



www.seaengineering.com

### SERVICES

Aquatic Environmental Services

Coastal Engineering

Ocean Engineering

Hydrographic and Geophysical Surveys

Diving Services

Construction Services

### LOCATIONS

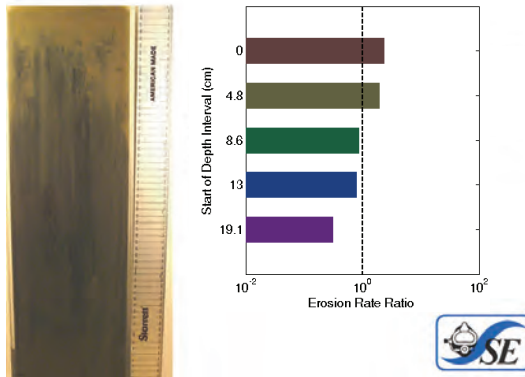
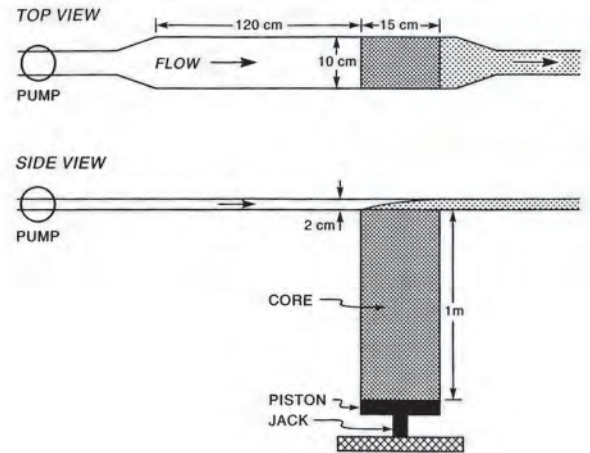
200 Washington St.  
Suite 210  
Santa Cruz, CA 95062  
(831) 421-0871

Makai Research Pier  
41-202 Kalaniana'ole Hwy. Suite 8  
Waimanalo, HI 96795  
(808) 259-7966

# Sedflume - Measurement of Sediment Erosion Properties

## Background

In the accurate characterization of sediment transport, two of the most significant parameters to understand and quantify are the sediment erosion rate and critical shear stress. Sedflume can be used to directly measure these rates in cores obtained in the field or reconstructed in the laboratory. By means of these accurate measurements of sediment erosion properties, realistic quantification of sediment transport can now be made with a minimal amount of calibration or fine-tuning of analytical and numerical models. Sea Engineering, Inc. (SEI) has dedicated fixed and mobile Sedflume laboratories certified to federal standards to ensure the highest quality analysis.



## Capabilities of Sedflume

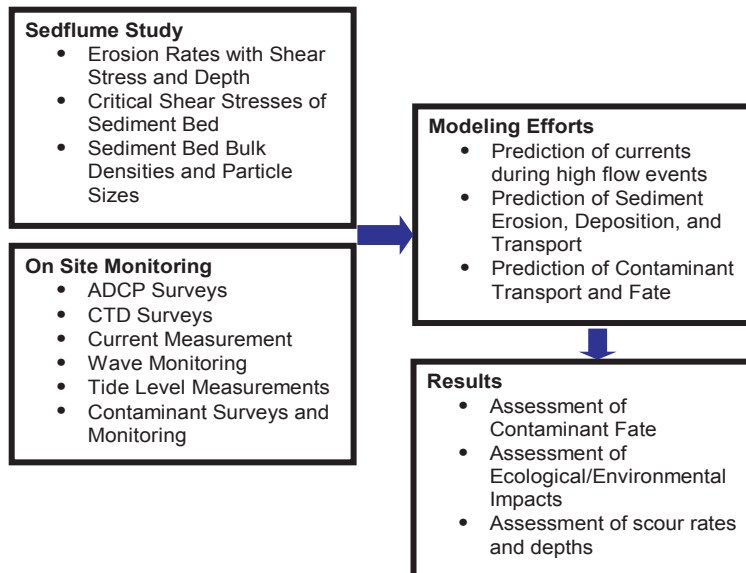
- Erosion and critical shear stress measurements with depth
- Erosion and critical shear stress measurements at high shear stresses (greater than 10 Pa)
- Ability to relate sediment properties to erosion and transport potential
- Coring capabilities in excess of 1000 m of water depth

## Applications

- Direct determination of erosion potential of cohesive and non-cohesive sediments
- Provides unique data for use in engineering and environmental studies of sediment scour effects
- Evaluation of dredge material stability
- Evaluation of capping material effectiveness

## Technical Approach

Sedflume fits into an overall study approach at Sea Engineering, Inc. to gain a complete evaluation of environmental risk in aquatic systems using multiple lines-of-evidence.



www.seaengineering.com

# Sedflume - A device for sediment property measurement

## Capabilities

### Sedflume Laboratory

SEI is equipped with a mobile field laboratory enabling the analysis of cores onsite with minimal disturbance. Additionally, if onsite analysis is not an option, SEI can ship the cores to the Santa Cruz laboratory in a custom designed shipping container to minimize disturbance. The SEI laboratories are certified to federal standards so that we can ensure the highest quality analysis for every study.

### Particle Size Distributions

The SEI laboratory is also equipped with a state-of-the-art Beckman Coulter LS 13 320 Laser Diffraction Particle Sizer. The particle sizer uses a laser light source to illuminate particulates, contained within a sample cell. The result is a particle size distribution determined as volume % in discrete size classes. The advantage of this over traditional methods is that a much higher resolution measurement is obtained over a particle size range from 0.04 to 2000 microns compared to traditional sieve and hydrometer methods. Additionally, smaller sample sizes (< 5 g) can be used to obtain particle size distributions which is necessary when subsampling cores.

### Other Sediment Properties

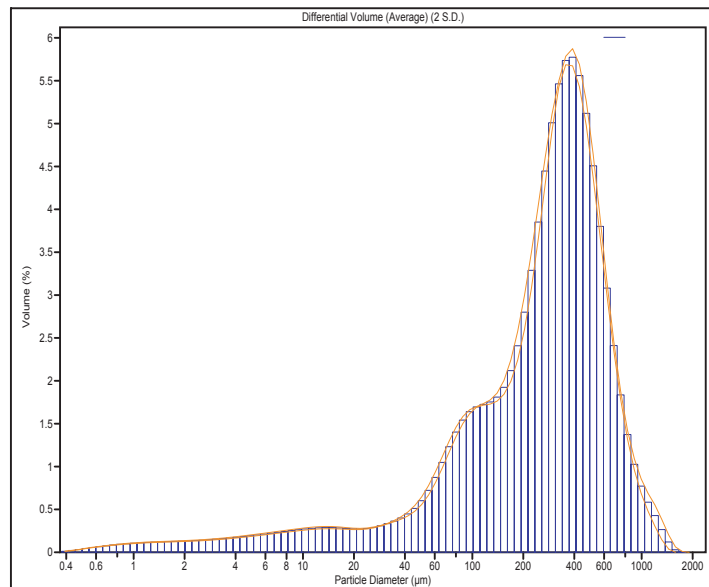
Subsamples from sediment cores are also taken in order to measure water content and bulk density so that mass erosion rates can be determined. Ancillary measurements, such as organic content, can also be subsampled from the core.

## Representative Projects

The SEI Sedflume has been used at a number of sites worldwide to provide site specific sediment information for applications ranging from contaminated sediment assessment to engineering scour evaluation.

These sites include:

- Lake Hartwell, Clemson, SC
- Hunters Point Naval Shipyard, San Francisco Bay, CA
- Washington Navy Yard, Anacostia River, Washington DC
- Lago Maggiore, Piemonte, Italy
- South San Francisco Bay Mudflats, CA
- Wialmette River, Portland, OR
- New Town Creek, NY
- Lower Duwamish River, Seattle, WA
- Augusta Bay, Sicily, Italy
- Delaware River Estuary, NJ
- Pearl Harbor, Oahu, HI



Sample laser diffraction particle size data

**Point of Contact:** Dr. Craig Jones (831) 421-0871 [cjones@seaengineering.com](mailto:cjones@seaengineering.com)

200 Washington St.  
Suite 210  
Santa Cruz, CA 95062  
(831) 421-0871

Makai Research Pier  
41-202 Kalaniana'ole Hwy.  
Suite 8  
Waimanalo, HI 96795  
(808) 259-7966



[www.seaengineering.com](http://www.seaengineering.com)