

GREEN/DUWAMISH AND CENTRAL PUGET SOUND (WRIA 9) IMPLEMENTATION TECHNICAL COMMITTEE



WRIA 9 Implementation Technical Committee Meeting
August 21, 2024 | 9:30 am – 11:30 am
IN-PERSON at Duwamish River Community Hub and Duwamish River People’s Park
[8600 14th Ave S, Seattle, WA 98108](https://www.govlink.org/watersheds/9/committees/ImpleTechCmte.aspx)

9:30 **Welcome & Introductions**

9:35 **South Duwamish Substation Site Tiering Recommendation**
Decision item for ITC

ITC Project Review
Subcommittee

The Project Review Subcommittee was assembled in response to project sponsor submission of a Proposed Project Form. The Subcommittee followed the tiering process developed via the 2021 Salmon Habitat Plan Update to assess the submitted project concept and recommends the proposed project “South Duwamish Substation Site” be adopted into the Salmon Habitat Plan as a Tier 3 Duwamish project.

9:50 **Spatial Analyses of the Exposure to and Effects of Chemicals of Emerging Concern on Juvenile Chinook Salmon along their seaward migration through the Green/Duwamish River Watershed**
Presentation followed by Q&A

Sandie O’Neill,
WDFW

Sandie and her team will present preliminary results of their work to assess juvenile Chinook exposure to chemicals of emerging concern (CECs) in WRIA 9, compare to other watersheds, and assess potential adverse impacts to juvenile Chinook health and survival. This research was funded by a 2022 WRIA 9 Cooperative Watershed Management grant.

10:45 **Duwamish River People’s Project**
Site tour

Jenn Stebbings,
Port of Seattle

If you have not yet explored the [Duwamish River People’s Park and Shoreline Habitat](https://www.govlink.org/watersheds/9/committees/ImpleTechCmte.aspx) site, you are in for a treat! Jenn and George will lead us through the project site and describe early results of monitoring for vegetation, invertebrates, and fish.

11:30 **Adjourn**

WRIA 9 ITC web page: <http://www.govlink.org/watersheds/9/committees/ImpleTechCmte.aspx>

Participant list:

Alicia Kellogg, Andrea Carey, Chester Bennett, Chris Gregersen, George Blomberg, Iris Kemp, Jean Jensen, Jenn Stebbings, Julian Douglas, Kollin Higgins, Maggie Glowacki, Marc Marcantonio, Matt Goehring, Matt Knox, Mike Perfetti, Molly Shuman-Goodier, Nik Novotny, Rowena Valencia-Gica, Sandie O'Neill, Zach Wilson

Reminder: please complete the WRIA 9 After-Action Survey by Friday, August 23. Your feedback helps us improve the grant round!

<https://app.smartsheet.com/b/form/b05f7262a52c47dc8be1861abd923116>

New Funding Opportunity: Pre-Green Support for Engagement, Enhancement, and Development (Pre-SEED awards)

WRIA 9 and the Urban Waters Federal Partnership are pleased to announce a new funding opportunity! Pre-Green Support for Engagement, Enhancement, and Development (Pre-SEED awards) will help organizations prepare for the upcoming Regreen the Green grant round. Funds are flexible and can support organizations to address barriers to developing strategic, connected, larger-scale, priority Regreen proposals; or, to support organizations with limited capacity to engage in the grant round at all.

The award amount is up to \$2,500 for each organization, with up to six organizations receiving funding for the 2024/25 season.

The first-call deadline for applications is **December 1, 2024**. After December 1 applications will be accepted on a rolling basis until June 2025.

No reporting, no spend-down timeframe.

Your post-award deliverable is either:

Your application in the subsequent Regreen grant round (2025)

-OR-

A short narrative (1-2 pages) describing how the funding was used and what limitations (funding-related or otherwise) your organization faced that prohibited submitting a proposal to the Regreen program, due by June 2025.

APPLY HERE: <https://app.smartsheet.com/b/form/3a9c9513f45e4bbb831d168f57e84b03>

ITC Project Review Subcommittee: recommended tiering for South Duwamish Substation Site

Link to slides: https://drive.google.com/file/d/1Mf5kUYm73F7nCijOiy_rz_wWScEjWldF/view?usp=drive_link

See attached summary and recommendation from the Project Review Subcommittee.

Decision item: WRIA 9 members at the meeting unanimously approved the Project Review Subcommittee's recommendation that this proposed project be adopted into the Salmon Habitat Plan as a Tier 3 Duwamish project. If no objections are raised via email within one week, we will adopt this project into the Salmon Habitat Plan as a Tier 3 Duwamish project.

Spatial Analyses of the Exposure to and Effects of Chemicals of Emerging Concern on Juvenile Chinook Salmon along their seaward migration through the Green/Duwamish River Watershed

Link to slides: https://drive.google.com/file/d/1D24yD5he5QHFC669vqX6eQs--6lcKXd/view?usp=drive_link

WDFW's Toxics Biological Observation System (TBIOS) Team has been monitoring toxic contaminants in Puget Sound since 1989. Their original focus was on legacy contaminants. In 2023, funding was expanded to include contaminants of emerging concern (CECs). A 2022 WRIA 9 CWM grant provided support to jumpstart this expansion by funding an assessment of CECs in juvenile Chinook salmon in the Green/Duwamish and nearshore Central Puget Sound.

CECs are largely unregulated (~86k unregulated chemicals!) and little is known about their impacts. They include pharmaceuticals, personal care products, industrial compounds, tire-related compounds, microplastics/nanoparticles, caffeine, illicit drugs, and more. Meador et al. reported that CECs are a concern for juvenile Puget Sound Chinook salmon based on samples from Puyallup, Sinclair Inlet, and Nisqually. The work that the TBIOS team is presenting today is their first look at CECs in Green/Duwamish Chinook salmon.

The team analyzed estuary and nearshore sites in five watersheds sampled in 2013 using composite samples of gutted whole juvenile Chinook. They found more CEC contamination in developed watersheds: higher numbers of CECs detected and higher detection frequencies of DEET, antimicrobials, PFAS, and pharmaceuticals in fish from the Green/Duwamish and Puyallup.

Focusing in on the Green/Duwamish, the TBIOS team evaluated juvenile Chinook composite samples from 2018 and 2023 from sites in the Middle Green, Lower Green, Duwamish, and Elliott Bay (see site map on slide 13). Samples were mainly hatchery fish but there were some wild samples at Elliott Bay and Duwamish sites.

The most frequently detected PPCPs were surfactants, hydrocortisone, and antimicrobials. Most frequently detected pharmaceuticals were diazepam (anti-anxiety medication) and ibuprofen.

Spatially, Soos Creek hatchery samples had elevated microbials, citalopram, ibuprofen, and sulfadimethoxine. This was surprising, and the TBIOS team is following up to learn more: is the food supply contaminated? Is the water supply contaminated? The ITC noted that Soos is unincorporated and largely on septic instead of sewer.

Samples from the Duwamish slip 4 site and downstream had elevated nonolphenols, BPA, metformin (diabetes medication) and diazepam. The upper Duwamish had few hits aside from diazepam. Surprisingly, samples from Elliott Bay sites had few detections. The ITC had some discussion about the rate at which could fish process/eliminate PPCPs – would this explain why hatchery fish at the hatchery have high levels of CECs but hatchery fish sampled further downstream do not?

The TBIOS team also looked at PFAS throughout the watershed. PFOS was detected both years in every sample and elevated at Duwamish slip 4, Duwamish Rhone Poulenc, and the Seattle

Waterfront. The spatial patterns in PFAS contamination were unique and even more distinct than the spatial patterns shown in PPCP contamination, suggesting unique contaminant inputs. Middle and Lower Green sites were relatively “cleaner”. The 2023 samples had a strikingly different contaminant signal – this surprising result was due to removal of livers from the 2018 fish while livers were included in the composite samples of the 2023 fish. PFAS accumulate in liver tissue.

Comparing the observed levels of CECs to documented biological effects thresholds suggests that 11 of the 59 detected chemicals in juvenile Green/Duwamish Chinook may be affecting fish physiology, behavior, and/or survival at current exposure levels, 17 are below concentrations known to affect fish health, and the 29 remaining CECs have unknown potential impacts. Spatially, there are concentrations that exceed potential adverse effects thresholds throughout the watershed from PPCPs. No PFAS exceeded the biological effect threshold or the EPA draft aquatic life tissue criteria.

In summary, juvenile Green/Duwamish Chinook are disproportionately exposed to CECs compared to undeveloped watersheds. Hotspots in the Green/Duwamish include Soos Cr Hatchery, Duwamish Slip 4, Duwamish Rhone Poulenc, and the Seattle Waterfront. Some PPCP concentrations are high enough to have health impacts. Many other CECs have elevated concentrations but unknown effects.

Further questions? Contact Sandie at sandra.oneill@dfw.wa.gov.

Special thanks to Jenn Stebbings and George Blomberg for their excellent site tour through the Duwamish River People’s Park and Shoreline Habitat.