



Port Angeles Harbor Sediments Investigation

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Ecology Staff

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- Meg Bommarito – Public Involvement
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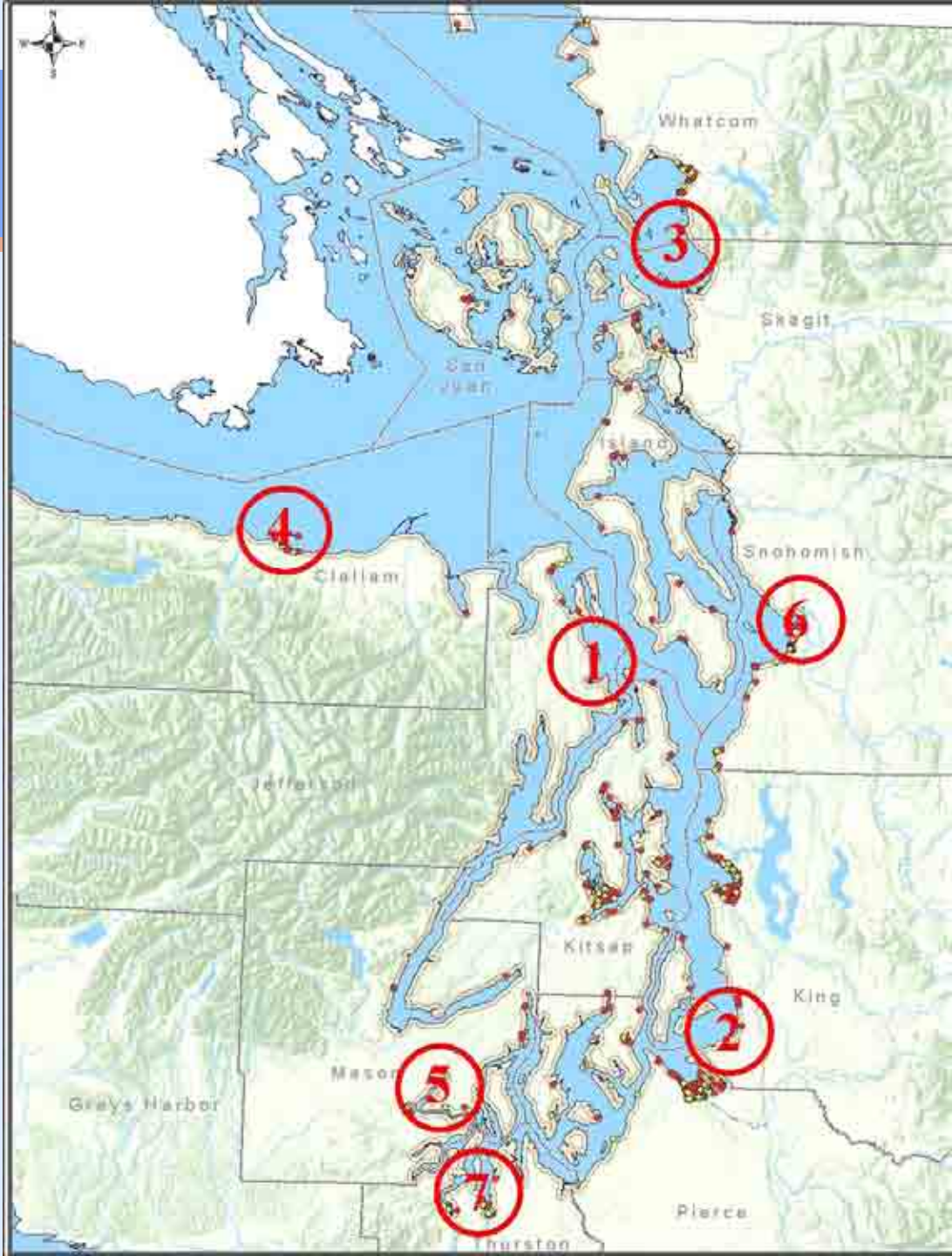


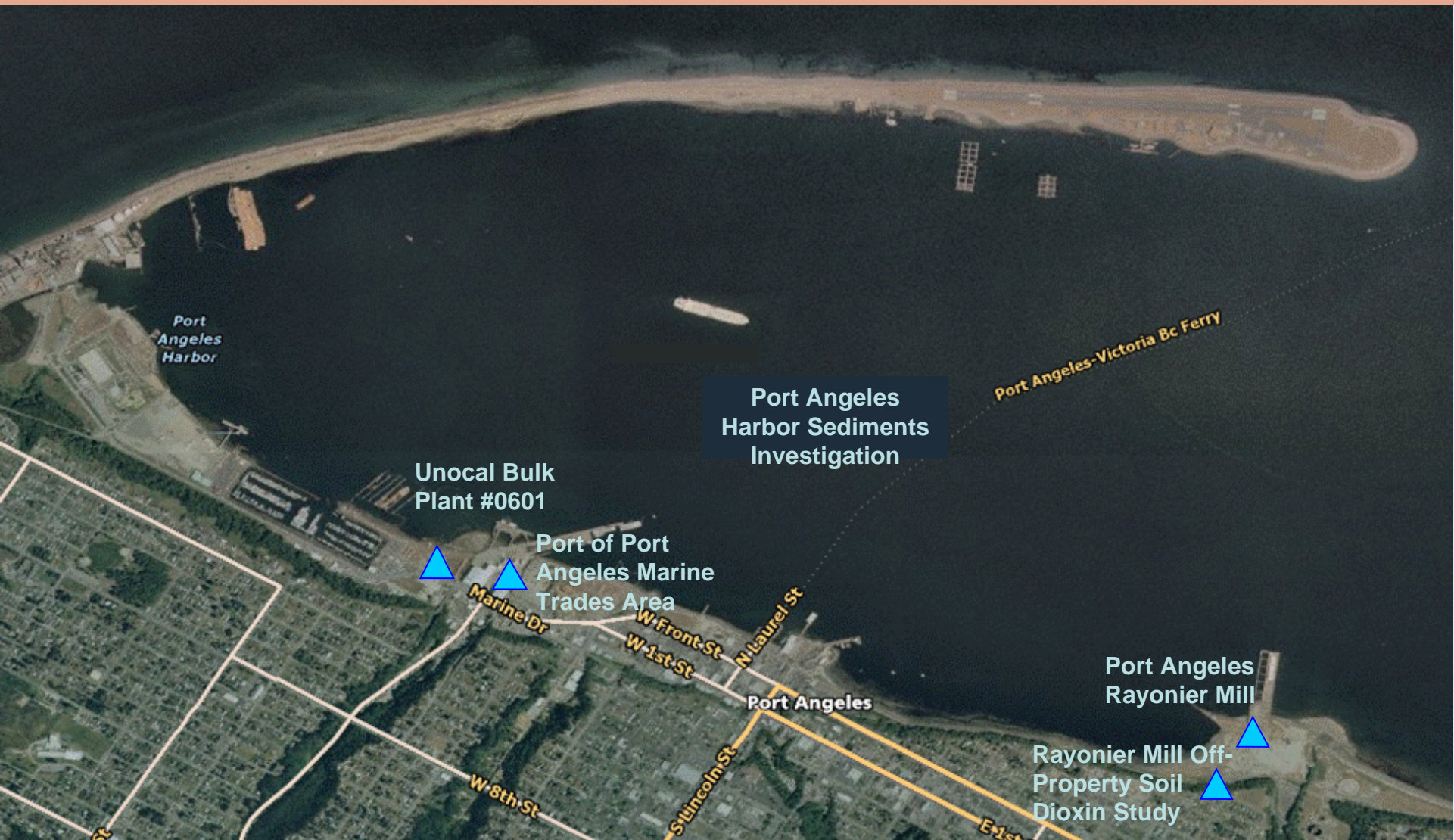
The Big Picture

- Puget Sound Initiative (PSI) = Governor's initiative to restore the health of Puget Sound by 2020
- Priorities for 2007-2009 include:
 - Cleaning up contaminated sites and sediments.
 - Preventing toxic contamination.
 - Protecting and restoring marine and freshwater habitats.

Priority Areas

1. Port Gamble
2. Dumas Bay
3. Padilla/Fidalgo Bay
4. Port Angeles
5. Oakland Bay
6. Port Gardner/Port of Everett
7. Budd Inlet





Ecology work in Port Angeles



Rayonier-Related Work

- Rayonier Mill
- Rayonier Mill Off-Property Soil Dioxin Study
- City of Port Angeles stakeholder work
- Port Angeles Harbor Sediments Investigation



Investigating Sediment Contamination



WASHINGTON STATE
DEPARTMENT OF
E C O L O G Y



Sediments Investigation

- Purpose of the Investigation
- History of Contamination
- Sampling & Analysis Plan (SAP)
- Next Steps
- Public Involvement



Purpose of the Investigation

- To determine the **nature and extent** of sediment contamination.
- To study how sediment contamination and wood waste **move through the harbor**.
- To investigate **current and historic sources** of sediment contamination in Port Angeles Harbor.
- To further characterize and potentially identify new **areas of concern**.
- To assess **human health and ecological risks**.



History of Contamination

- Historic and current sources:
 - Saw mills and plywood
 - Pulp and paper mills
 - Marine shipping, transport
 - Boat building
 - Petroleum bulk facilities
 - Commercial fishing
 - Combined sewer outfalls
 - Runoff, residential and industrial, stormwater





History of Contamination

- Harbor contaminants:
 - Wood debris, creosote, related contaminants
 - Dioxins and furans
 - Polycyclic aromatic hydrocarbons (PAHs)
 - Polychlorinated biphenyls (PCBs)
 - Heavy metals
 - Chlorinated pesticides



Wood Waste in Port Angeles Harbor





Sampling Design

- Sampling Locations
 - Port Angeles Harbor areas of concern
 - Western harbor
 - Ediz Hook
 - Eastern intertidal
 - Outer harbor
 - Rayonier Mill areas of concern
 - Reference samples – Dungeness Bay

Harborwide Proposed Sample Locations (Figure 4-2)



Harborwide Tissue Sample Locations (Figure 4-8)





Sampling Design

- Rayonier Mill Study Area
 - Sampling 7 areas of concern.
 - Adds to information collected by Rayonier for the Study Area Marine Remedial Investigation.
 - Needed for risk assessments.

Former Rayonier Mill Study Area and Proposed Sample Locations (Figure 2-4)



Legend

- Proposed Rayonier Investigation Sample Location
- Former Rayonier Mill Study Area
- Outfall Location
- Former Rayonier Mill





Current Monitoring & Sediment Transport

Purpose:

1. Most available data is for *surface* currents
 2. To help determine sources of contamination
- Where sediments are picked up and deposited
 - How sediments are transported
 - Bottom current direction and speed



“Fingerprinting” Analysis

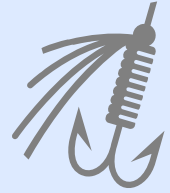
- Define *types* of sources of dioxins, furans, and PAHs (petroleum products)
 - For dioxins – define a wood waste treatment source vs. an air emissions source.
 - For PAHs – tell the difference between creosote from wood pilings, a bulk fuel spill, or a gasoline or diesel tank leak.
- Cannot always use it for specific source identification



Risk Assessment Design

Human health risk assessment

- Populations at potential risk of exposure:
 - Subsistence and recreational fishers
 - Residential users
 - Recreational users
- Assessment calculates risk based on:
 - Potential intake of contaminants through **ingestion** and **dermal** (skin) contact
 - Chemical toxicity (cancer or non-cancer health effects)





Risk Assessment Design

Ecological risk assessment

- Looks at types of wildlife that might be exposed to harbor contaminants:
 - Brant
 - Cormorant
 - Greater scaup
 - Harbor seal
 - Raccoon
 - Bald Eagle
- Looks at the potential risks to those species through food or sediment ingestion.





Next Steps

| | |
|-------------|---|
| June 2008 | Final Sampling & Analysis Plan |
| Summer 2008 | Sediment sampling |
| Fall 2008 | Laboratory analysis & data validation |
| Early 2009 | Draft Sediment Investigation Report and risk assessments – <i>available for public review</i> |



Public Involvement

- Public Participation Plan
- Public comment period until May 29 – *submit comments here!*
 - Information about Port Angeles Harbor history
 - Information about pollution in the harbor
 - Input about the Sampling and Analysis Plan
- Responsiveness summary
- Public review of the draft investigation report and risk assessments



Questions?