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Coastal erosion hazard assessment results along Clallam County, WA

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Coastal erosion hazard assessment results along the Strait of Juan de Fuca shoreline of Clallam County, WA

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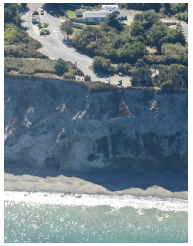
INTRODUCTION

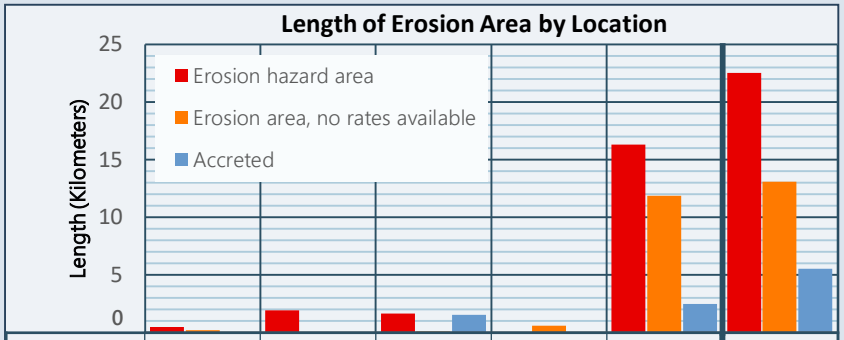


The Washington State Department of Ecology performed an erosion hazard assessment for the coast of Clallam County, WA. This shoreline receives among the highest wave energy for the Salish Sea and its ruggedness and remoteness creates challenges for shoreline change assessments outside of developed areas. This study used existing National Agricultural Imagery Program (NAIP) imagery to assess the coast from Cape Flattery to Diamond Point for vulnerable and hazardous erosion areas.

RAPID ASSESSMENT

A rapid assessment compared multiple years of NAIP imagery between 2006 and 2019 to determine potential erosion areas. Populated coastline and tribal land was prioritized for intensive examination because of the risk to infrastructure and cultural resources, however all other areas were also examined and assigned a designation. Any signs of coastline change were flagged for detailed review. Erosion indicators such as vegetation loss on the bluff face or over-washing were noted even if the coastline position did not appear to change.

Results from this assessment are intended to aid local, regional, and state agencies in planning, project prioritization, and coastal resilience efforts. The figures below show the amount of erosion and accretion areas by location.



Length by Location (Km.)	Port Angeles	Clallam Bay	Elwha Reservation	Makah Reservation	All Others	Total
Erosion hazard area	0.51	1.95	1.63	0.00	16.30	22.53
Erosion area, no rates	0.22	0.00	0.11	0.60	11.83	13.09
Accreted	0.00	0.00	1.52	0.00	2.47	5.51

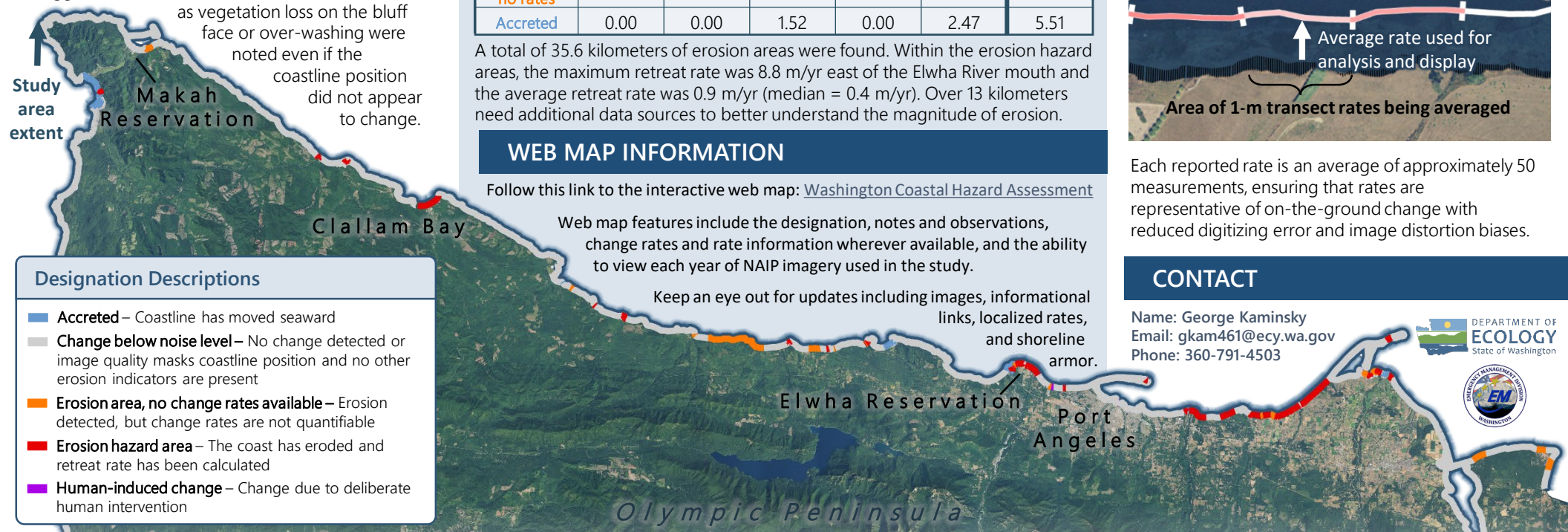
A total of 35.6 kilometers of erosion areas were found. Within the erosion hazard areas, the maximum retreat rate was 8.8 m/yr east of the Elwha River mouth and the average retreat rate was 0.9 m/yr (median = 0.4 m/yr). Over 13 kilometers need additional data sources to better understand the magnitude of erosion.

WEB MAP INFORMATION

Follow this link to the interactive web map: Washington Coastal Hazard Assessment

Web map features include the designation, notes and observations, change rates and rate information wherever available, and the ability to view each year of NAIP imagery used in the study.

Keep an eye out for updates including images, informational links, localized rates, and shoreline armor.



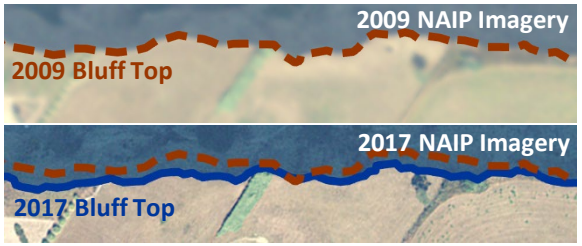
Designation Descriptions

- **Accreted** – Coastline has moved seaward
- **Change below noise level** – No change detected or image quality masks coastline position and no other erosion indicators are present
- **Erosion area, no change rates available** – Erosion detected, but change rates are not quantifiable
- **Erosion hazard area** – The coast has eroded and retreat rate has been calculated
- **Human-induced change** – Change due to deliberate human intervention

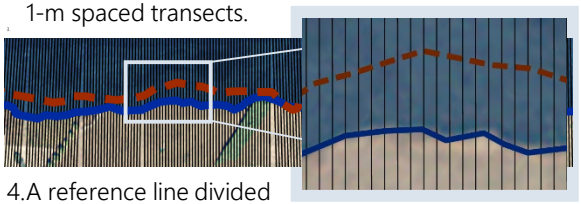
CHANGE ANALYSIS

Erosion rates were calculated at each designated erosion hazard area.

1. The vegetation line, bluff toe, or shoreline was digitized from two years of imagery.



2. Endpoint rates were calculated from cross-shore 1-m spaced transects.



4. A reference line divided into approximately 50-m alongshore segments was used to average rates from the 1-m transects.

Each reported rate is an average of approximately 50 measurements, ensuring that rates are representative of on-the-ground change with reduced digitizing error and image distortion biases.

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Imagery: WA Statewide 2017 NAIP, Spatial Reference: WA State Plane N NAD 83 (2011)

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