

Mitigating Supersonic Underwater Noise **Studies of Impact and Vibratory Pile Driving in Marine Environments**

Narrator: At the Port Townsend Washington State ferry dock, construction is underway. New piles are being sunk dockside. The technique in use: vibrational pile driving. Rapid vertical vibrations are transmitted into the pile – driving it home. This method is often used to try to keep the noise down.

Measuring the noise below the surface is a team of graduate students from the UW Department of Mechanical Engineering led by Per Reinhall and Peter Dahl of the UW's Applied Physics Laboratory.

Peter Dahl: We really have two goals here: one is to study the nature of the underwater sound field as it's generated at the pile. By that, I mean what is its direction, angular distribution, frequency content, and strength?

The second goal is to study how sound propagates away from the pile.

Narrator: The APL-UW team has the area wired with 13 underwater microphones – hydrophones. Nine close in. Four more are out 200 meters and 400 meters.

These data will be employed to describe what Dahl calls 'the zone of influence'.

Dahl: The zone of sound that can potentially cause impact to marine mammals and how far that zone extends out from the pile-driving region is not well known.

Narrator: Previously, Reinhall and Dahl found a way to turn down the noise of impact pile driving by encapsulating the pile in a sound-deadening sleeve.

Dahl hopes this new data set may lead to reducing this sound as well.

Dahl: We might learn more about how sound is generated by vibratory pile driving in order to later reduce it, which would then benefit everybody.

This is APL **The Applied Physics Laboratory at the University of Washington in Seattle.**