



Underwater Noise Mitigation and Management Plan

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Port of Seattle and Underwater Noise

Underwater noise is one of the **top three threats** to Southern Resident killer whales; it also impacts other sensitive species. It can impede hunting, navigation, communication, reproduction, and danger avoidance.

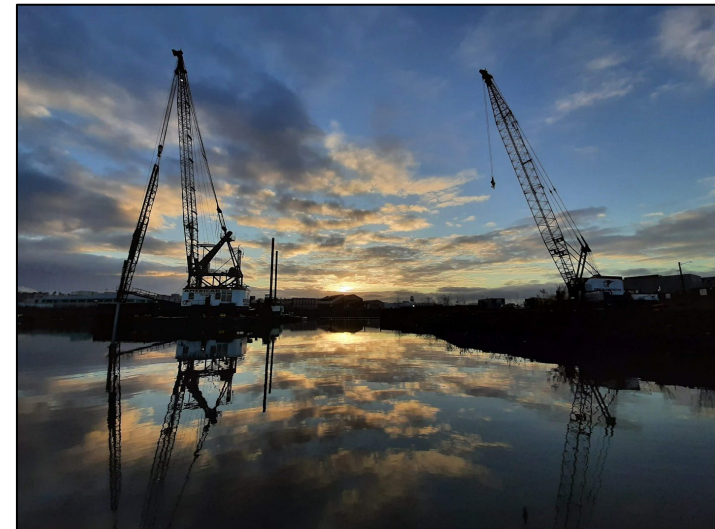
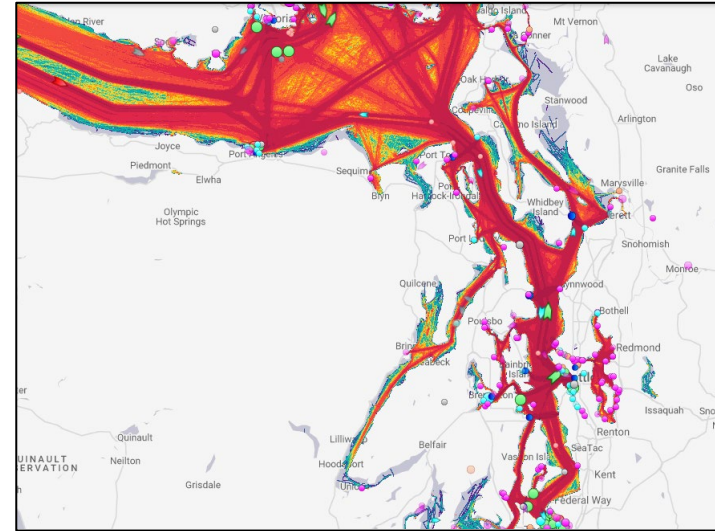
- **Southern Resident killer whales**
- Humpback whales
- Puget Sound Chinook salmon
- Puget Sound steelhead trout
- Bull trout
- Bocaccio and yelloweye rockfish
- Marbled murrelets
- Leatherback turtles



Port of Seattle and Underwater Noise

The **Century Agenda** compels the Port to meet international trade and cargo needs in an environmentally sustainable way.

In-water construction and **vessel traffic** are principal sources of Port-related underwater noise.



Underwater Noise Mitigation and Management Plan

Green Marine: The goal is to meet the Underwater Noise Performance Indicator - Level 3 Criteria and builds a framework for Level 4 and Level 5 Criteria.

Table 1: Summary of Verified Performance for Applicable Green Marine Criteria

Green Marine Performance Indicator	Performance Indicator Scores		
	Levels <u>Verified</u> for Performance Year 2017	Levels <u>Claimed</u> for Performance Year 2020	Levels <u>Verified</u> for Performance Year 2020
1) Aquatic Invasive Species <i>A - Scientific research support</i>	Yes	Yes	Yes
<i>B - Registry</i>	Yes	Yes	Yes
2) Greenhouse Gases and Air Pollutants	5	5	5
3) Spill Prevention	3	5	5
4) Dry Bulk Handling and Storage	N/A	N/A	N/A
5) Community Impacts	3	5	5
6) Environmental Leadership	5	5	5
7) Waste Management	5	5	5
8) Underwater Noise	1	2	2

Port of Seattle and Underwater Noise

The Port does not have direct control over most port-related activities that generate underwater noise, but is committed to helping ensure that commerce, communities, and keystone species can co-exist sustainably through efforts in four categories:



Leadership in environmentally responsible stewardship of marine facilities



Advocacy for sound policy, regulations, and practices related to underwater noise



Financial investments and studies to advance scientific knowledge



Partnerships with industry, government agencies, tribes, and non-profits

Underwater Noise Strategies



Best Management Practices



Research & Development



Underwater Noise Studies



Outreach & Education



Improvements in Vessel Design/Operation



Collaboration & Amplification



Legislative Advocacy



Underwater Noise Studies

Complete or Ongoing Efforts (2022):

- Underwater noise levels were measured during dredging to assess noise levels compared to background levels
- The Port is funding a study by UW & NOAA to conduct a gap analysis of the hydrophone network in the Salish Sea
- The Port launched an Ambient Noise Assessment Program in 2022 to collect baseline underwater noise data in Elliott Bay
- Port Environmental staff sit on the Monitoring Whales and Vessel Noise working group as part of the Quiet Sound program which oversees various underwater noise studies

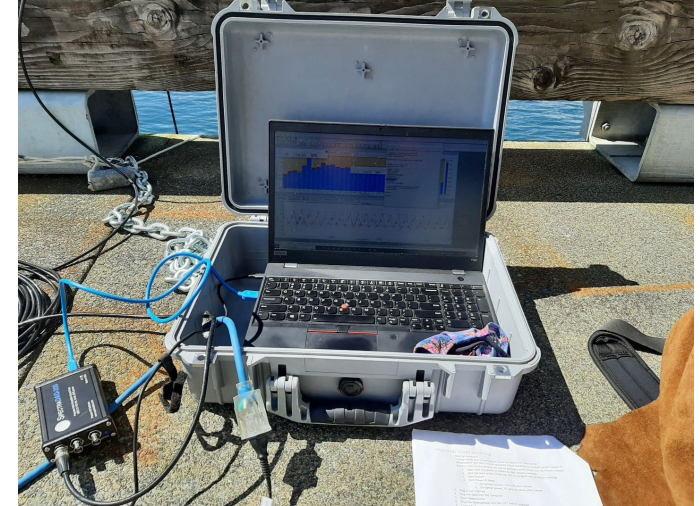




Underwater Noise Studies

Opportunities in 2023-2024:

- With any remaining funds from the UW/NOAA study, purchase hydrophone equipment to improve the regional monitoring network
- Continue to measure background noise levels in Elliott Bay through the Ambient Noise Assessment Program
- Maintain a seat on the Monitoring Whales and Vessel Noise Quiet Sound working group
- Establish plan-specific noise reduction target(s) once background noise levels are established



Adaptive Management Approach

- Biannual Review/Update and Reporting
- Budgeting for strategy implementation
- Use data collection to set targets and increase Green Marine certification to Level 4 and 5



Thank You!



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Level 2 Criteria

- 2.1** Promote and raise awareness of tenants and ship operators calling at the port about the issue of underwater noise by distributing pertinent information on the effects of underwater noise on marine mammals and sensitive areas.
- 2.2** Promote the provision of marine mammal sightings data from a stewardship program with a publicly available database (in Canadian and US waters) through a logbook program or a recognized application (like Whale Alert and Whale Report) to port users, pilots' associations, and ship operators calling at the port.
- 2.3** Summarize current knowledge to understand target species, to identify sensitive habitats, and to understand the port activities' zone of impact. For example, this may inform vessel traffic management (potentially including vessel routing and/or speed).
- 2.4** Require the services of a trained and experienced marine mammal observer (MMO) during port-related in-water construction or during on-land construction work (below high water) that is known to increase significantly the underwater noise soundscape.

Level 3 Criteria



3.1 Implement all applicable criteria listed at Level 2.



3.2 Develop and adopt an Underwater Noise Mitigation and Management plan (UNMMP), which incorporates a range of noise reduction/mitigation options and best practices/operating procedures for both acute and chronic noise-generating activities including construction and shipping.

AND fulfill one of the following 2 criteria:



3.3 As part of the UNMMP, establish an ambient underwater noise monitoring program, analyze and archive the data to understand local ambient underwater noise conditions.

3.4 Offer a recognition program to ship owners for vessel noise reductions.

Level 4 Criteria

4.1 Implement all applicable criteria listed at Level 3.

4.2 Develop and incorporate targets for underwater noise reduction into the UNMMP in port waters and to the extent possible. These targets should be developed with the help of information obtained from the noise monitoring program.

AND fulfill one of the following 3 criteria:

4.3 Develop an incentive program for ship owners who implement vessel noise mitigation measures.

4.4 Establish an in-situ acoustic monitoring system to collect relative source level of individual ships. This data should be shared with ship owners.

4.5 Support/collaborate on scientific research that includes the measurement of underwater radiated noise.

Level 5 Criteria

5.1 Implement 4 of the 5 applicable criteria listed at Level 4.

5.2 Meet reduction targets on underwater noise.

5.3 Demonstrate continual improvement in implementing the Underwater Noise Mitigation and Management plan to utilize noise reduction solutions and technologies that reduce underwater noise.