

## Dr. Joel Baker

Port of Tacoma Chair of Civil Engineering  
University of Washington Tacoma

Science Director, The Center for Urban Waters  
Director, UW Puget Sound Institute

## Points for today:

A brief history of the partnership between the Port of Tacoma and UW Tacoma

A snapshot look my program at Urban Waters

Specific examples of our impact

Water Quality: Better understanding through chemistry

Shoreline Armoring: Science to action

Workforce Development: Growing engineers in Tacoma

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(from April 28, 2003 meeting materials)

## **Tacoma Marine Science Center (To be re-named)**

### **MISSION STATEMENT**

**Provide solutions for urban bay communities as they restore and redevelop urban waters. Focus areas will include stormwater, habitat restoration, toxic contaminations, fish and wildlife and other clean water issues particular to these unique environments.**

We will do this by:

- Conducting scientific studies and collecting information identifying critical urban bay problems and developing solutions that will facilitate restoration and redevelopment of urban waterways
- Sharing urban bay information with policy makers at the federal, state and local level to better inform the development of public policy
- Developing methods and systems for urban bay communities and scientists to coordinate and share ongoing research and findings
- Fostering stewardship of our urban bay environments through community outreach initiatives, educational programs and visitor education and exhibits that reinforce the Center's mission.

## MISSION STATEMENT

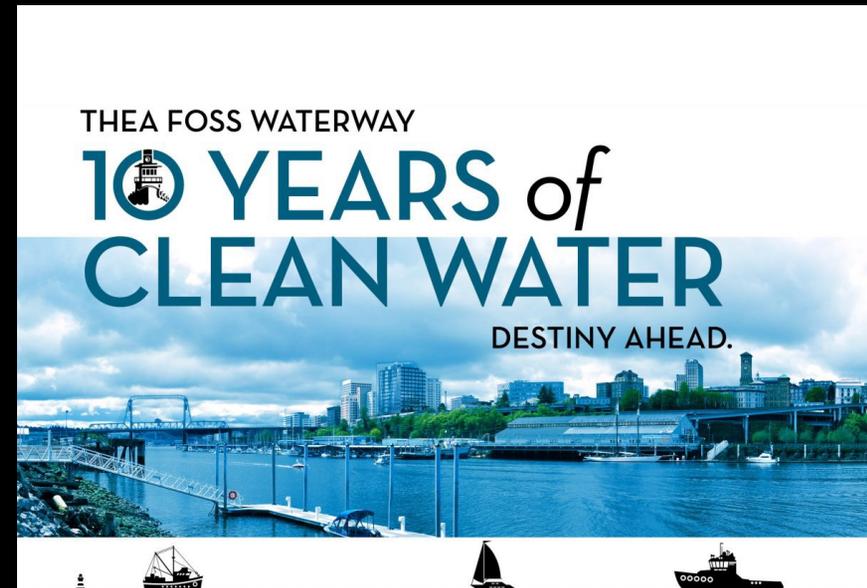
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## The Port of Tacoma Endowed Chair at the University of Washington Tacoma

- Endowment funded by contributions from the Port, the City, and SSA Marine, with matching funds provided by UW
- Created by MOU's between UW Tacoma and the Port and between UW Tacoma and the City
- Guided by the Urban Waters Advisory Board
- J. Baker named Endowed Chair in January 2008



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# PUGET SOUND INSTITUTE

UNIVERSITY of WASHINGTON | TACOMA

The Puget Sound Institute Provides expertise across three major areas:



Twenty-seven full and part-time employees in Tacoma  
ca. \$4M annually of external grants and contracts



PUGET SOUND INSTITUTE

**W** UNIVERSITY of WASHINGTON | TACOMA

## Strengthening relationships to support science for policy

- Convene scientific conversations on emerging environmental challenges
- Share relevant, timely, and independent scientific analysis with decision-makers
- Proactively build trust, collaboration, and leadership

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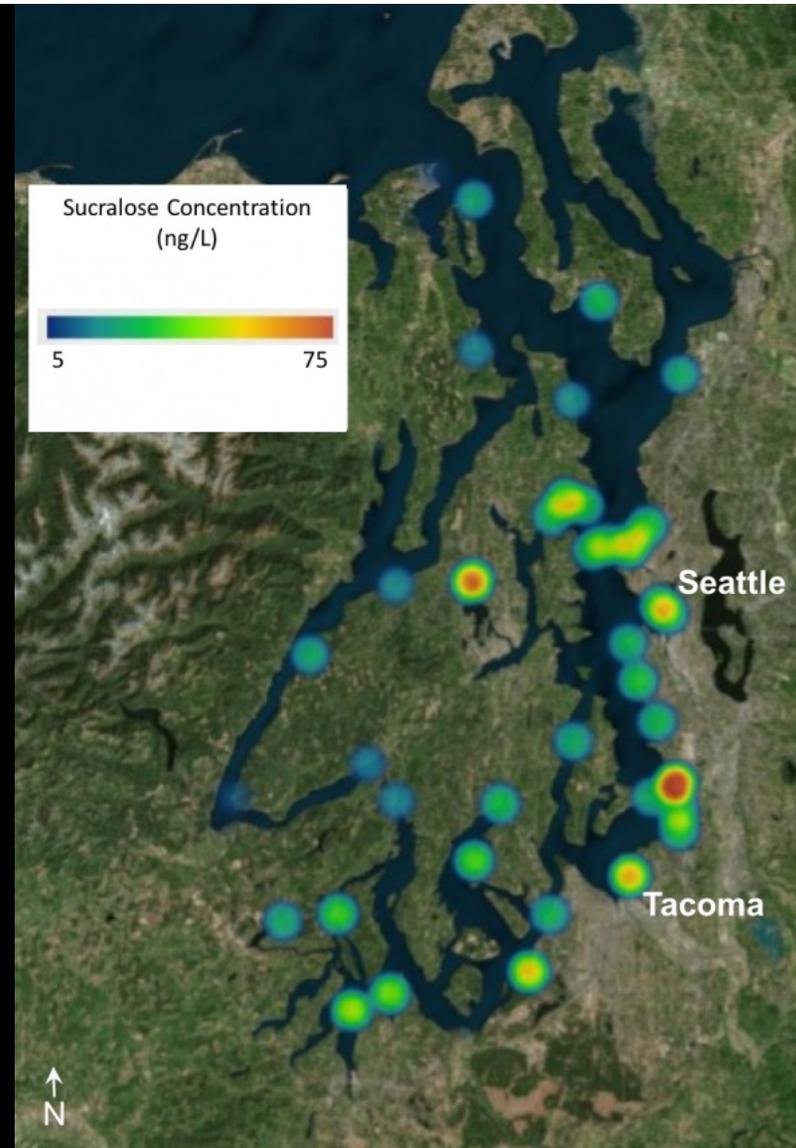
## Making sense of consumer chemicals in Puget Sound

**Problem:** Recent advances in laboratory methods allow us to detect 1000's of man-made chemicals in Puget Sound.

**Question:** So what?

**Approach:** Use a risk-based screening method to 'find the toxic needle in the haystack'. Aided by very recent advances in artificial intelligence including large language models. Emerging collaboration with UW Computer Science and Microsoft.

**Outcome:** Allows regulatory and voluntary source reduction programs to be strategic and effective



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**Problem Statement:** Much of the Puget Sound shoreline is ‘armored’ to prevent erosion and to allow access, this destroys critical habitat

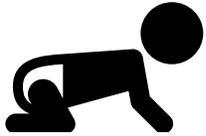
**Solution:** New “soft shore” approaches have been pioneered in Washington State that provide comparable benefit with much less impact

**Goal:** Where possible, replace armored shoreline structures with softer alternatives

**Problem:** This is expensive. How to equitably incentivize landowners and provide financing?

**Solution:** A science-based “Shore Friendly” revolving loan fund





**2012-2015**

Social marketing strategy developed  
5 NEP grant-funded pilot programs



**2016-2018**

**PSI synthesis of pilot programs informs the Shoreline Armoring Implementation Strategy**

**Need for new financial incentives emphasized**



**2019-2021**

New home for Shore Friendly at WDFW's ESRP  
State budget appropriation  
Expansion to 12 counties

**PSI loan program feasibility study**

**Residential Shoreline Loan Program Feasibility Study: Developing a New Shore Friendly Incentive to Help Puget Sound Homeowners Finance Beach Restoration and Sea Level Rise Adaptation**



March 2021

Aimee Kinney, Jim Johannessen, Michael Fisher,  
Avery Maverick, Lauren Øde-Giles, and Brock Lane

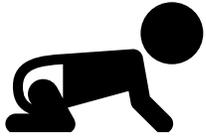
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**NE**  
Northern  
Economics

**CGS**  
COASTAL GEOLOGIC SERVICES

## FEASIBILITY STUDY ELEMENTS

1. Eligible activities
2. Model programs
3. Market analysis
4. Cost analysis
5. Financial analysis
6. Seed money sources
7. Program administration



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**2022-2025**

Loan program coordinator position created and filled

WDFW plans to request capitalization funding during 2025 Legislative session

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## **Workforce Development: Growing Engineers in Tacoma**

Strong community support for the launch of Mechanical (2022) and Civil (2023) Engineering degree programs at UW Tacoma.

Local internships provided for engineering students.

Excellent recruitment of early career engineering faculty.

# TCE 490 Ports And Marine Infrastructure For Engineers



A course created and taught by enthusiastic and experienced local port and marine engineers

A unique opportunity for UW Tacoma students to meet and learn directly from practicing engineers working on local projects

Thanks to Commissioner Ang and Director Howard for setting the stage...

...and to Stan Ryder and Brett Ozolin for closing the course with great examples.

Next:

Actively planning a partnership with several parties to design and execute the next phase of the Hylebos Waterway clean-up using innovative chemical and statistical methods pioneered at UW Tacoma at the Center for Urban Waters

Integrated Environmental Assessment and Management — Volume 00, Number 00—pp. 1–11

Received: 21 November 2023 | Revised: 30 December 2023 | Accepted: 2 January 2024

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## Critical Review

# Puget Sound sediment cleanup remedy effectiveness retrospective

Clay Patmont<sup>1</sup> and Rob Healy<sup>2</sup>

<sup>1</sup>Anchor QEA, LLC, Seattle, Washington, USA

<sup>2</sup>Port of Tacoma, Tacoma, Washington, USA



Thank you