Sediments and Society
9th International SedNet Conference

The Role of the Municipality in Cleanup of Contaminated Sediments, Lessons from the Thea Foss Waterway in Tacoma, Washington

Philip Spadaro (The Intelligence Group, Seattle, Washington)
Mary Henley (City of Tacoma, Washington)
John O'Loughlin (City of Tacoma, Washington)
Michael P. Slevin III (City of Tacoma, Washington)

TIG environmental
INVESTIGATIONS ▾ FORENSICS ▾ REMEDIATION

TheIntelligenceGroup
RESEARCH ▾ INVESTIGATIONS ▾ FORENSICS

Tacoma

THEA FOSS WATERWAY

SedNet

September 2015

Urban Waterways

- We devote much time to their study and occasionally to their cleanup
- Often, the municipalities through which these waterways run are only marginally involved
- Sometimes they are involved, but only in a defensive posture
- So what is the role that a city can play? And why should they play it?

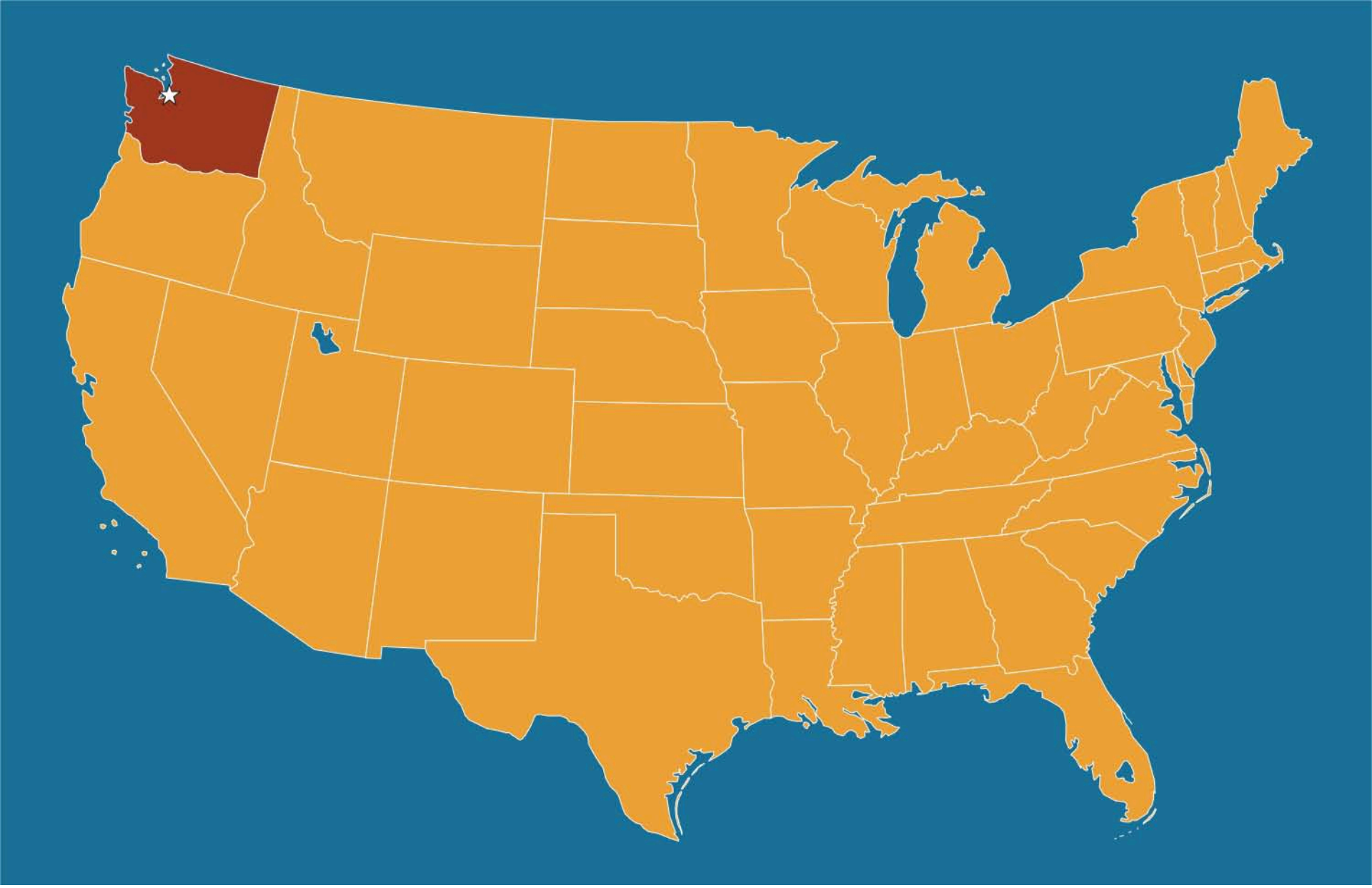
Why Get Involved?

- When everyone else departs, you are still there
- You may be the owner (Congratulations!)
- You likely were and maybe still are a source of contamination
- Something is going to happen and if you are not involved you may not like the result
- It is good for you (That which does not kill us makes us stronger)

Tacoma, Washington

THEA FOSS WATERWAY

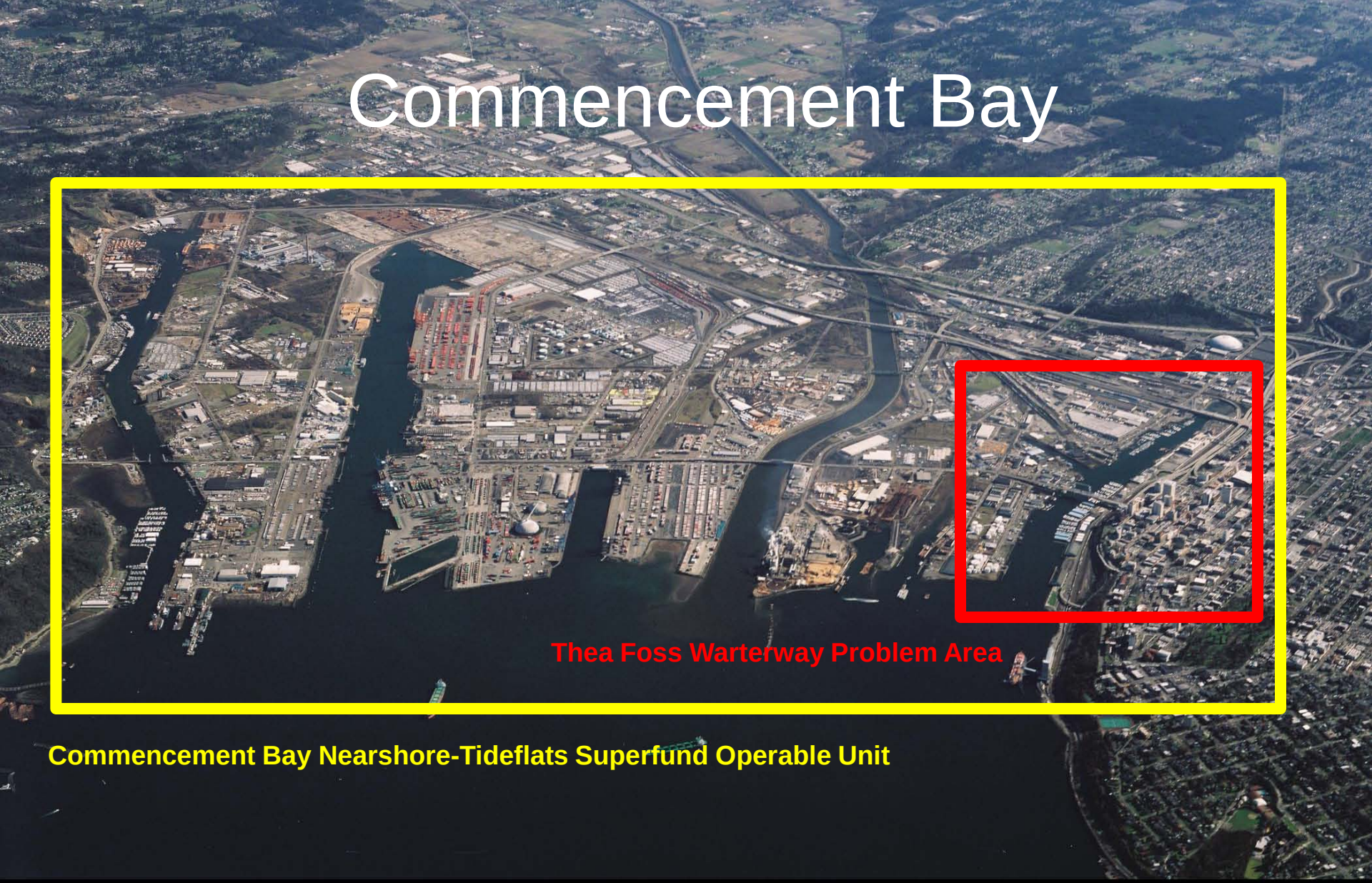
TheIntelligenceGroup
RESEARCH ▾ INVESTIGATIONS ▾ FORENSICS



TheIntelligenceGroup

RESEARCH ▼ INVESTIGATIONS ▼ FORENSICS

Commencement Bay



Commencement Bay Nearshore-Tideflats Superfund Operable Unit

Over 100 Years of Industrial History

TheIntelligenceGroup
RESEARCH ▾ INVESTIGATIONS ▾ FORENSICS

City Waterfront

TheIntelligenceGroup
RESEARCH ▾ INVESTIGATIONS ▾ FORENSICS

Before Remediation

- The City purchased most of the land in the waterfront area and began upland cleanup
- Commissioned Development and Environmental Master Plans as well as remedial design for the waterway
- Signed agreement with EPA to clean up the sediments in the waterway
- Signed an agreement with Washington Department of Ecology for upland cleanup
- Created Foss Development Authority and a strategic plan for redevelopment

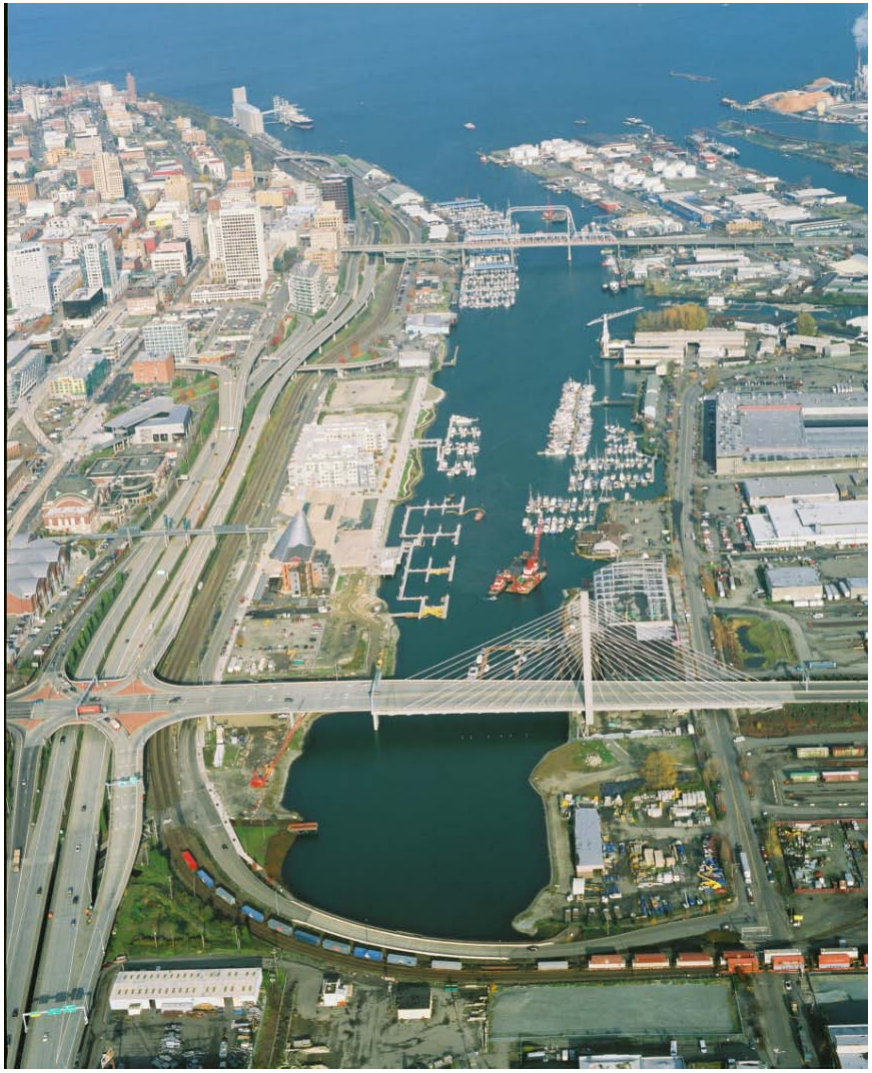
During Remediation

- Multi-Technology Remedy
  - No Action (15 hectares)
  - Natural Attenuation (8.5 hectares)
  - Enhanced Natural Attenuation (1.6 hectares)
  - Dredging (19 hectares – 400,000 cubic meters)
  - Nearshore confined disposal facility
  - Capping (12 hectares – 172,000 cubic meters)
  - Impermeable capping of active tar seeps

Pedestrian Esplanade

TheIntelligenceGroup
RESEARCH ▾ INVESTIGATIONS ▾ FORENSICS

During Remediation



TheIntelligenceGroup
RESEARCH ▾ INVESTIGATIONS ▾ FORENSICS

After Remediation

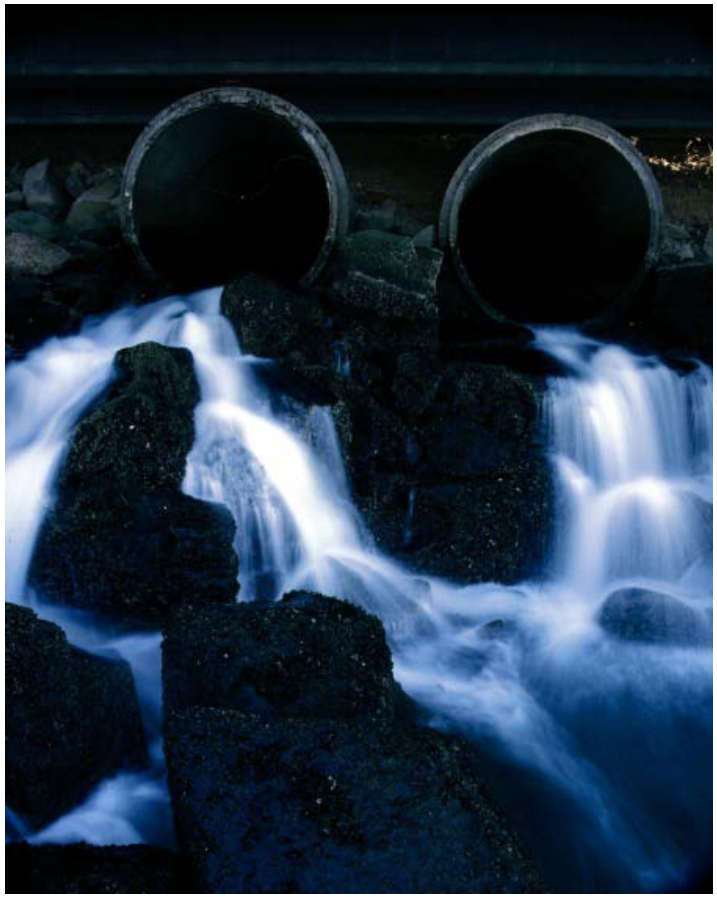
TheIntelligenceGroup
RESEARCH ▾ INVESTIGATIONS ▾ FORENSICS

What Have Been the Results?

UPLANDS DEVELOPMENT ON THE WEST SIDE OF THE FOSS	RESIDENTIAL BREAKDOWN	SQ. FT. OFFICE	SQ. FT. OF RETAIL, COMMERCIAL, SPECIALITY	NUMBER OF PARKING STALLS	APPROXIMATE PRIVATE INVESTMENT (in Millions)
Team Tacoma Thea's Landing	46 condos & 189 apts.	N/A	21,936	431	$35 (€32)
Foss Harbor Marine	166 units	N/A	10,170	282	Est. $40 (€36)
Albers Mill	36 units	5,000	5,000	48	$10 (€9)
Balfour Dock Building	N/A	N/A	45,000		$20 (€18)
Museum of Glass	N/A	N/A	75,000	180	$55 (€50)
Thea Foss Holdings , LLC	172 condos	N/A	19,000	280	$75 (€68)
Pacific Seafood	N/A	N/A	7,000	19	$3.0 (€2,7)
The Henry	161 apts.	N/A	10,500	286	$30 (€27)
Hollander Investments Site 4 (Waterway Hotel)	N/A	30,000	224 rooms	180	$52 (€47)
TOTAL	770 Units	30,000	163,660	1,706	$346 (€315)

TheIntelligenceGroup
RESEARCH ▾ INVESTIGATIONS ▾ FORENSICS

Extensive Monitoring



- **In-Waterway Sediment Monitoring**
  - 35+ Locations by City, 18 by Others
  - Collected Years 0, 2, 4, 7 & 10
- **Annual Stormwater Monitoring**
  - 7 Municipal Outfalls
  - 10 Storm Events Per Year for First 11 Years, Now 3-8 Per Year
  - 4 Base Flow Events Per Year for the First 10 years
- **Upland Stormwater Sediments**
  - 6 Municipal Outfall Locations
  - 30+ Upland Locations/Year

TheIntelligenceGroup
RESEARCH ▾ INVESTIGATIONS ▾ FORENSICS

Redevelopment Continues

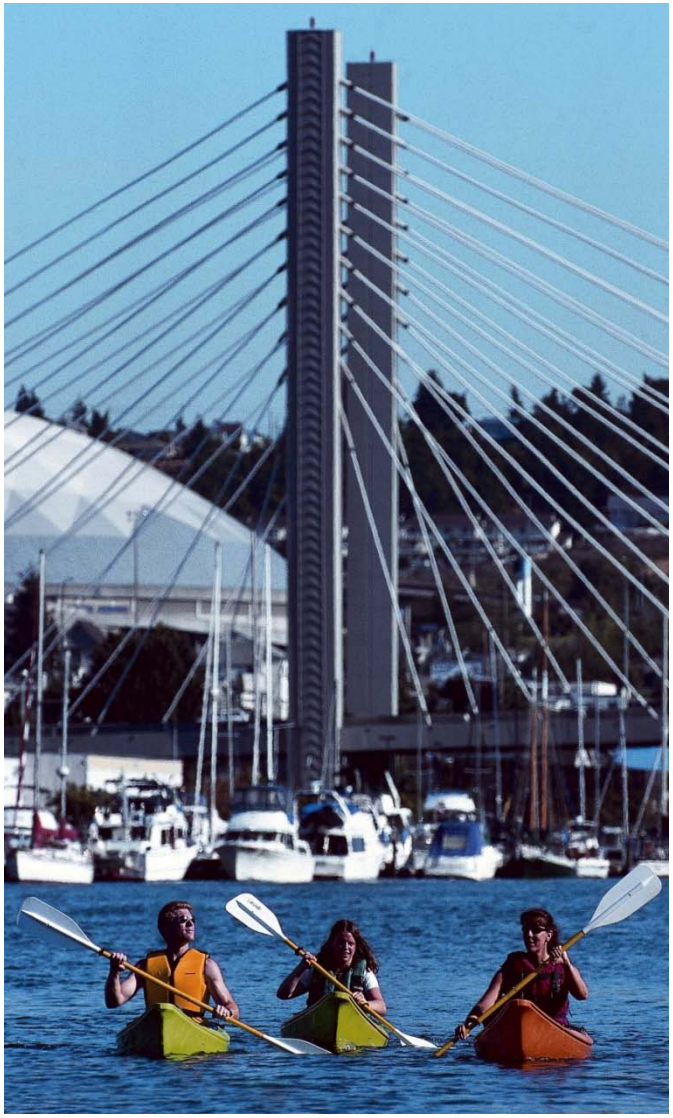
TheIntelligenceGroup
RESEARCH ▾ INVESTIGATIONS ▾ FORENSICS

But What was the Role of the City?

- Leadership and vision
- Planning for redevelopment
- Purchasing the waterfront land
- Leading the upland and in-water cleanup processes
- Leading the cost allocation process
- Leading source control efforts

Conclusions

- Municipalities can play an important catalyzing role in cleanup
- Leadership and vision, as expressed in development and environmental master plans, is critical
- Economic and social benefits are achievable with planning and follow-through effort



TheIntelligenceGroup
RESEARCH ▾ INVESTIGATIONS ▾ FORENSICS

Questions

TheIntelligenceGroup
RESEARCH ▼ INVESTIGATIONS ▼ FORENSICS