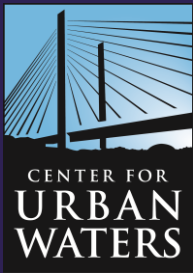


Port of Tacoma Chair in Environmental Science: Annual Report

Dr. Joel Baker

Thursday 21 September 2017



Overview of activities

Assessing Effectiveness: Stormwater Treatment

Assessing Effectiveness: Shoreline Armoring
Regulations

Continuing to broaden and deepen technology
research in Tacoma

Overview of activities

Assessing Effectiveness: Stormwater Treatment

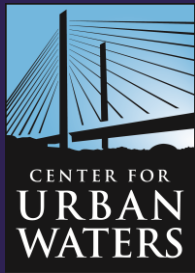
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Overview of activities

UW Tacoma at the Center for Urban Waters

- 13.5 FTE, including 6 Principal Investigators who lead research efforts
- 30 journal articles in peer reviewed publications published since 2011
- 21 different UWT classes have met at the Center for Urban Waters



Overview of activities

- 40 undergraduates trained in the Urban Waters Internship Program



21 September 2017 Port of Tacoma Commission

Overview of activities

UW Tacoma at the Center for Urban Waters

- Over past 5 years awarded over \$11M through competitive grants and contracts.
- Annual burn rate approximately \$2M
- \$8.6M in current research awards
- \$1.7M cash on hand

Overview of activities

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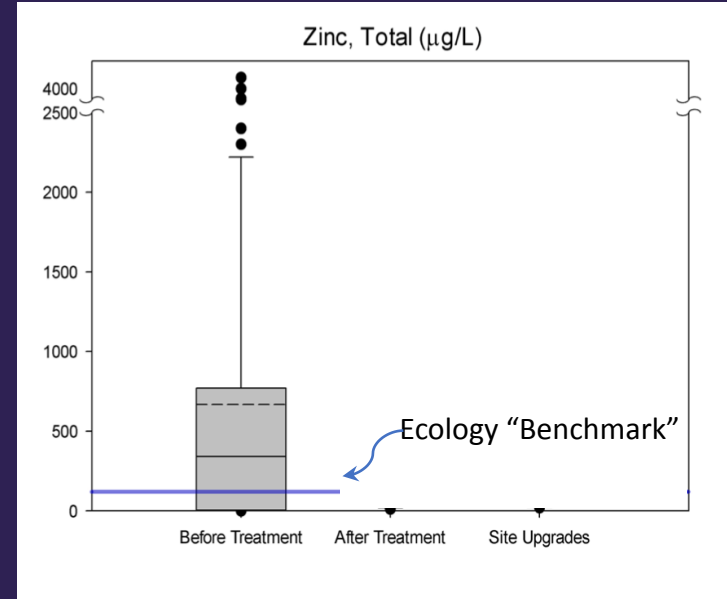
Assessing Effectiveness: Stormwater Treatment

Problem Statement:

Weekly sampling of stormwater on a Tideflat property shows that the zinc concentration exceeds the level allowed in the permit.

Possible remedies include:

1. Source control. Find and eliminate the source of zinc to the site.
2. Treatment. Install a system to remove the zinc from the stormwater.



Assessing Effectiveness: Stormwater Treatment

Approach:

Design, install, and operate a stormwater treatment system to remove solids, metals and petroleum products from stormwater

Questions:

How well do treatment systems work?

What is the most cost effective option?

How can we learn from others and work collaboratively?



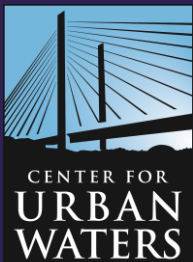


Puyallup Watershed Initiative

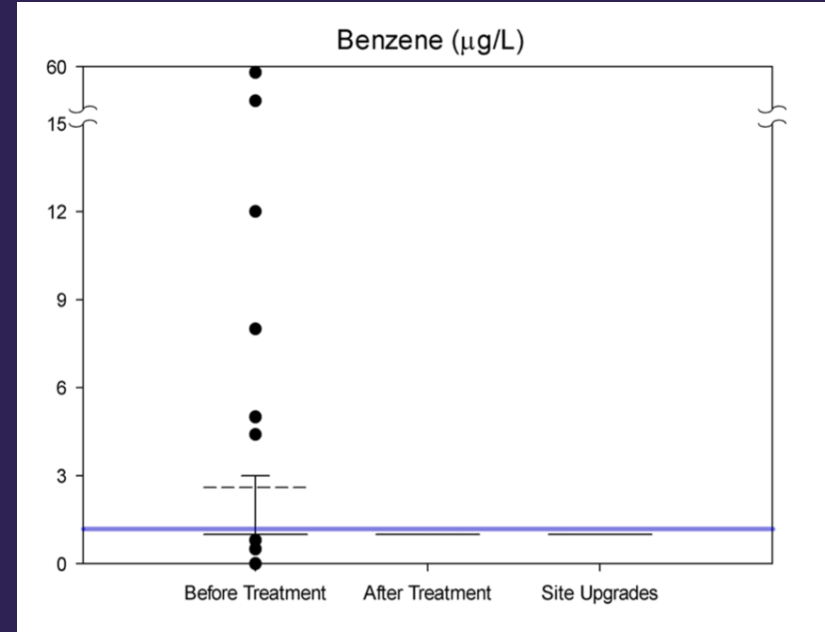
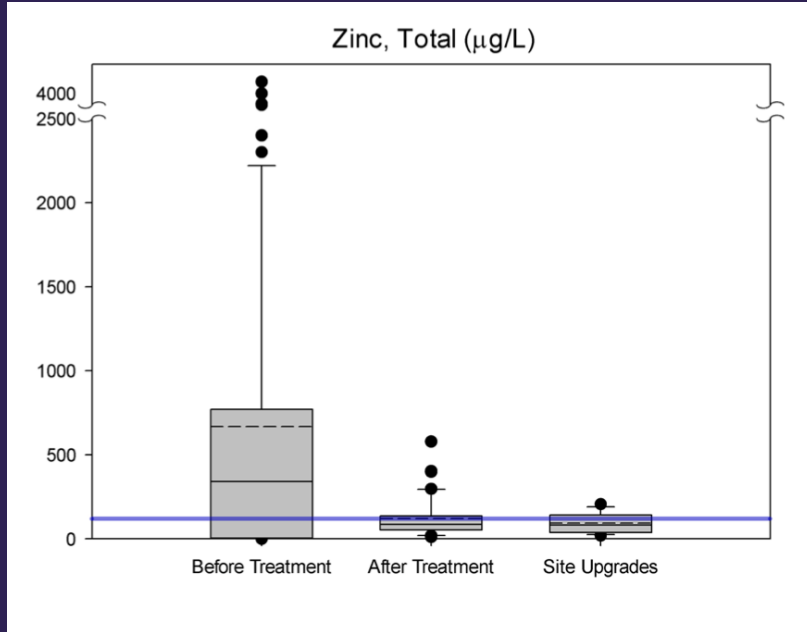
Industrial Stormwater

Hayley Matthew and Carla Milesi
Center for Urban Waters

21 September 2017 Port of Tacoma Commission



Assessing Effectiveness: Stormwater Treatment



Success! But at what cost? Is there a better way?

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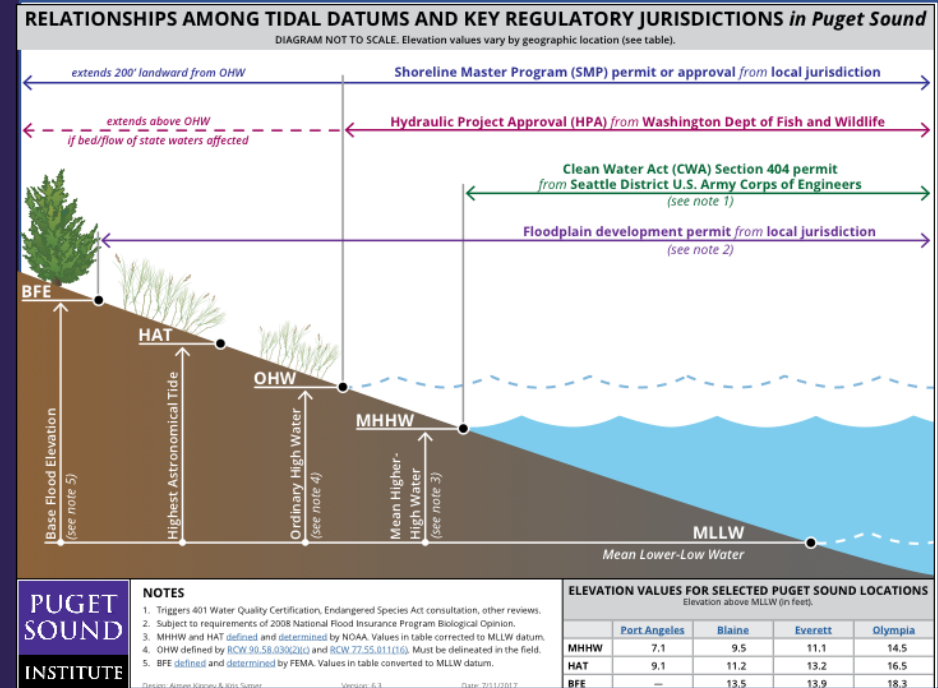
Assessing Effectiveness: Shoreline Armoring Regulations

Problem Statement:

- Nearshore habitat is incredibly important to Puget Sound species.
- Armoring (bulkheads, rip-rap, etc.) is thought to protect property and infrastructure.
- Several overlapping regulatory jurisdictions.

Questions:

1. How well do we understand the impacts of armoring?
2. Are current regulations sufficient?
3. Are current programs efficient?



Assessing Effectiveness: Shoreline Armoring Regulations

PUGET SOUND INSTITUTE

ISSUES in BRIEF

Illegal shoreline armoring

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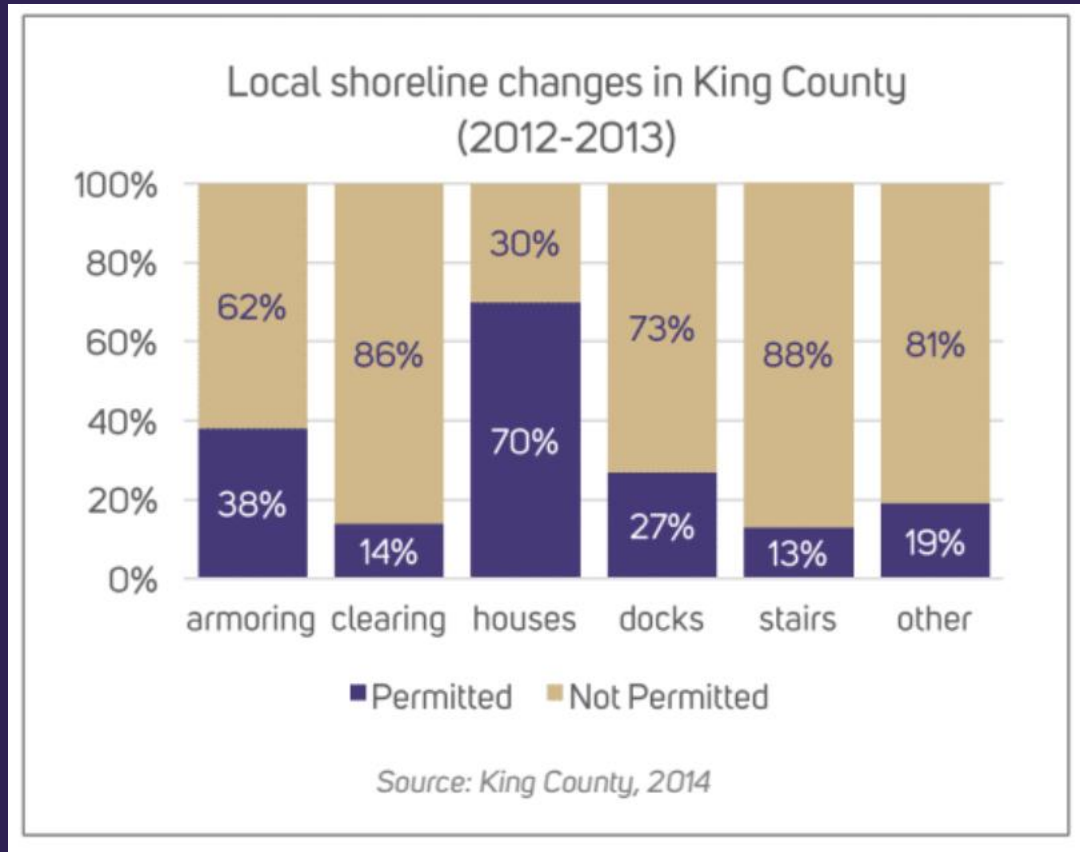
Aimee Kinney and Tessa Francis
UW Puget Sound Institute @ CUW

in collaboration with the Marine and Near-Shore Lead Organization

ISSUES in BRIEF

Illegal shoreline armoring

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ISSUES in BRIEF

Illegal shoreline armoring

*EXEMPTIONS*

Many shoreline stabilization projects do not require permits because of exemptions built into state law. A review of armoring permits issued over 5 years in Kitsap and San Juan counties found that 70-90% of armoring projects fell under statutory exemptions.⁵ The high volume of shoreline armoring exemptions—particularly repair and replacement exemptions—has been called a significant threat to habitat but also an opportunity for enhancement and restoration.⁶

- Lack of enforcement
- Insufficient penalties

ISSUES in BRIEF

Illegal shoreline armoring



Illegal shoreline armoring (continued)

THE KNOWLEDGE GAP

Although initial studies indicate unwelcome trends, more research is needed to fully document compliance rates for armoring structures across Puget Sound. Surveys have not been conducted in most counties, and in many cases, a lack of standardized monitoring protocols make accurate assessments and inventories of shoreline structures difficult.⁴ There is a need for more reliable and consistent data on regulatory compliance.

ENFORCEMENT

Critical information can be collected via simple surveys, but enforcement programs must also be capable of pursuing identified violations. Limited enforcement programs and weak penalties for violations undermine the effectiveness of local Shoreline Master Programs.

THE CHALLENGES

Shoreline Master Plan programs have experienced staff reductions of 50-60% since 2007⁴. Most local jurisdictions do not have dedicated enforcement staff for shoreline regulations. Increases in staffing levels, funding, and training for SMP permitting programs would improve regulatory protections.

WHAT WE KNOW

GETTING THE BEST DATA

The highest quality data on unpermitted construction has derived from surveys using field-based methods (e.g., boat surveys and site visits). Efforts that relied on remote methods for baseline data appeared to identify fewer armoring projects. Rigorous baseline inventories of shoreline structures at the parcel scale were useful for identifying unpermitted shoreline construction. This indicates that regular shoreline change monitoring could improve enforcement capability.

THE ROLE OF PUBLIC EDUCATION

About 57% of Puget Sound's 2500 miles of shoreline is privately owned, creating a clear need to reach out to property owners and developers. Public education can play an important role for improving compliance especially as factors like population growth and sea level rise put further pressure on the nearshore environment.

EXEMPTIONS

Many shoreline stabilization projects do not require permits because of exemptions built into state law. A review of armoring permits issued over 5 years in Kitsap and San Juan counties found that 70-90% of armoring projects fell under statutory exemptions.⁵ The high volume of shoreline armoring exemptions—particularly repair and replacement exemptions—has been called a significant threat to habitat but also an opportunity for enhancement and restoration.⁶

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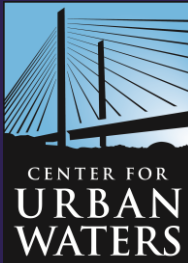
RAIN (Readiness Acceleration and Innovation Network)



The Readiness Acceleration & Innovation Network

RAIN is a life science innovation hub growing talent, companies, and jobs.

- **Building a life science industry in Tacoma** serving the South Puget Sound, from healthcare to industrial biotechnology.
- **Establishing a regional Innovation Hub** that facilitates collaboration and innovation, with particular interest in solving local problems.
- **Educating next generation talent** and catalyzing transition into higher paying, higher-skilled jobs.
- **Growing biotech companies** from startup to expansion stages.



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