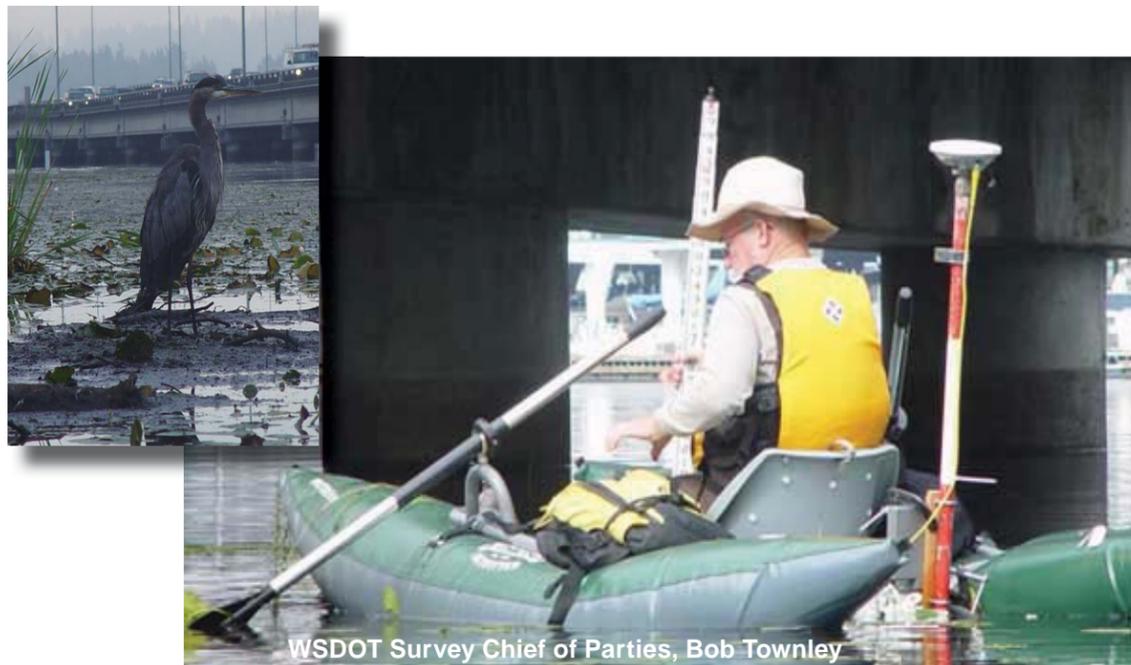


# WSDOT Bathymetric Mapping of Waterways

## Facilitating Project Delivery With Cutting Edge Technology



WSDOT Survey Chief of Parties, Bob Townley

Designing a new SR 520 bridge requires an accurate three dimensional topographic and bathymetric map. Bathymetry is the study of underwater depth, the underwater equivalent to altimetry.

A motor boat equipped with sonar and a global positioning system (GPS) is used in the deep water of Lake Washington, but something else is required for maneuvering through the environmentally sensitive marshlands near the Seattle Arboretum, Foster Island and the south shore of Portage Bay.



This oar-powered pontoon boat rigged with a GPS and total station tracking was used to conduct bathymetric soundings of the marsh.

The inflatable one-person raft was selected as the best survey platform to allow taking depth measurements and recovery of real time GPS locations.

The boat traveled unobtrusively through lilies and reeds, past herons and beavers, collecting depth and location information.

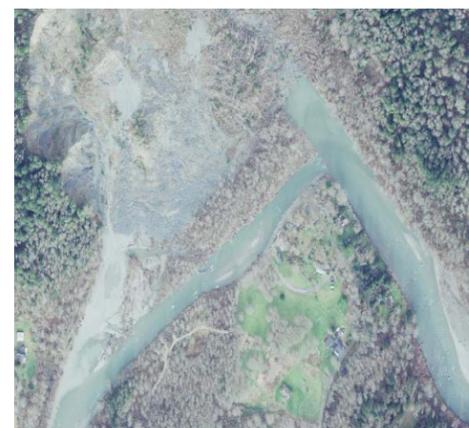
WSDOT "safety kayaker" Jason Goldstein, took these photos while providing safety back-up during the survey.

# WSDOT Unstable Slopes Mapping

## Facilitating Project Delivery With Cutting Edge Technology

### Stillaguamish Slide

Weather changes are impacting Washington State in many different ways such as mudslides, river movement, loss of coastal land, wildlife and habitat loss, water health, and many others.



This imagery was taken by WSDOT Geographic Services immediately following the Stillaguamish River flood on 02/07/2006. The image was ortho rectified by WSDOT Photogrammetry Branch and delivered to the Stillaguamish Tribe and consultant, Anchor Environmental. They used the orthophotos to assess the severity and depth of damage and plan repairs. They also used 3D computer maps produced by WSDOT Photogrammetry.



This imagery was taken by WSDOT Geographic Services on 10/12/2006 after repairs to the river had been made. The new orthophoto shows the difference the repairs made in redirecting the river and preventing repeat flood damage. The orthophotos also helped contractors choose safe methods of digging and trenching to avoid unstable areas. There were no worker injuries during the project, and the repairs were made without damage to the environment.



This oblique angle aerial photograph of the repairs from 2007, was provided by the Stillaguamish Tribe GIS Administrator who worked in close conjunction with WSDOT and Consultants throughout the project. This image is used with permission from the tribal authorities.

# WSDOT Emergency Assessment Mapping Facilitating Project Delivery With Cutting Edge Technology



## 2001 Nisqually Earthquake

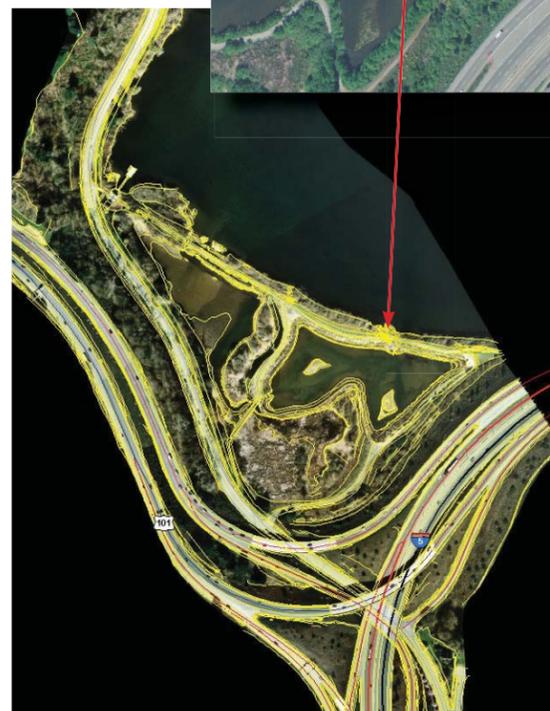
This Mapping project was requested by the Olympic region immediately following the 2001 Nisqually Earthquake. New, accurate maps were needed to assist in planning and designing the reconstruction of the heavily damaged roadway and adjacent trails.

Geographic Services placed control points accurate to +/- 0.02m and took the aerial photographs at a scale of 1:2400 (1":200'). Photogrammetrists used the photos and control points to make a 3D CAD map accurate to +/- 0.2'. The map was also used to produce an orthophoto at 0.25' resolution. Engineers used the high resolution orthophoto and 3D map to assess the shape and depth of damage.

## After Repairs



Repairs In Progress



CAD Data Overlaid On Orthophoto

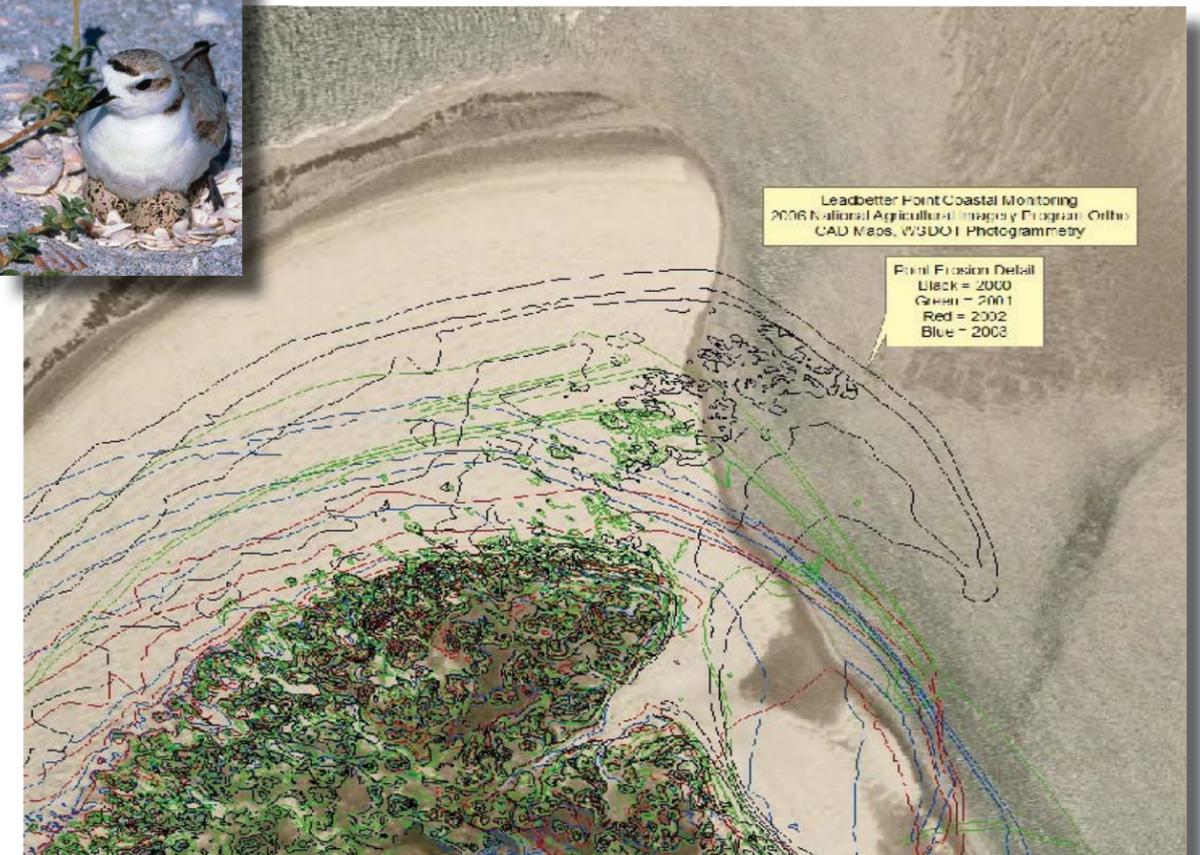
# WSDOT Environmental Assessment Mapping Facilitating Project Delivery With Cutting Edge Technology

## Leadbetter Point

This mapping project was requested by the Southwest Region in response to Federal inquiries about the erosion occurring at the northern tip of the Long Beach peninsula in Washington. It is one of the northernmost migration areas of the Snowy Plover, an endangered species of shore bird.

Geographic Services placed control points accurate to +/- 0.5m, took the aerial photographs at a scale of 1:6000 (1":500'), and produced a 3D computer aided design map of the area accurate to +/- 0.5' each year from 1999 until 2003.

For more information on the Snowy Plover visit: "<http://birdweb.org>"



Fluctuation of the coastline, mapped from 2000 to 2003. Black=2000, Green=2001, Red=2002, Blue=2003. Contours are shown projected on the 2006 National Agricultural Imagery Program (NAIP) orthophoto.