Apr 4th, 4:00 PM - 4:15 PM

Elwha nearshore ecosystem restoration: dam removal and shoreline armor removal

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Elwha Nearshore Ecosystem Restoration: Dam Removal and Shoreline Armor Removal

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Salish Sea Ecosystem Conference 2018

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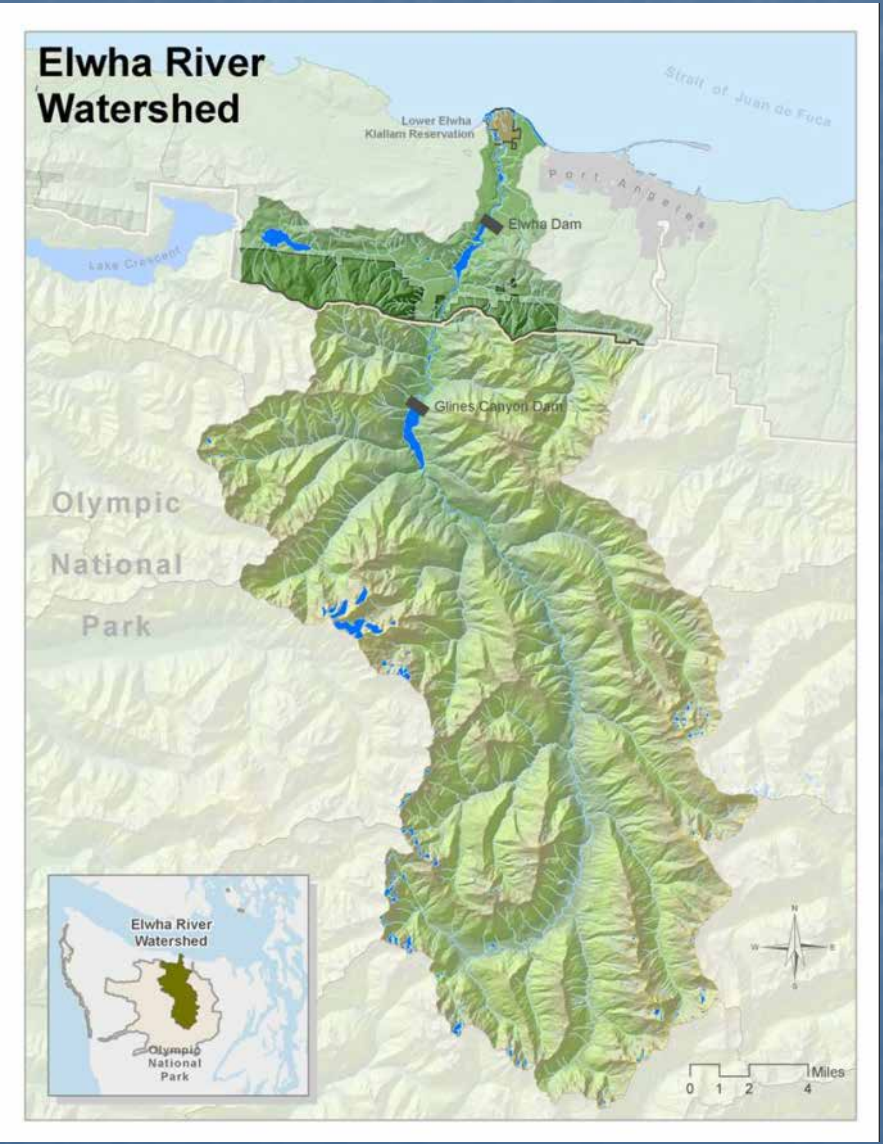
Dams Alter Sediment Supply



Former 105’ tall Elwha Dam
Removal Completed August 2012

Former 210’ tall Glines Canyon Dam
Removal Completed August 2014

Pre Dam Elwha River Delta

1908

Historical Changes to Estuaries, Spits, and Associated Tidal Wetland Habitats in the Hood Canal and Strait of Juan de Fuca Regions of Washington State. PNPTC, 2006

Sediment Starvation Exacerbates Erosion and Results in ¾ Mile of Armor

Continued Erosion Despite Armor

2011

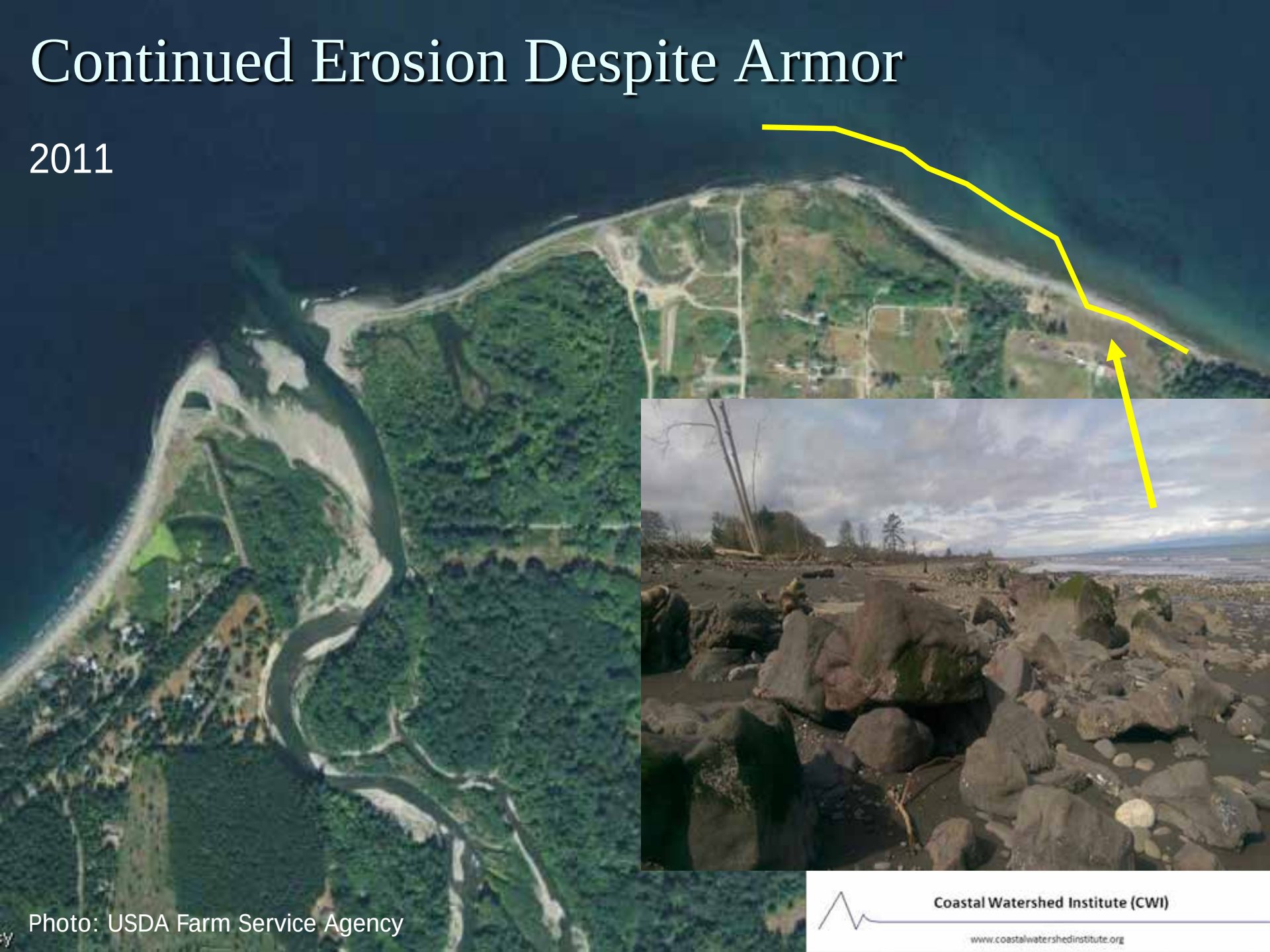


Photo: USDA Farm Service Agency

Approximately 20,000,000 cubic meters of material behind dams*- approximately 60% is sand/ silt, 40% is gravel/cobble

Photos by John Gussman

Lake Mills August 2012

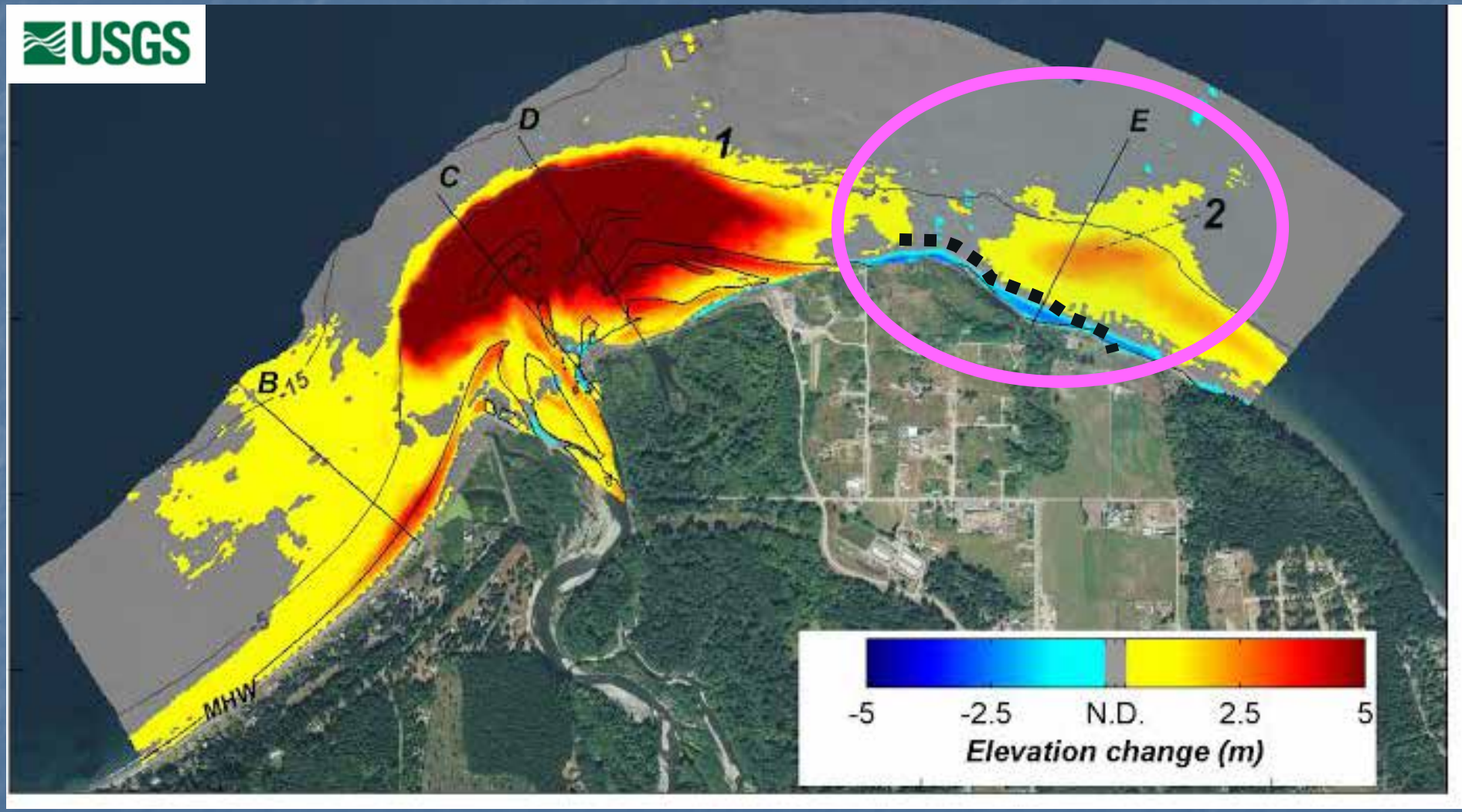
*80% from Lake Mills

A. Ritchie, ONP, J. Bountry and T. Randle, BoR)

River Delta Expansion

2015

Derelict Armor Inhibits Beach Formation Process



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Elwha Nearshore Restoration

Chronic Sediment Starvation Results in Loss of ~20 acre Estuarine Lagoon

Shoreline transition from sand/gravel to cobble/boulder substrate

Derelict armor adversely impacts estuarine/nearshore dependent species
-Spawning
-Foraging
-Migrating

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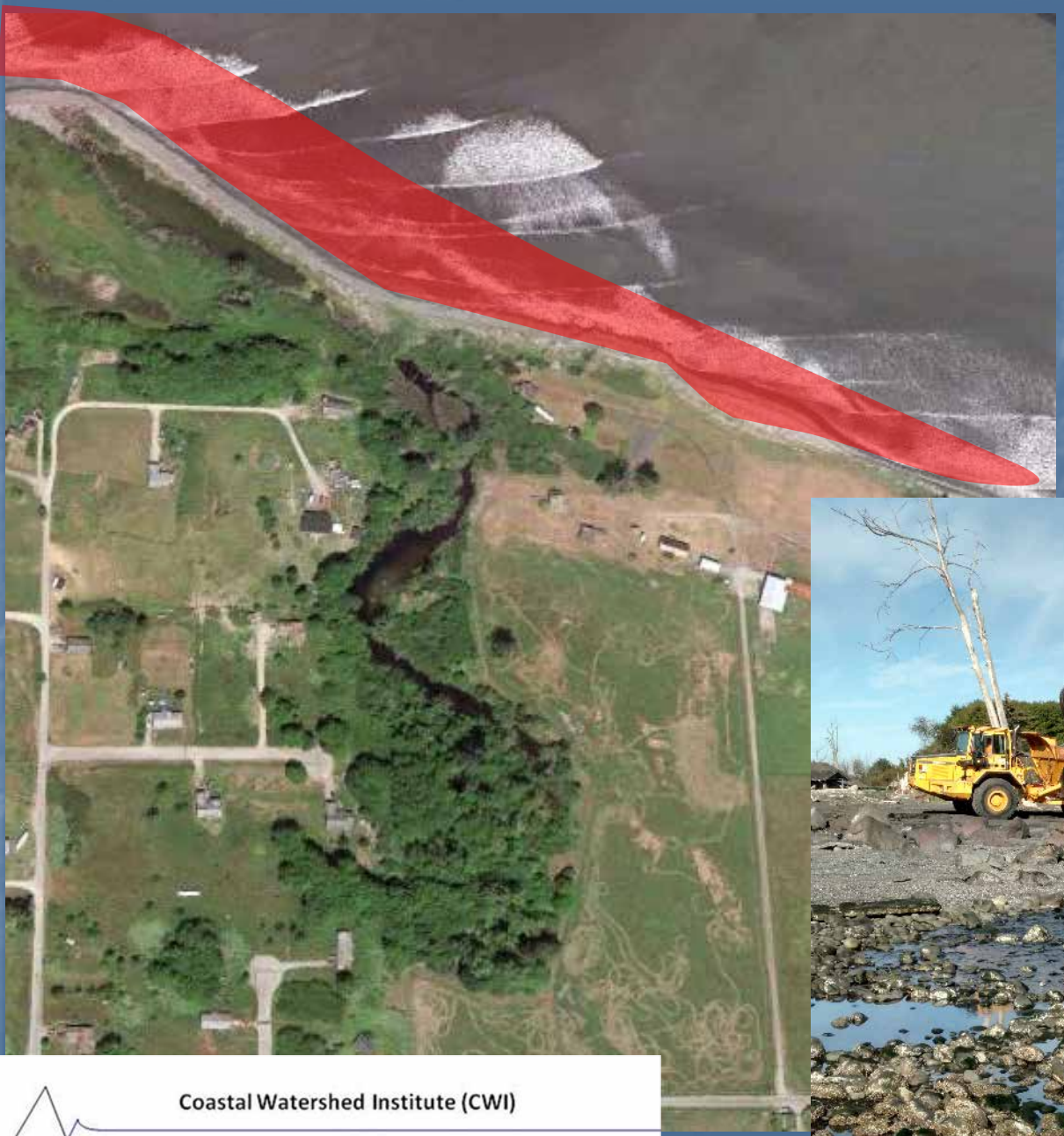
Freshwater Bay Deposition

Beach Lake Erosion

(Photo: US National Archives)

Elwha Nearshore Restoration Project



Multiple Mobilizations to remove exposed abandoned shoreline armor from 3 acres of tidelands along ¾ mile of beach in front of Conservation Property, Tribal Reservation and Private Landowner.

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Beach Lake Acquisition and Restoration Project

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Phase I Armor Removal Demobilization
8/19/2016

Beach Lake Acquisition and Restoration Project

Increase of LWD Recruitment and Retention

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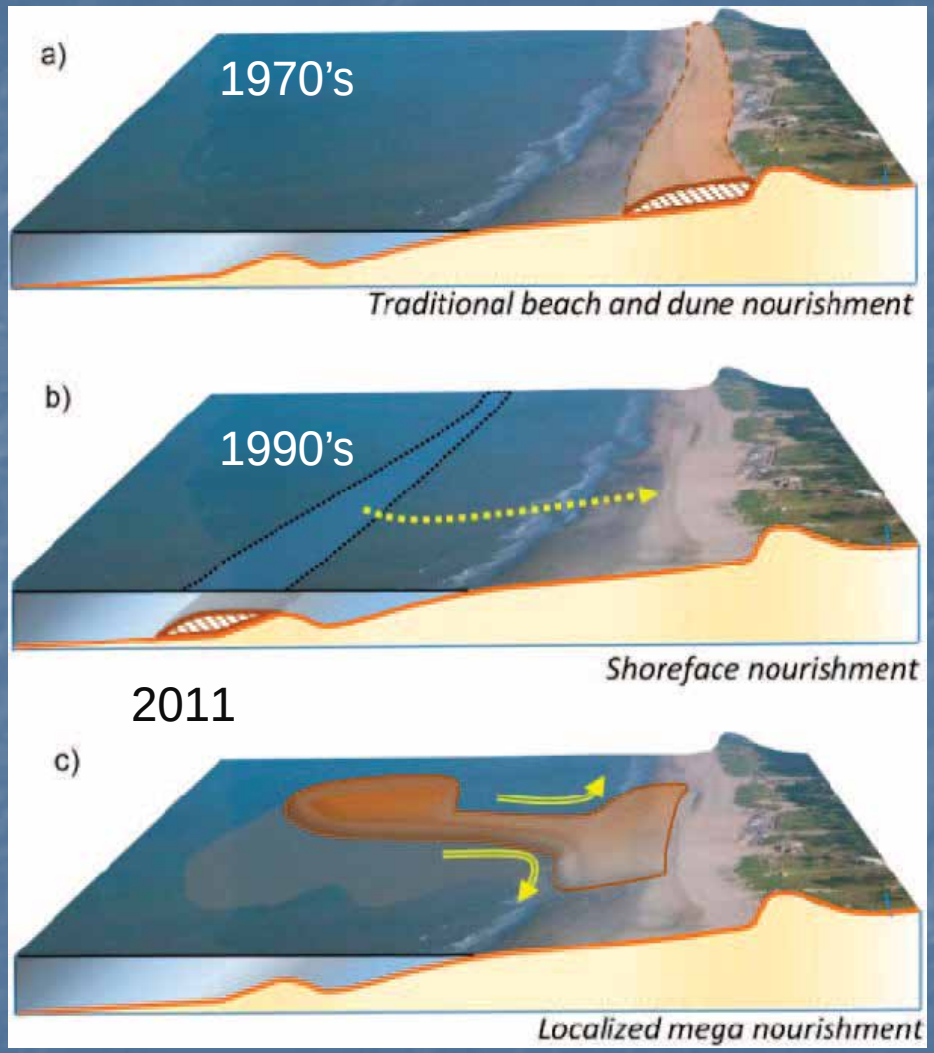
Beach Lake Acquisition and Restoration Project

1/4/2017 (+4’ MLLW Tide) Material Exposed After Winter Erosion. Note the armor and concrete panels on beach, but also the armor extending out to -2’ MLLW. Project is permitted and funded for multiple phases of armor removal to continue to mobilize as armor emerges.

Sand Engine Technique in Holland



Stive, M.J.F.; de Schipper, M.A.; Luijendijk, A.P.; Aarninkhof, S.G.J.; van Gelder-Maas, C.; van Thiel de Vries, J.S.M.; de Vries, S.; Henriquez, M.; Marx, S., and Ranasinghe, R., 2013. A new alternative to saving our beaches from local sea-level rise: the sand engine. Journal of Coastal Research, 29(5)

Beach Lake Acquisition and Restoration Project

<u>Monitoring Metrics</u>

-Newly Emerged Armor
-Beach Topography
-Beach Sediment Size
-Forage Fish Spawning
-Beach Wrack
-Invertebrates
-Fish Use
-LWD

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Project Supporters and Collaborators

2 Grade
Excavation and
Development

Questions/What's Next?

Elwha nearshore 20 August 2016. Photo by Dave Parks and CWI. All rights reserved

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