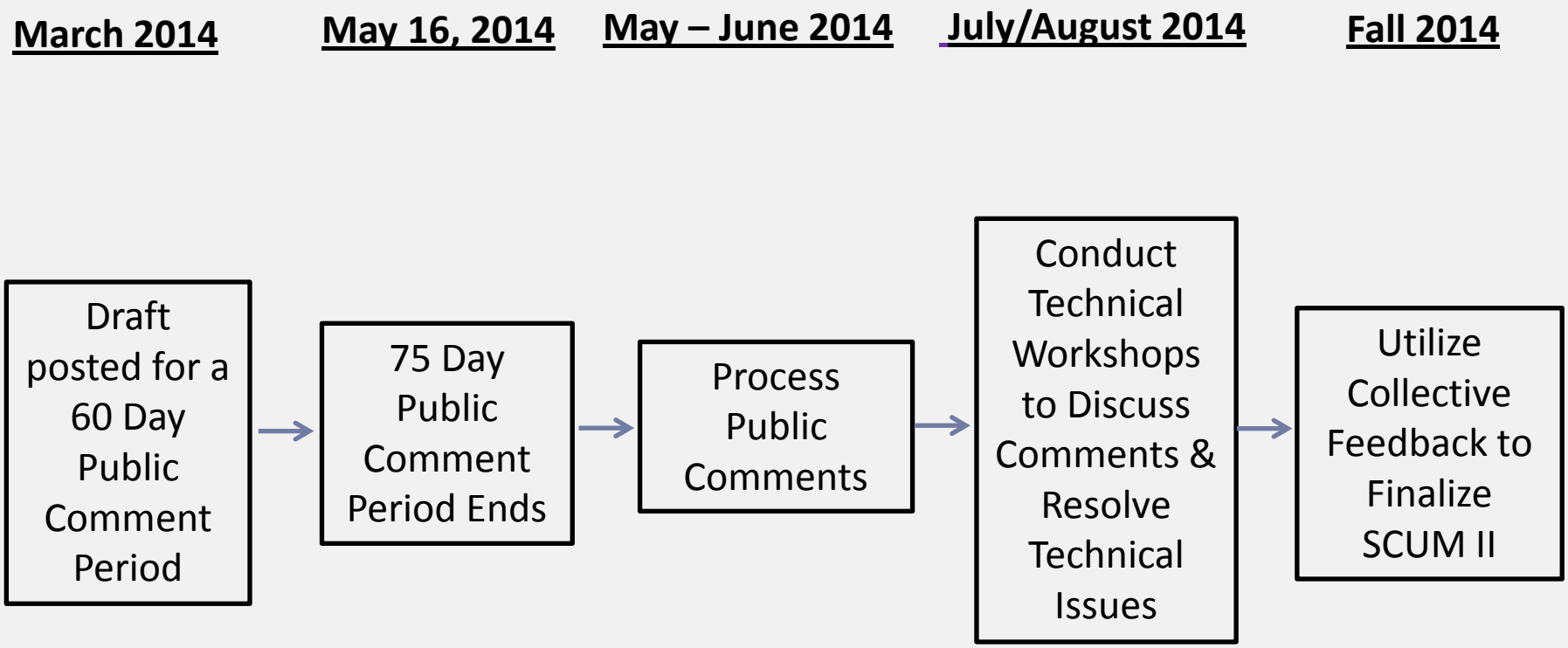
SCUM II Technical Workshops

- **Purpose.** Provide an opportunity for Ecology to collaboratively work with people to resolve key issues to finalize SCUM II.

- **Logistics:** Workshops will be held at the Ecology Bellevue Office from 9 AM – 1 PM.

July 17, 2014	July 31, 2014	August 6, 2014
Screening CoCs	Remedial Investigations	Establishing Cleanup Levels
Natural/Regional Background	Human/Ecological Health Risk Assessments	Remedy Selection
Compliance Monitoring	Bioavailability	Sediment Recovery Zones

SCUM II Timeline & Next Steps



SCUM II – Future Opportunities for Revisions

- SCUM II is intended to be a “living” guidance document.
- Regular and focused revisions will be made through SMARM to:
  - Reflect newer science as appropriate
  - Correct errors as they are discovered
  - Update policy
  - Incorporate lessons learned from experience as the SMS rule and SCUM II are implemented

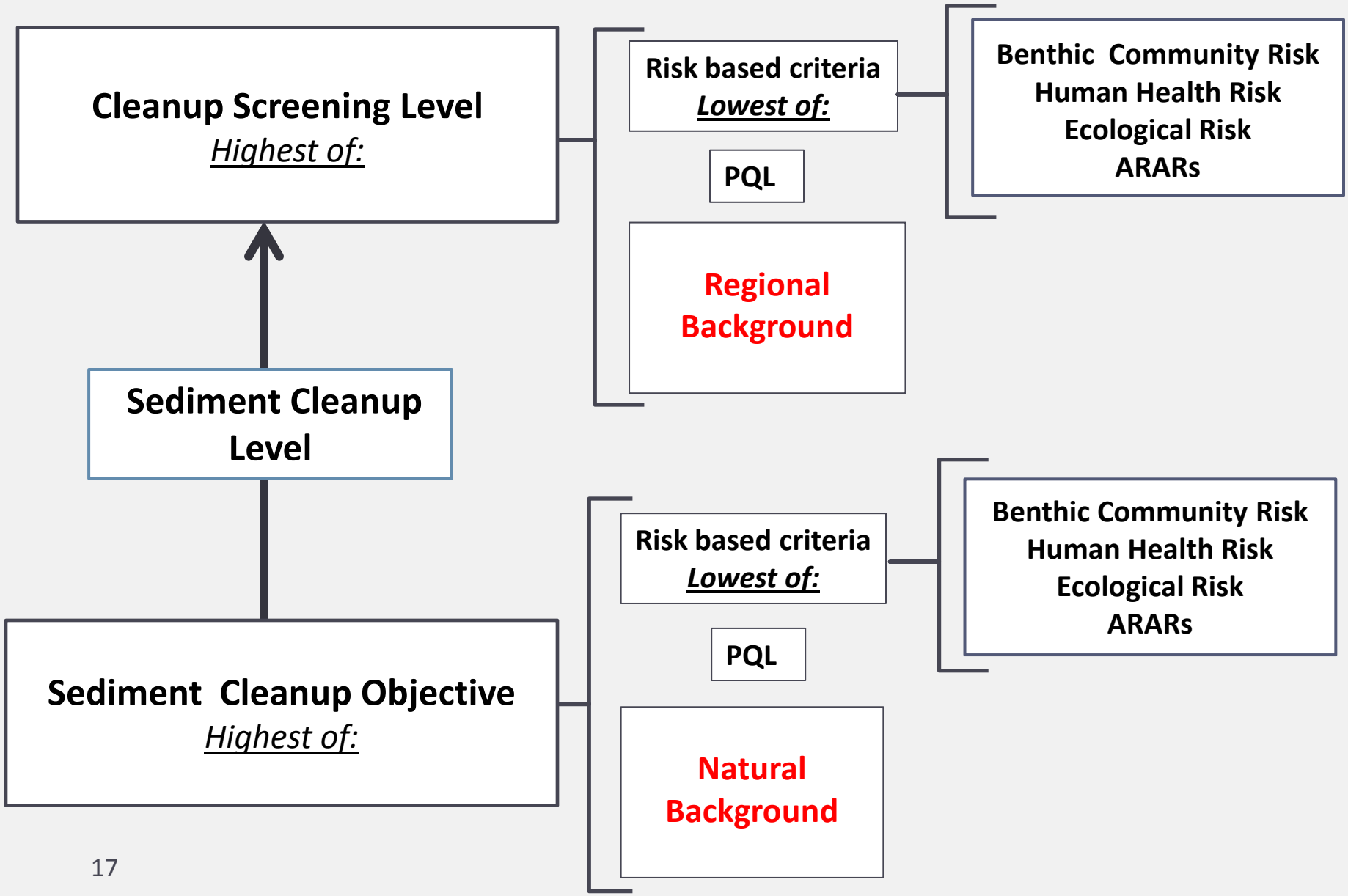
Now for something

completely different……

Regional Background Updates

- Briefly describe the regional background concept.
- Provide context for how and why we're conducting supplemental sampling for Port Gardner based on feedback received.
- Communicate next steps and our timeline for:
  - Completing the Port Gardner regional background work.
  - Completing the Port Angeles data report.
  - Completing the initial development of the LDW SAP.

Background & SMS rule - Establishing Cleanup Levels



Intent of Regional Background

- To address the reality of ubiquitous contaminants continuously entering the environment .
- To provide a technically implementable structure to meet and maintain cleanup standards given the potential for recontamination from diffuse and uncontrollable sources.
- Can include some influence from definable sources such as piped stormwater, but not the direct influence (that is, the primary contributor).

Regional Background - What it is NOT

- Not primarily influenced by definable sources (e.g. a cleanup site).
- Not defined by "recontamination potential" that is primarily from definable sources (e.g. a stormwater discharge from a pipe).
- Cannot solely sample within an area of relatively elevated concentrations due to the direct impact of a definable source. For example:
  - Within the depositional zone of an outfall, if a clear depositional zone exists.
  - Within an established cleanup site (that hasn't been cleaned up).
- Not natural background – if there's a statistically significant difference between regional and natural background.

Ecology's Regional Background Engagement Process

Port Gardner:

- 2013 Draft SAP reviewed by stakeholders/tribes & discussed at a workshop.
- 2013 data package (data and summary statistics) reviewed by stakeholders.

Port Angeles:

- 2013 Draft SAP reviewed by public & discussed at public meetings.
- 2013 data made available to public.

Elliott Bay / Lower Duwamish Waterway:

- September 2013: Technical workshop to discuss establishing regional background and SAP sampling design options due to feedback received for Port Gardner and Port Angeles work.

How Ecology Considered Comments

- We considered the collective comments received over the past year on our regional background approaches and decided to re-focus our efforts on **Port Gardner Bay**.

- We analyzed the usefulness and technical feasibility of:

  - Developing a conceptual bay model to guide a more appropriate selection of sampling stations representative of regional background.

  - Conducting alternate types of sampling (sediment traps).

  - Using bay-specific data to define the appropriate distance from the shoreline and historic, current, and potential sources.

Why Did We Conduct Supplemental Sampling?

- Port Gardner is essentially our “pilot” embayment – it was our first attempt at establishing regional background.
- Your comments and feedback were very helpful. We realized there was room for improvement with this work.
- You helped us rethink the sampling framework and design as well as the intent and SMS rule definition of regional background.
- We want to get this right to see how the lessons learned can be applied to future regional background work.
- This can be the starting template for future work, with the acknowledgement that bay or area specific flexibility is necessary.

Changes to the Port Gardner Supplemental SAP

- Development of a Conceptual Bay Model to guide the appropriate selection of sampling stations which include: Hydrology, bathymetry, known sites and sources, use of all existing chemistry data and other existing information such as modeling.
- Analyzed all historical data, total organic carbon and grain size distributions to:
  - Exclude areas from sampling.
  - Determine distance from shoreline for sampling locations.
  - Identify potential sources and direct areas of influence.

These Changes Resulted In:

- Refined sampling area by adding nearshore areas potentially influenced by diffuse urban sources but excluding areas primarily influenced by sites or sources.

- Exclusion of approximately ½ of the original 2013 sampling area (Phase I) to avoid sampling in areas primarily influenced by natural background sources as opposed to the urban environment.

- Combined the remaining Phase I sampling area with the new Phase II sampling area in a statistically appropriate manner.

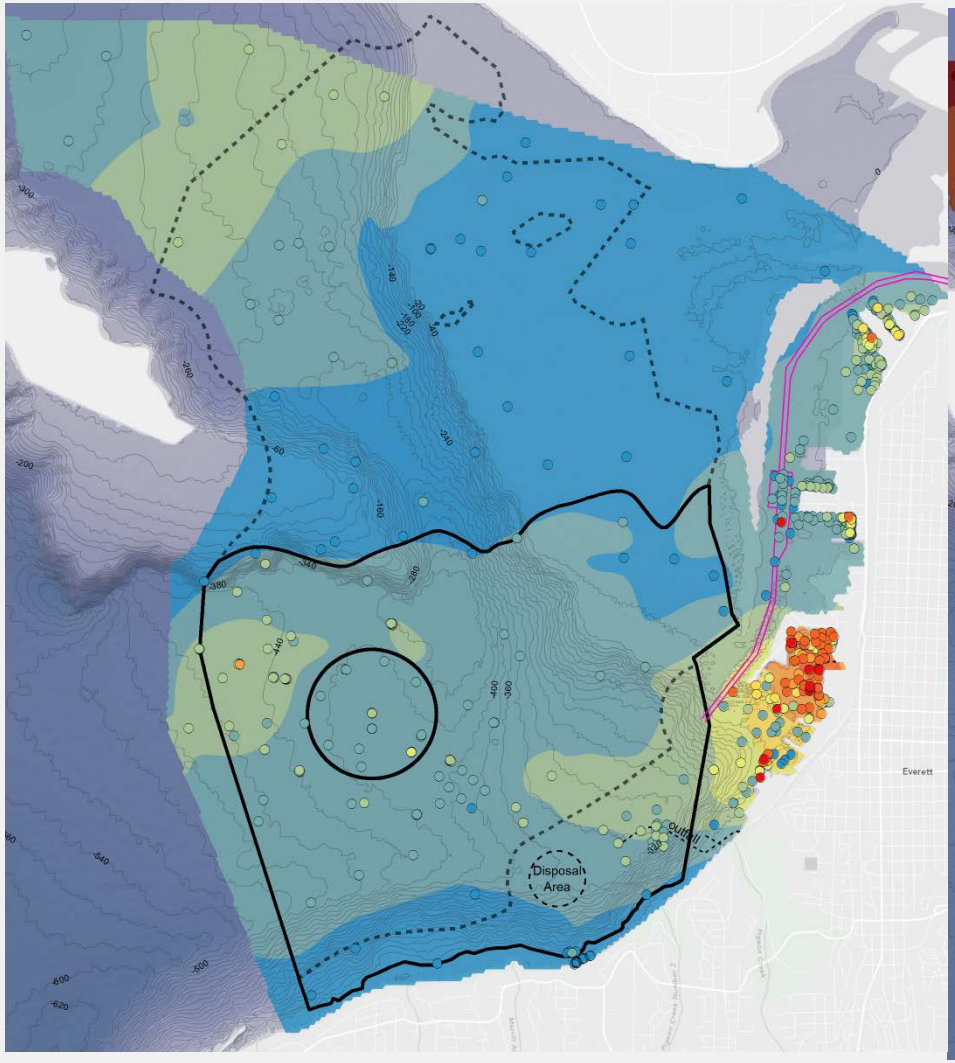
Conceptual Bay Model
Evaluation of Sources, Sites, and Areas of Influence

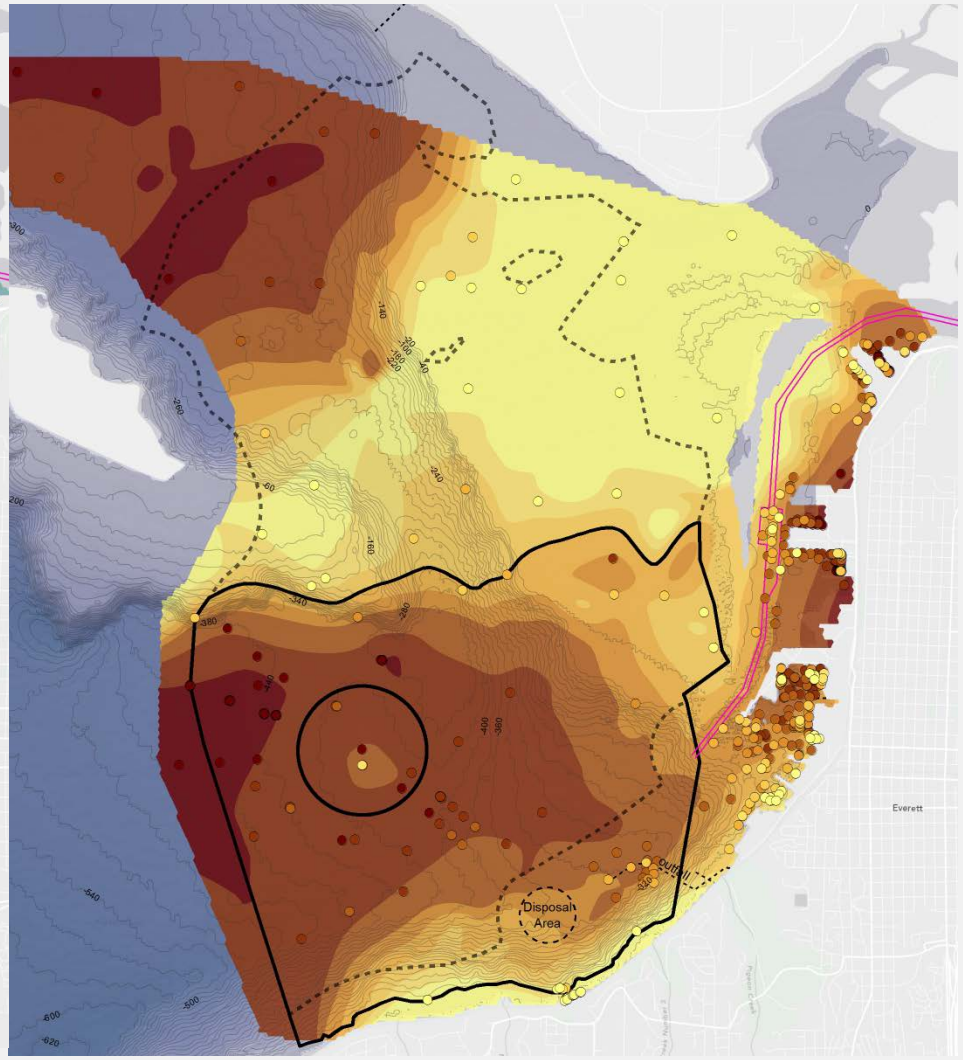
- Ecology is currently focusing on cleaning up ten identified contaminated sites. The influence of these sites was considered.
- Three additional areas of potential influence were further evaluated:
  - Deep water diffuser outfall southwest of Weyerhaeuser Mill A.
  - Historical disposal area (1954 – 1966) - had not been used.
  - Dredged Material Management disposal site - currently active.

% Total Organic Carbon & Grain Size Distributions

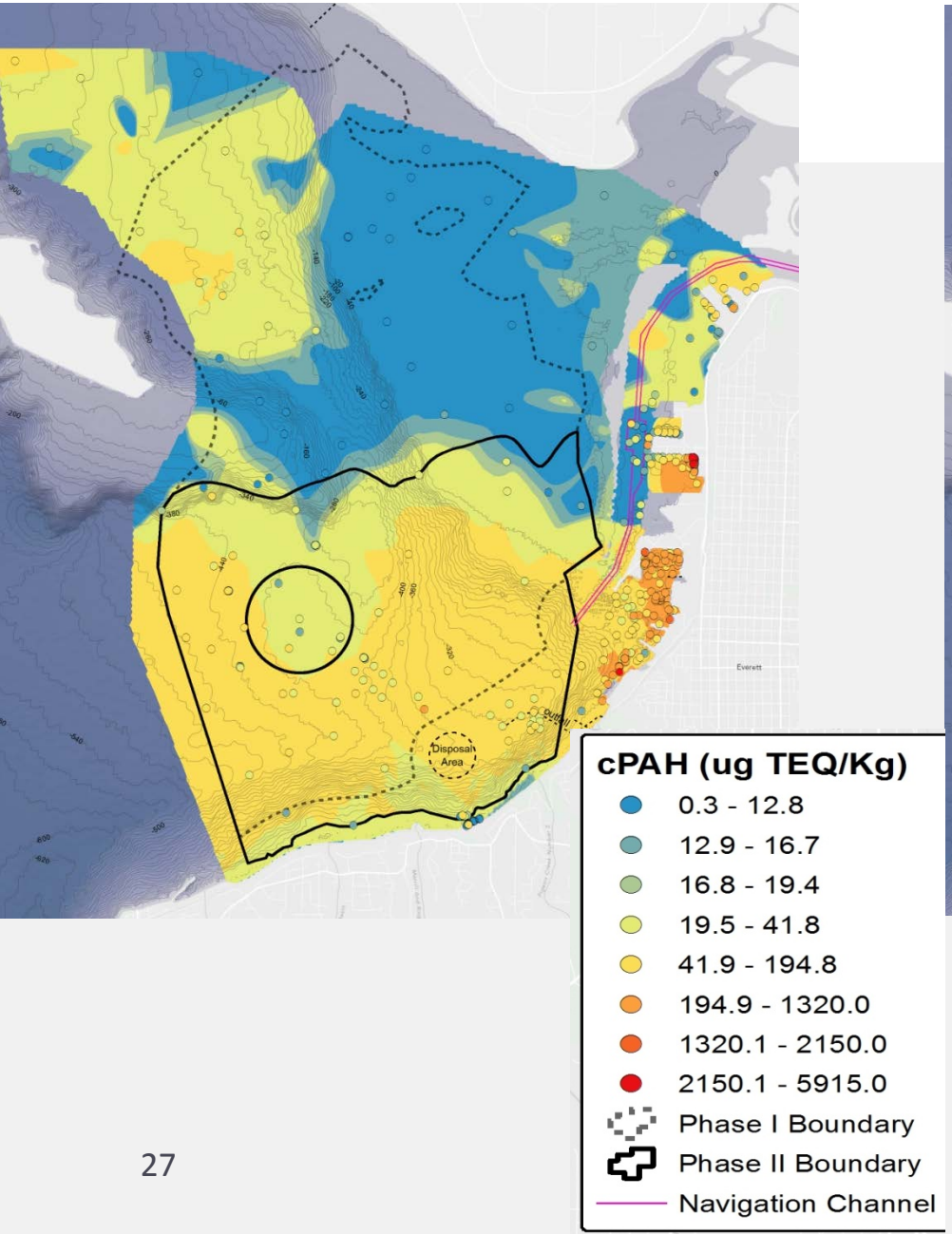
Sampling area guided by < 30% fines and < 1% TOC contours (solid line)

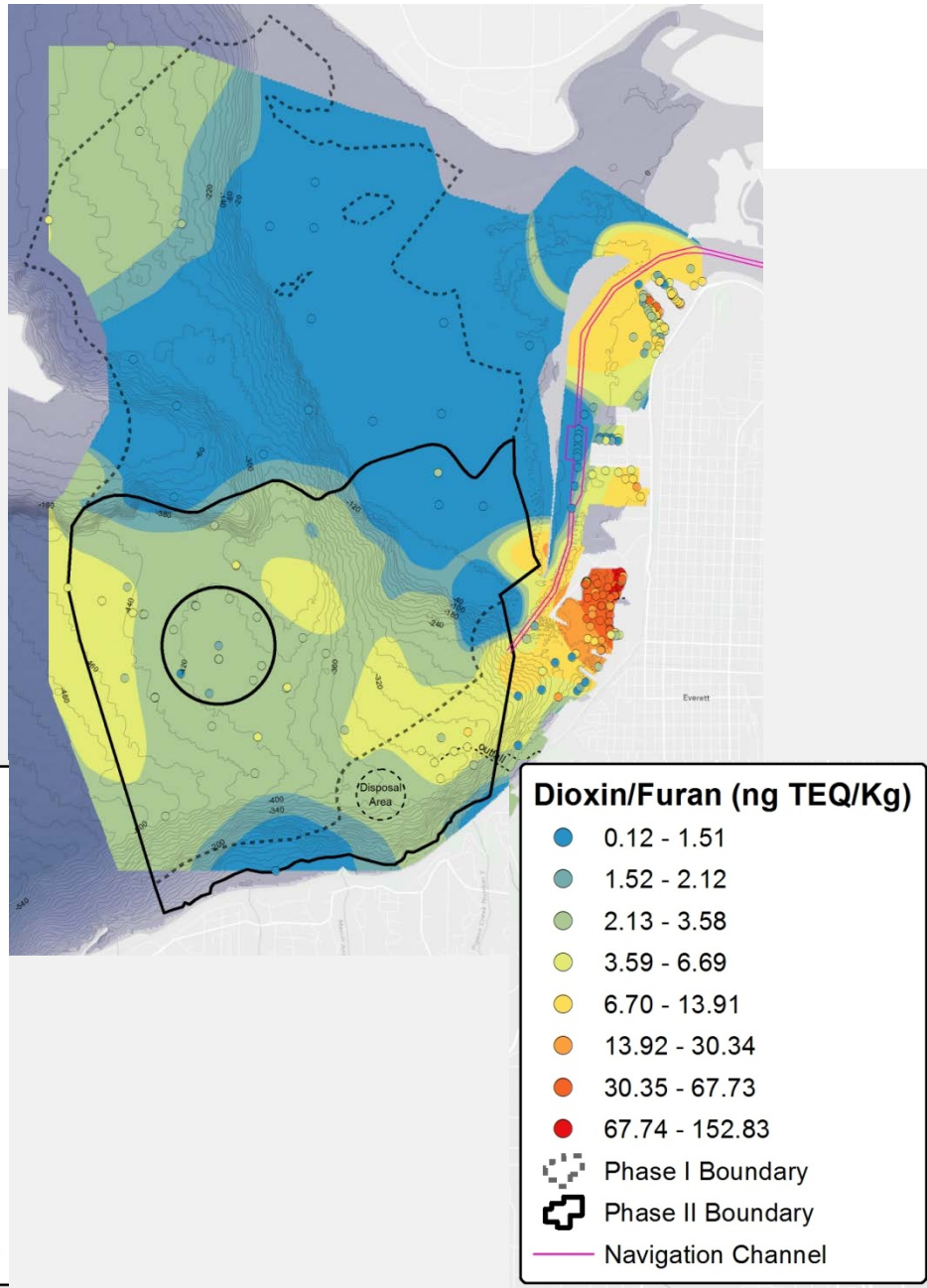
Original sampling area (dotted line)



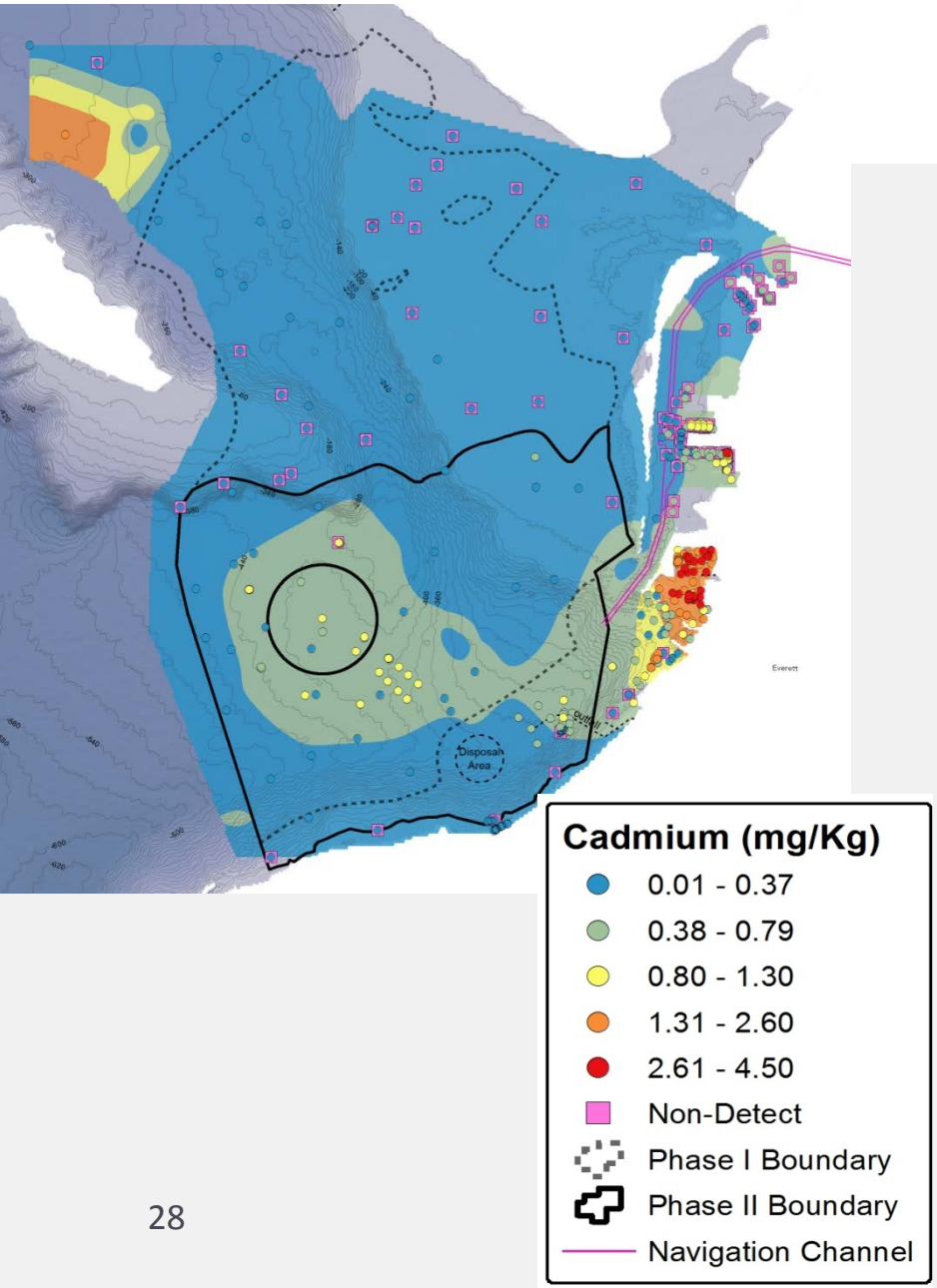


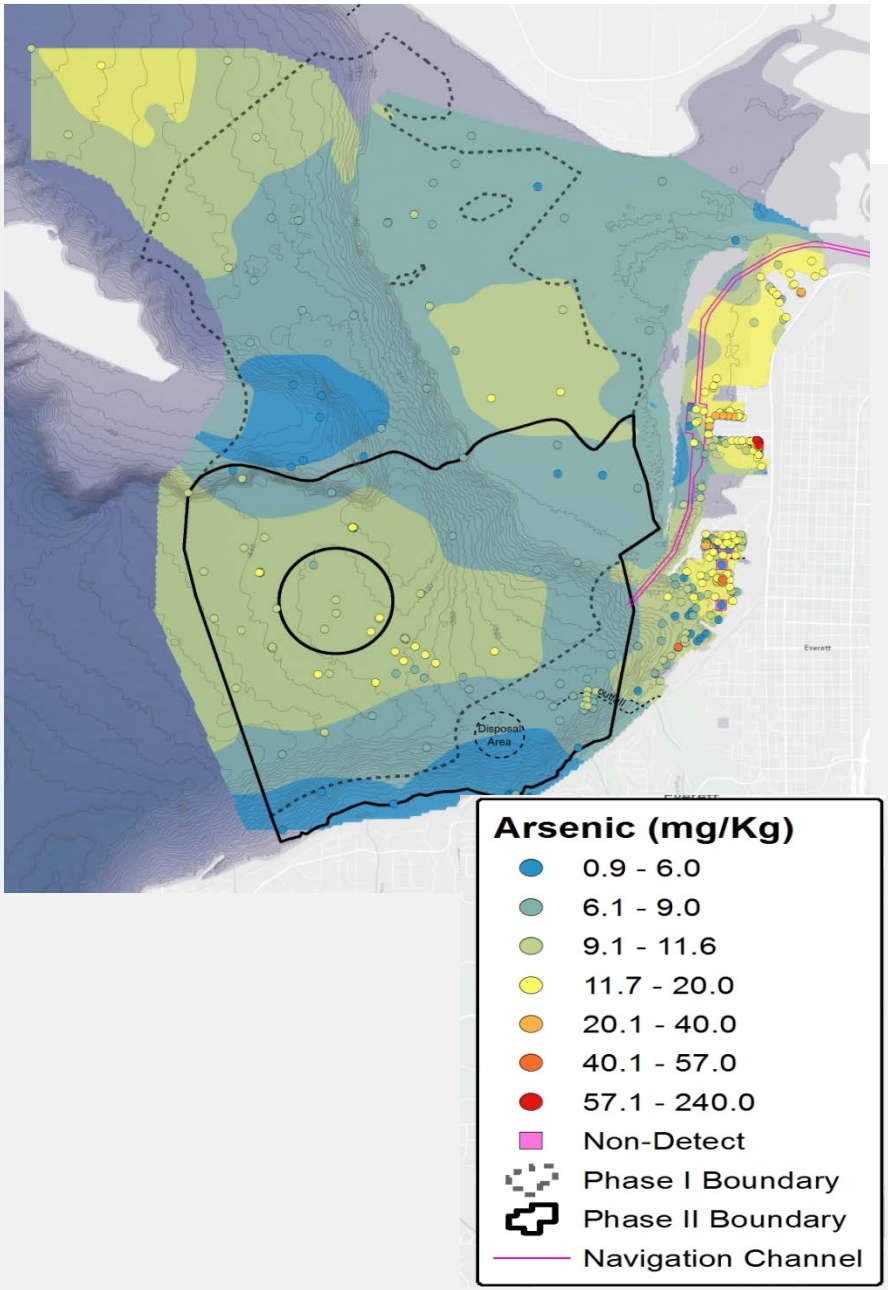
Existing Sediment Concentrations: cPAHs & Dioxins/Furans



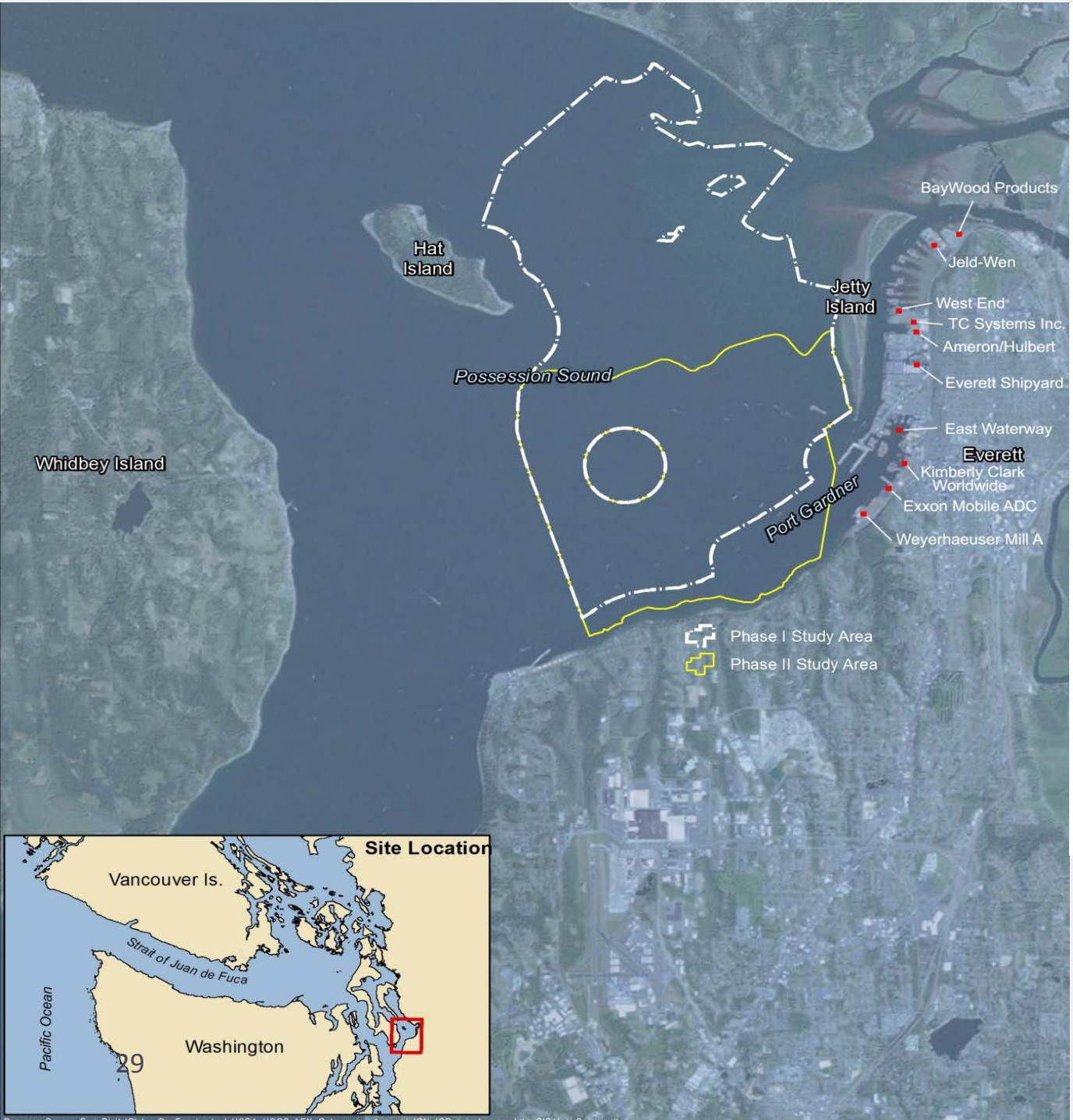


Existing Sediment Concentrations: Cadmium & Arsenic



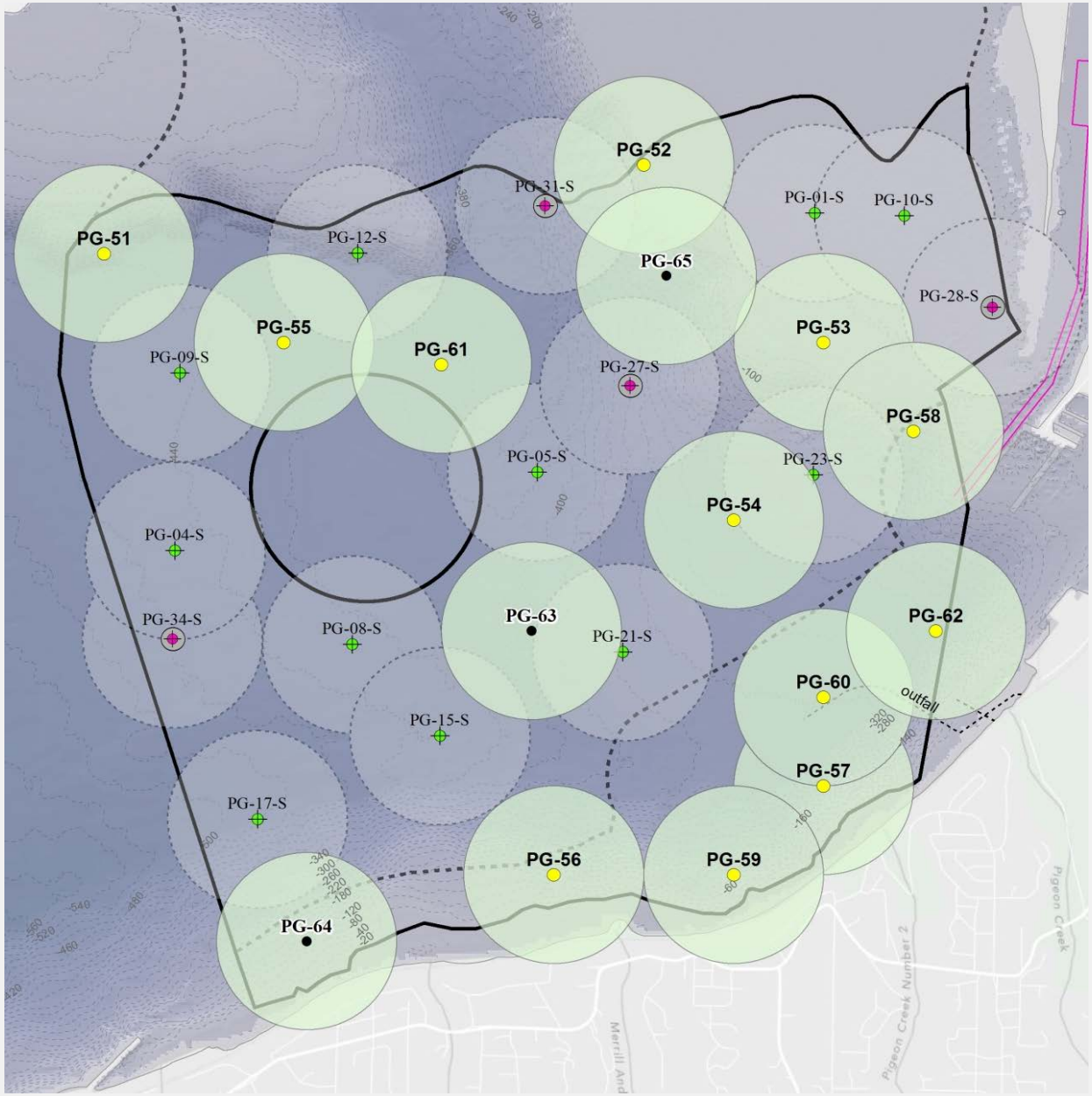


Port Gardner Revised Sampling Area



Original Study Area (White Dotted Line)

Revised Study Area (Yellow Solid Line)



Phase II Baseline & Secondary Sampling Locations

Phase II:
12 Baseline Samples
3 Secondary Samples

Phase I:
15 original samples

Regional Background/SCUM II Timeline

Spring 2014 | **Summer 2014** | **Fall / Winter2014**

Port Gardner: Supplemental SAP& Field Sampling → Draft Data Report Public Review & Conduct Technical Workshops to Discuss Comments → Finalize Data Report

Port Angeles: Draft Data Report Public Review & Public Meetings to Discuss Comments → Finalize Data Report

Lower Duwamish:

- **2014 -** Continue stakeholder engagement to plan and inform development of the SAP.
- **2015 -** Begin SAP development – completion dependent on Green River studies results and complexity of the SAP.

Ongoing in 2015 →

Draft SCUM II Public Comment Period → SCUM II Technical Workshops to Discuss & Resolve Comments → Finalize SCUM II