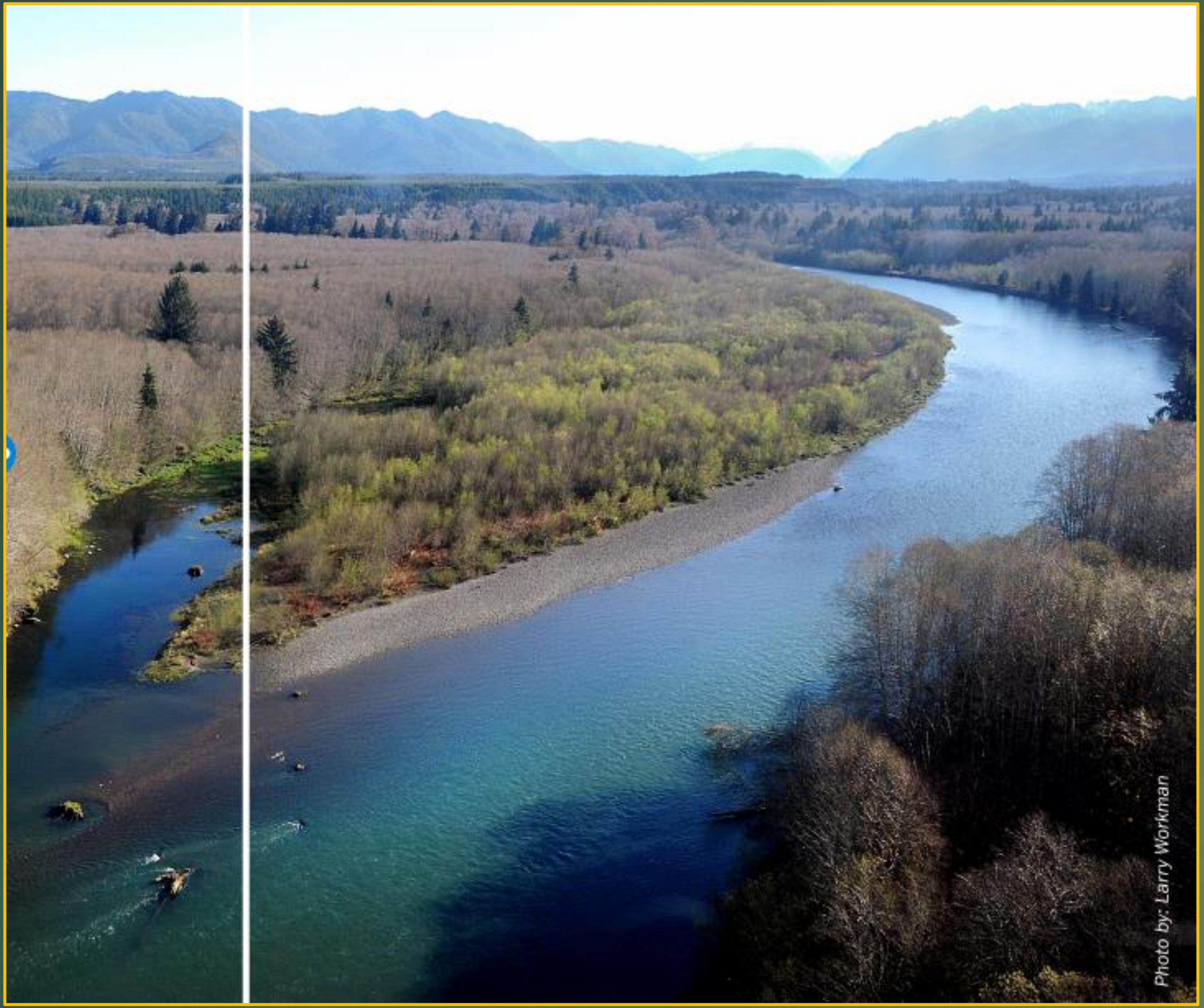


QIN Shoreline Master Plan Project

Phase 1

Team: QIN, SCJ Alliance and AECOM
QIN Project Manager: Jesse Cardenas, ACE
QIN Planning Director: Charles Warsinske

Presenter:
Lisa Palazzi, SCJ Alliance
Certified Professional Wetland Scientist (PWS)
Certified Professional Soil Scientist (CPSS)

Project Funded Through
Administration for Native Americans

ANA Administration for Native Americans
An Office of the Administration for Children & Families

QUINAULT INDIAN NATION

ACE American Community Enrichment

SCJ ALLIANCE CONSULTING SERVICES

AECOM

Overview of QIN Shoreline Master Program Project Scope of Work

- CURRENT WORK

Phase 1: Shoreline Inventory, Analysis, and Characterization Report

- NEXT YEAR

Phase 2: Write Shoreline Master Program:

    - Shoreline Designations
    - Policies and Regulations
    - Administrative Procedures

Benefits of a Shoreline Master Program

Provides a science- and policy-based context for assessing impacts of land management decisions on critical infrastructure, natural systems (forest and fish) and tribal commerce

What is a Shoreline?

- *The edge of a large water body – marine (saltwater) or riverine (freshwater) ecosystems*

Why are Shorelines important?

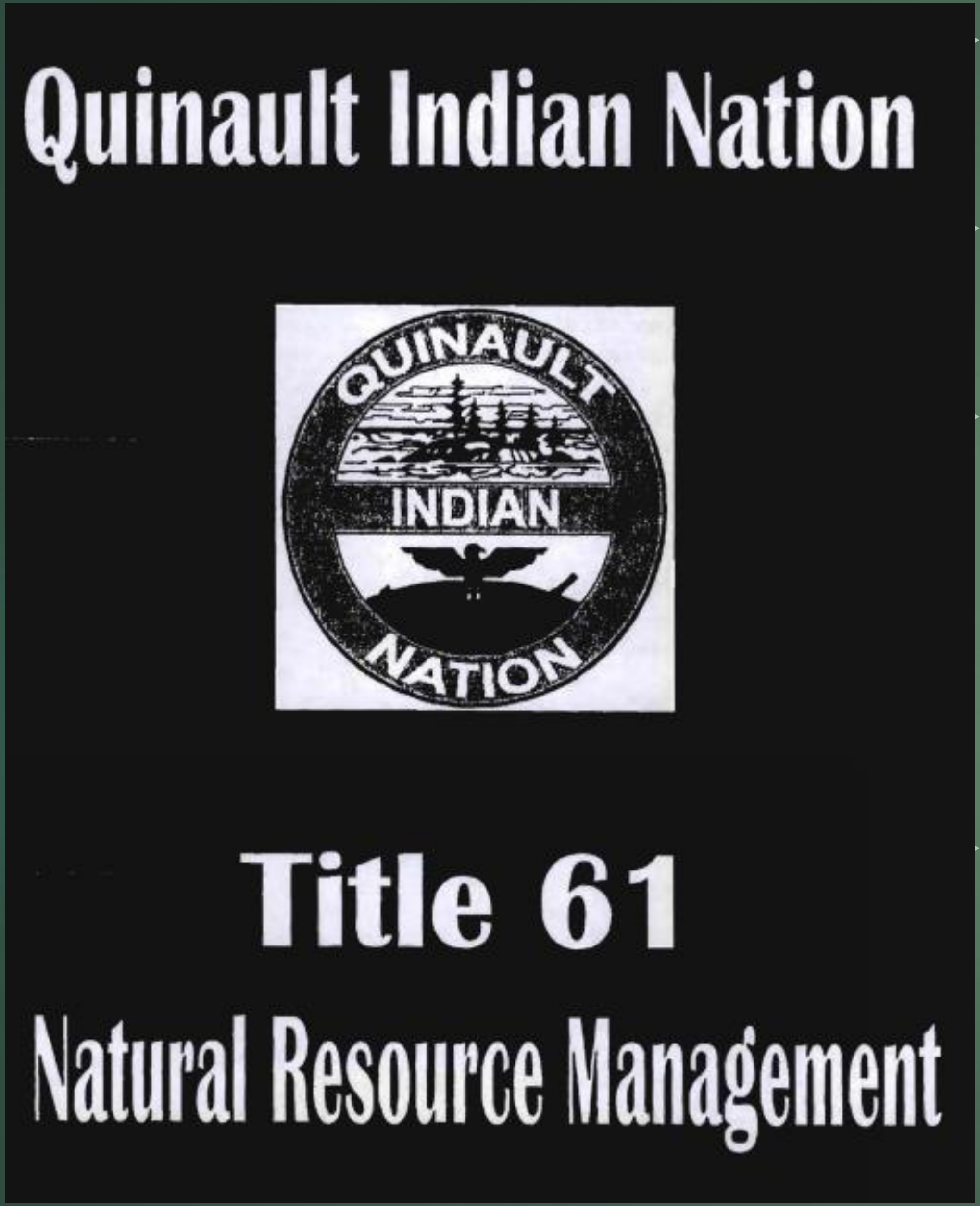
- *Support tribal commerce and cultural dependence on salmon fishery*
- *Protect important Quinault cultural resources*
- *Support broad land and water-dependent ecosystems*

Phase I Project Tasks

* D-Rivers inside the QIR include the Queets River, Salmon River, Raft River, North Fork Raft River, Quinault River, Wreck Creek and Moclips River.

1. Review Existing Code, previous SMP, QIN GIS Databases, Reports, and other SMPs
2. Define Shoreline Analysis Areas (SSAs) and Reaches Along Coast and D-Rivers*
3. Map and Describe Conditions within each Reach in the Shoreline Analysis Areas (SSAs)
4. Map and Model 100-year Floodplain on D-Rivers
5. Map and Model Perimeter of Lake Quinault
6. Write Shoreline Characterization Report Describing Natural Conditions and At-Risk Infrastructure within each Reach in the Shoreline Analysis Ares (SAAs)

PRIMARY RESOURCE DOCUMENTS



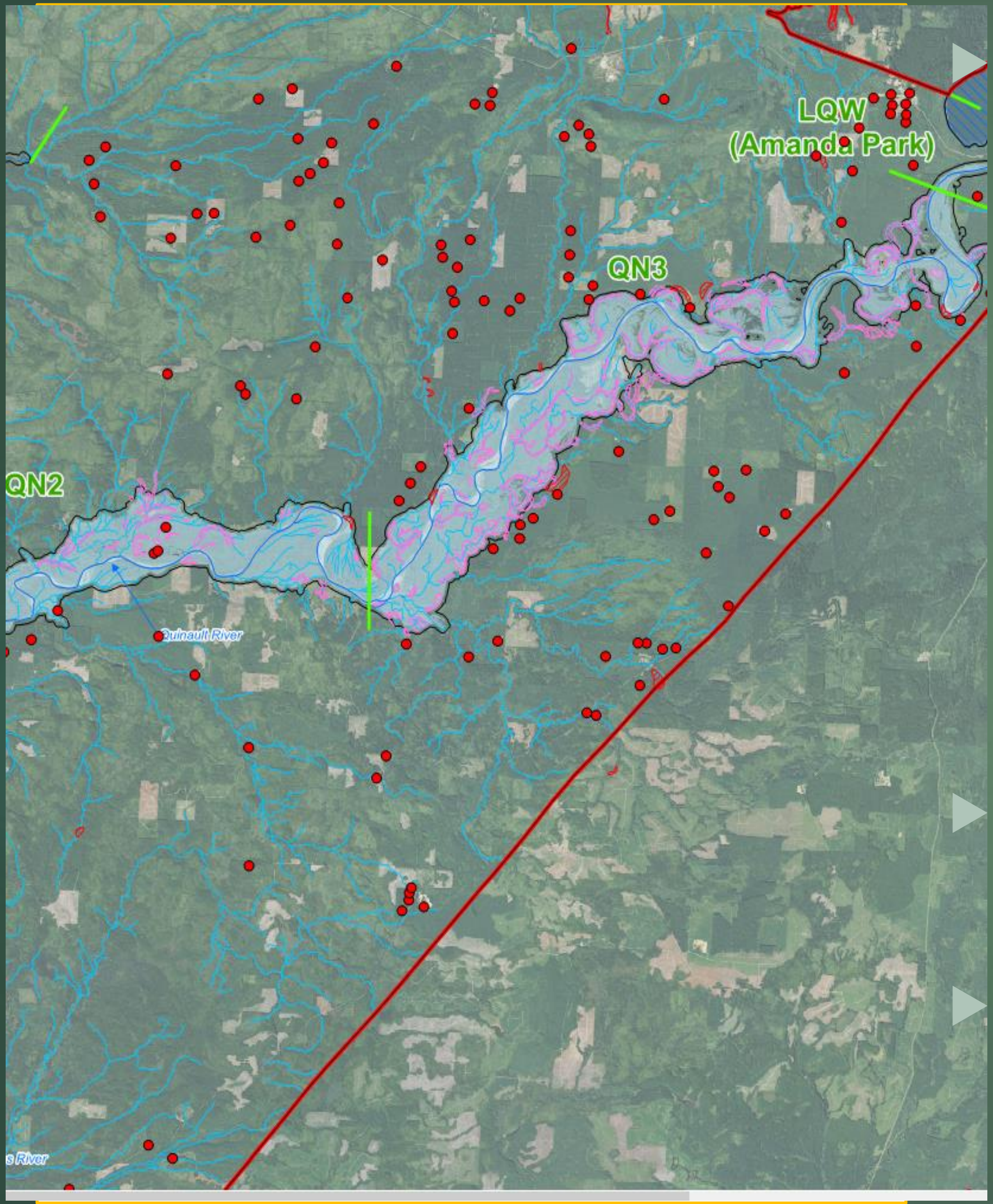
Title 45: QIN "Shoreline Management Code of 1993"

Title 48: QIN Land Use and Development Code (adopted 1975; most recently amended 2013)

Title 52: Beach Lands Regulations (adopted 2008) Documents QIN ownership of Beach Lands for "*fishing, the taking of shellfish, the taking of driftwood and other purposes…*" and protecting "*marine life, [and] cleanliness of water or air…*"

Title 61: Natural Resource Management (adopted 2008, currently being updated) – Regulates "Reservation Resources", defined as "*land, water, trees and other vegetation, fish and wildlife, and capital improvement*"

OTHER RESOURCE DOCUMENTS, DATABASES and MODELING WORK

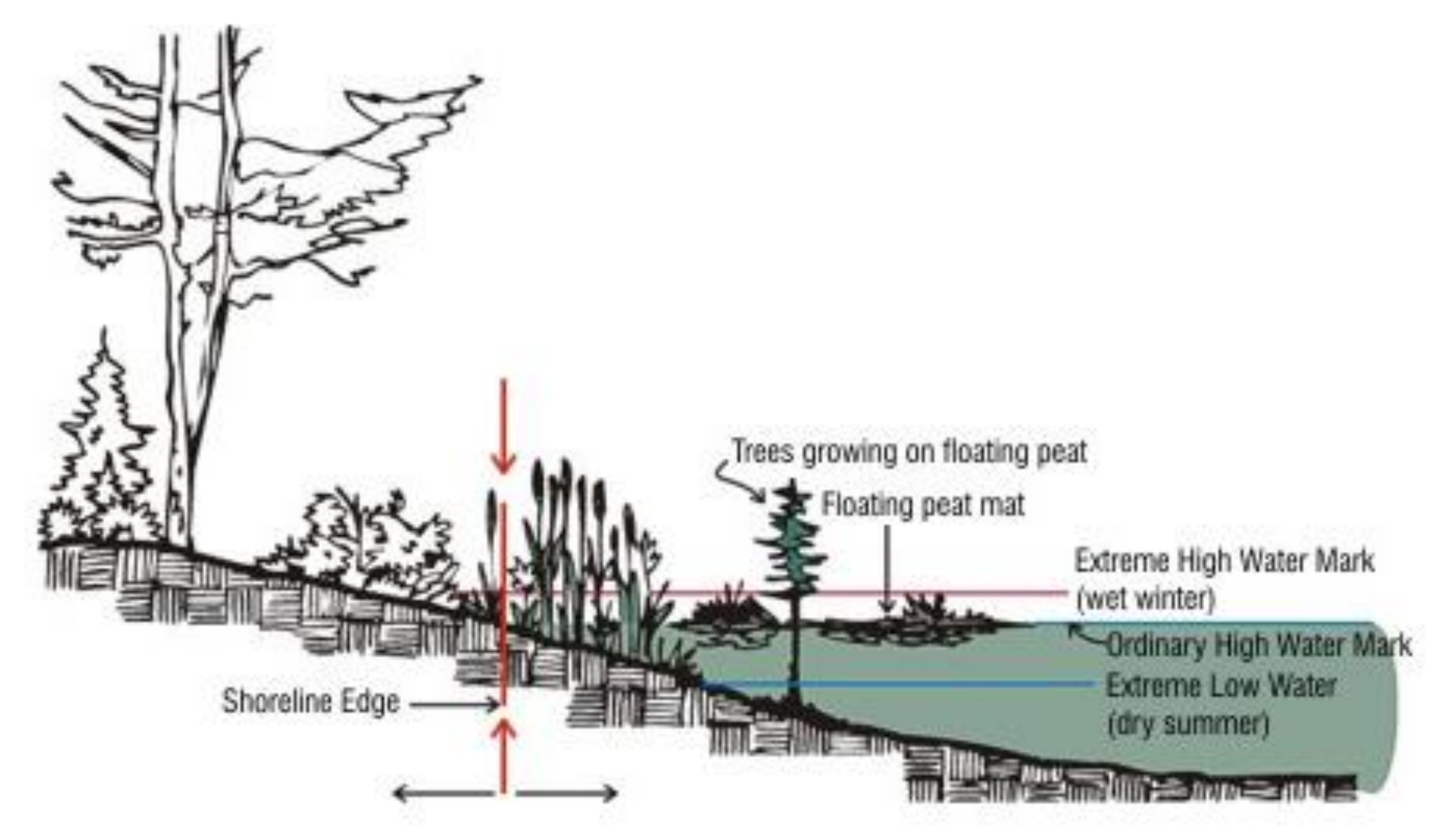


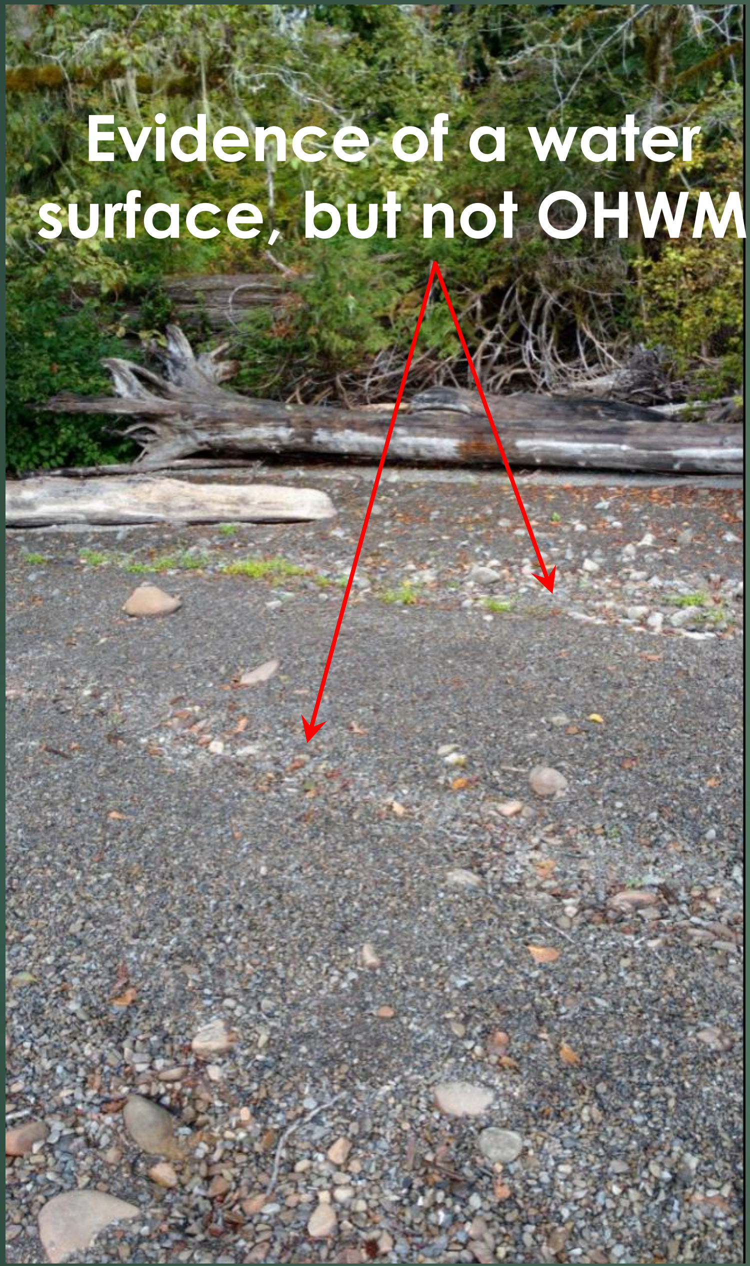
- **QIN GIS mapping database (limited list):**
  - LiDAR topography
  - Quinault Soil Survey (2007)
  - Rivers, Streams, Wetlands and Forest Stands
  - Roads and Gravel Pits
  - FEMA 100 year floodplain panels
  - Zoning and Allotments
- **Floodplain and Ordinary High Water Mark (OHWM) Modeling**
- **Kamiak Ridge Coastal Reach Assessment photos:** Maps and Aerial Photos of 14 Coastal Reaches

- OHWM = “a biological vegetation mark” – OR “A mark on a shoreline” that indicates regular presence and action of water under ordinary conditions; is often the edge of a scour line or a vegetation line.
- One can define a default tidal or fresh water elevation line for locations where the OHWM is hard to determine from examining the shore.

Definition of OHWM

Concept:
OHWM is where the Lake’s water surface persists in most winters.



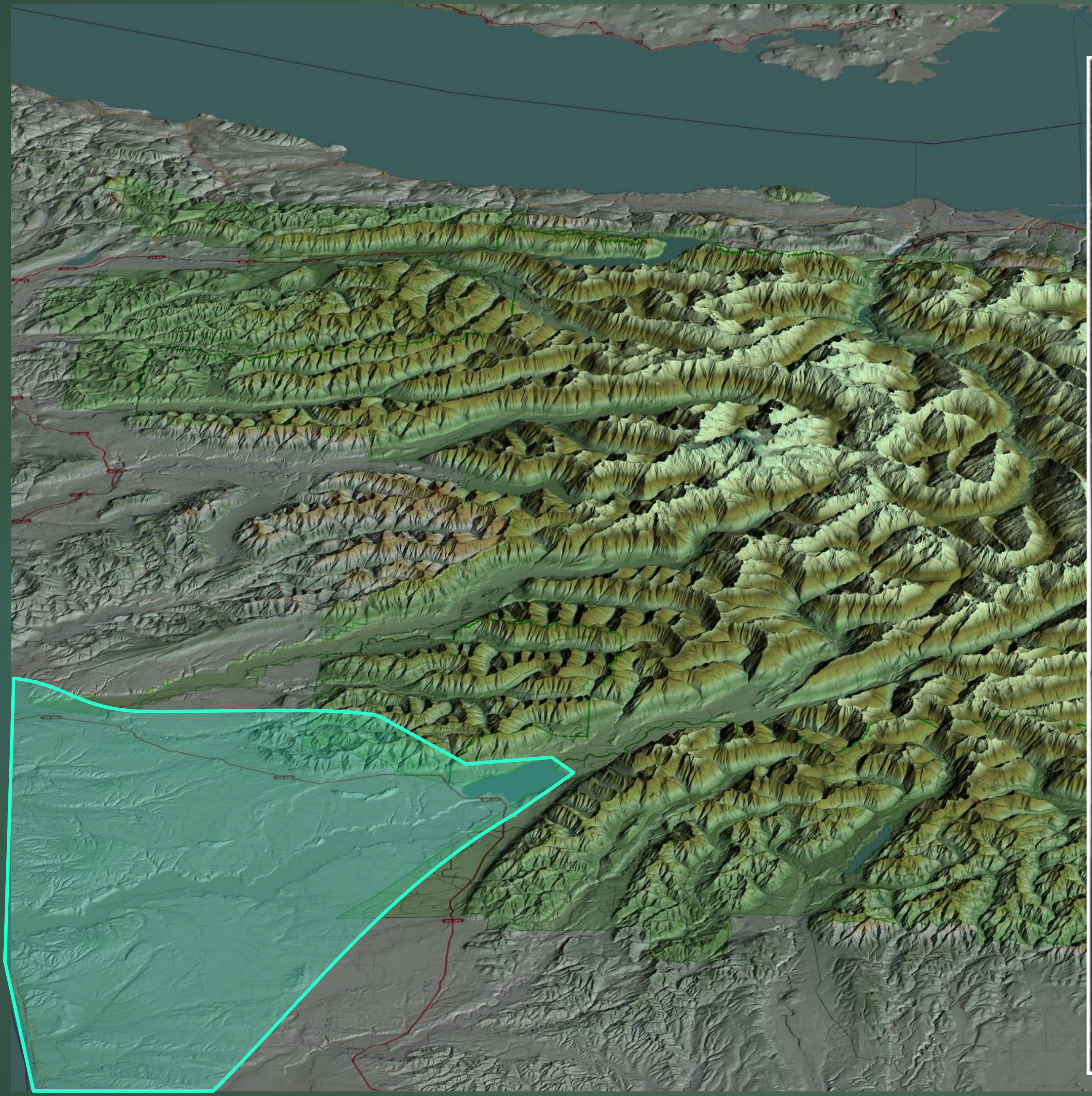


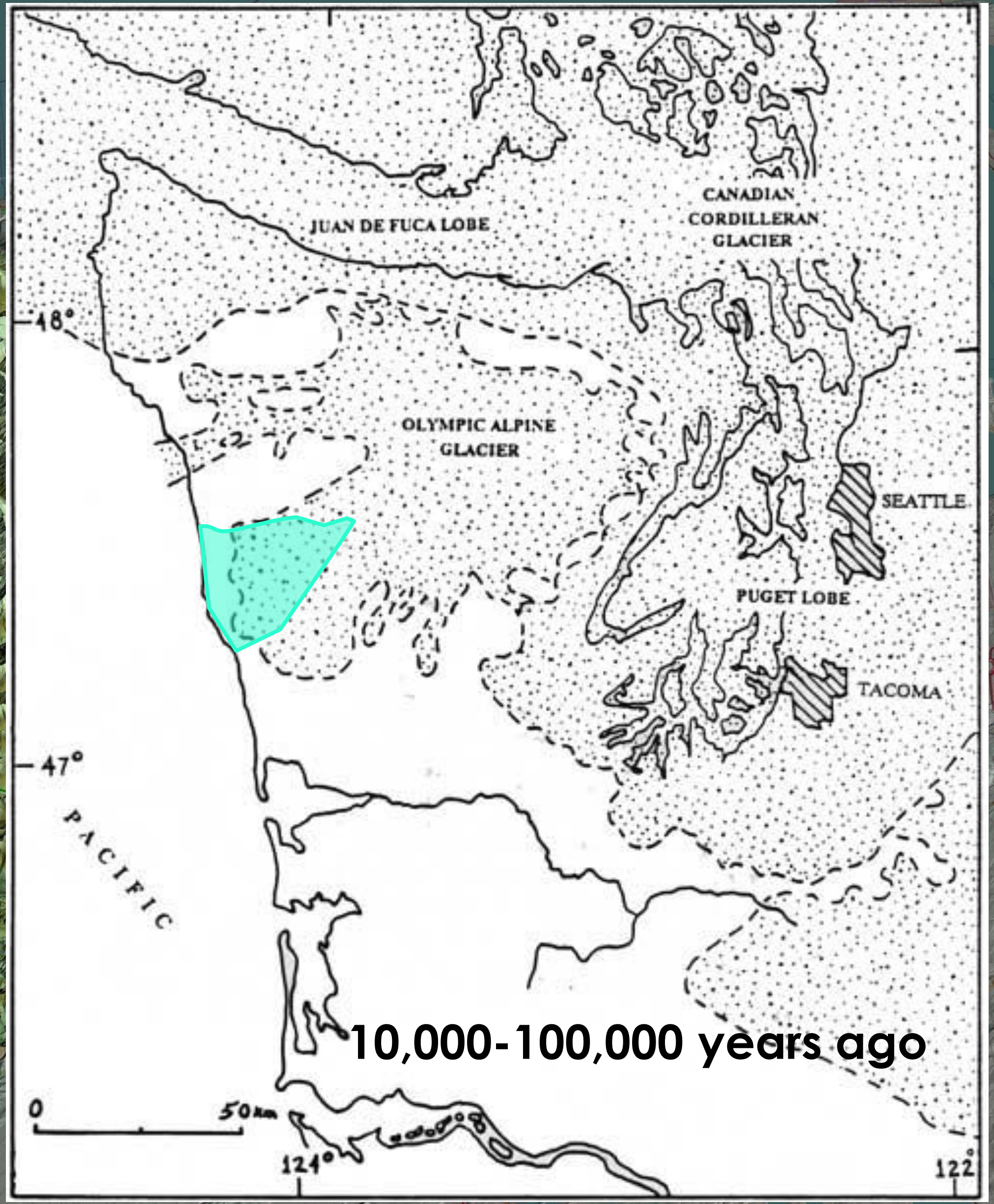
Looking for Evidence of OHWM

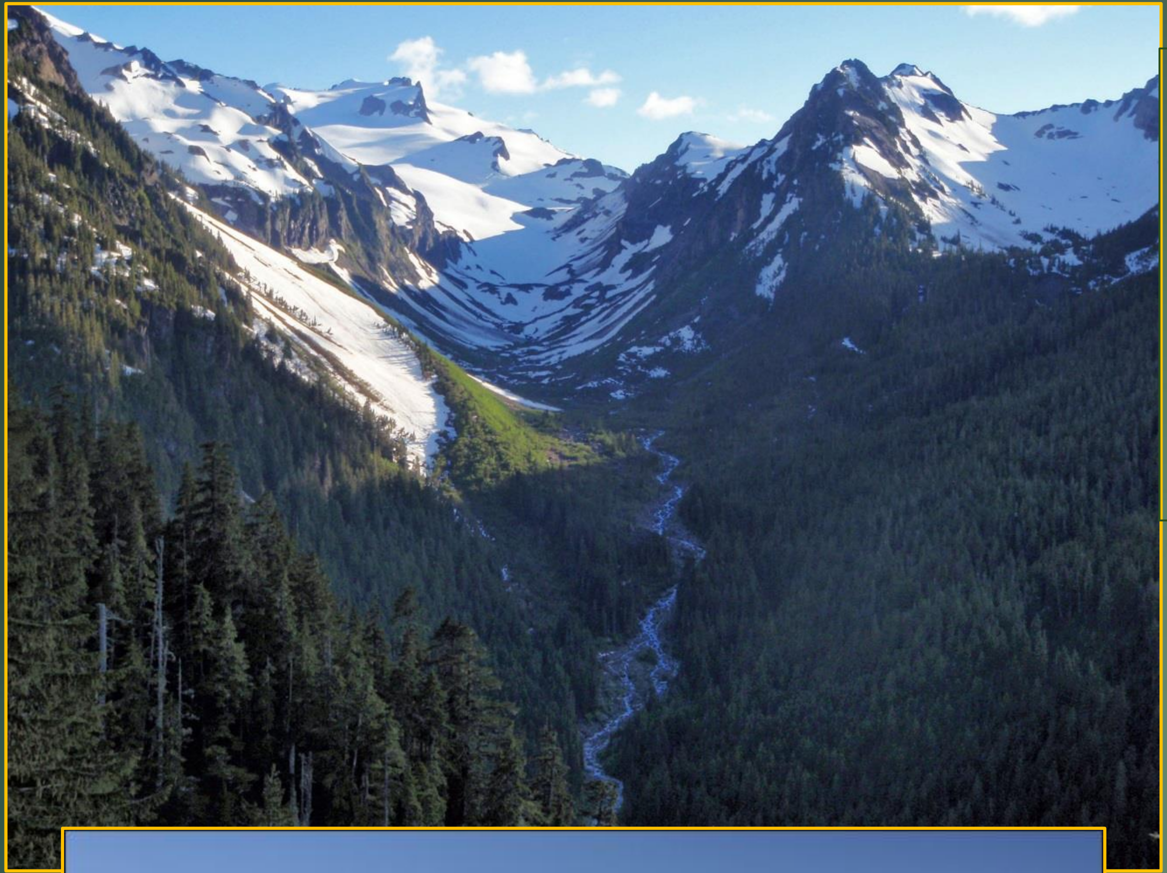

Logs were floated in, and erosion
shelf below the job shack indicates
a Lake water surface.

What creates Natural Systems Unique to the Quinault Reservation

1. Soils and Geology
   Acted upon by
2. Climate (which is changing)
   And
3. Living organisms (plants and animals)
   Over
4. Time
   Which creates
5. Landscapes and Ecosystems

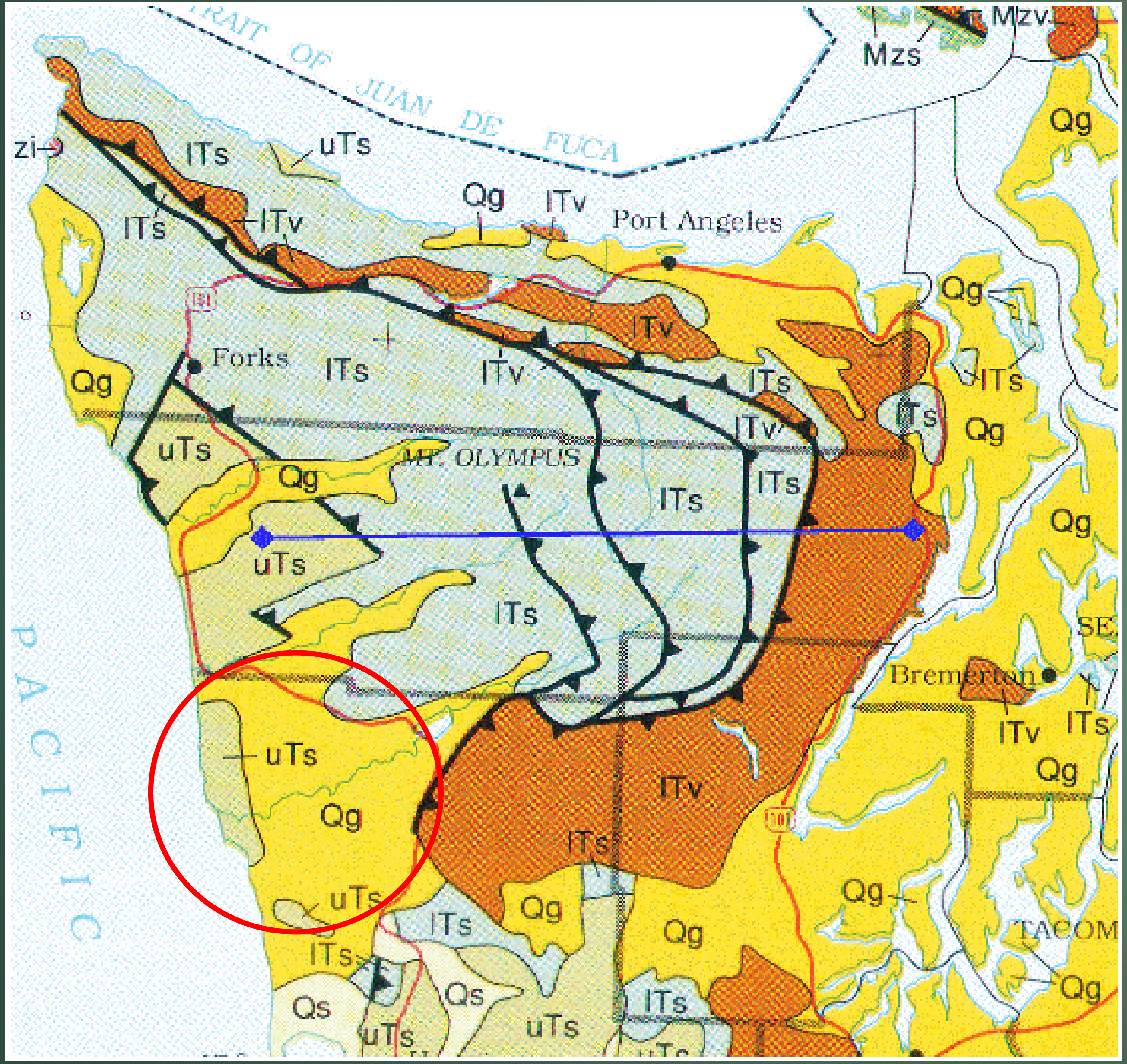


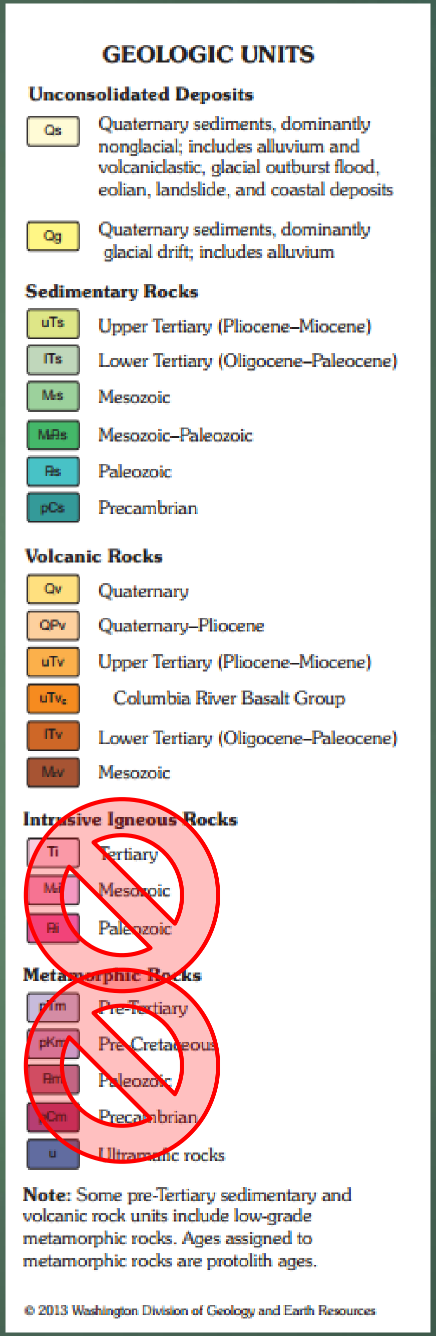

CANADIAN
CORDILLERAN
GLACIER
JUAN DE FUCA LOBE
48°
OLYMPIC ALPINE
GLACIER
SEATTLE
PUGET LOBE
TACOMA
47°
PACIFIC
0
50km
124°
122°
10,000-100,000 years ago



Alpine glaciation on the Olympic Peninsula

Generalized Geology





The Olympic peninsula is formed from a series of rock bands scraped and piled in overlapping layers over the surface of the incoming San Juan de Fuca plate.

This leaves eastward facing curves of rock that have pushed up 8000 feet to form the Olympic mountains.

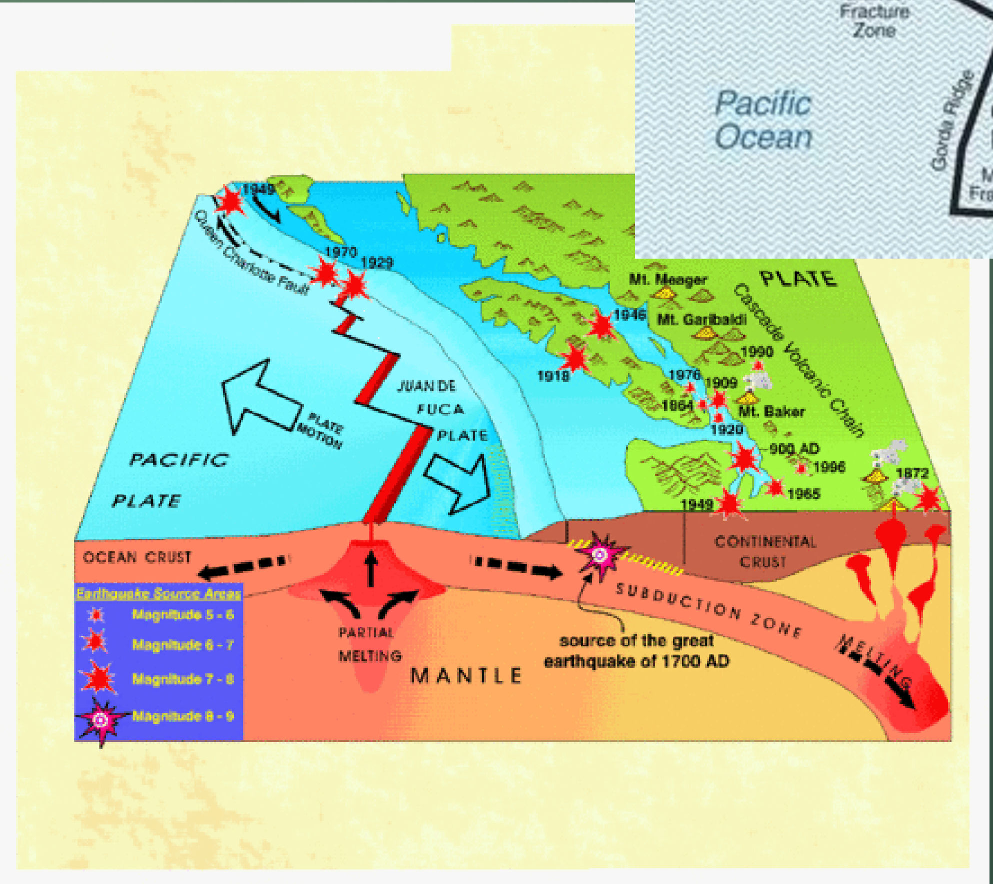
Basalt Lava Flows at Point Grenville

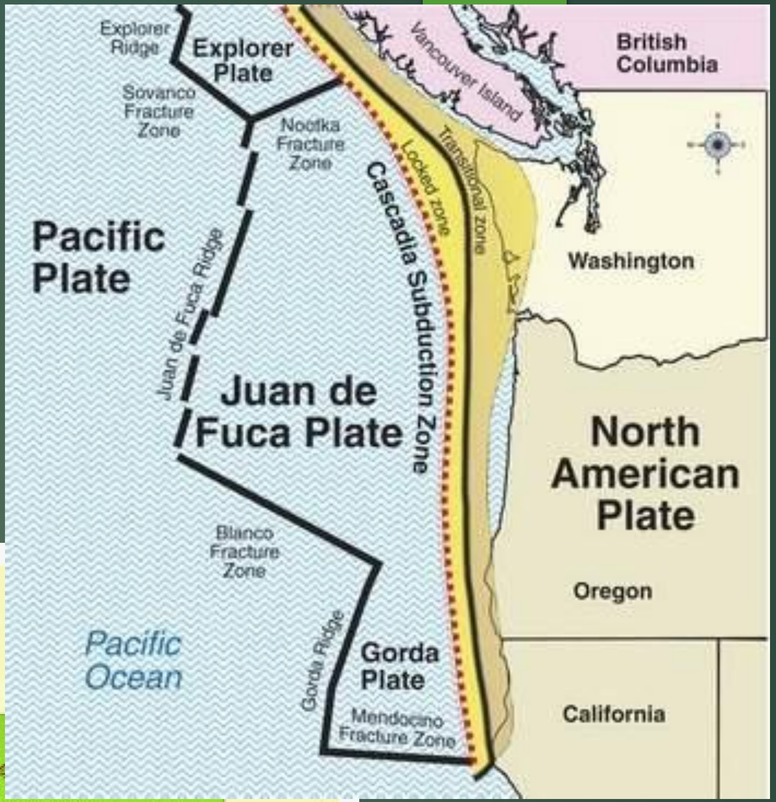
Plate Tectonics of the Olympic Peninsula

The Juan de Fuca plate is colliding with the edge of North America at an average rate of 4.5 cm/year (1.8 in/year).

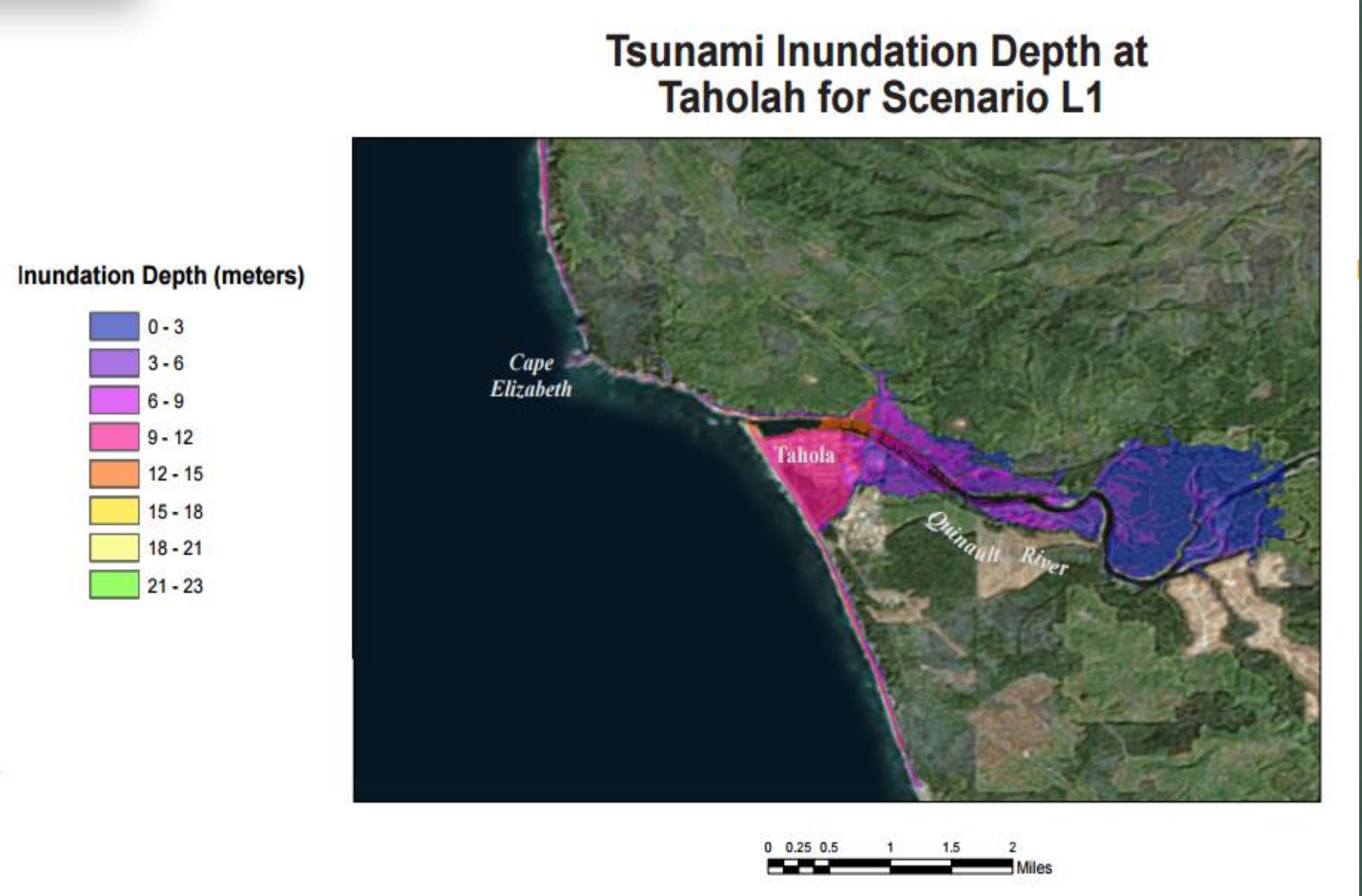
Every few hundred years, it gets hung up, then releases all at once in a big earthquake.

The last of these events was 313 years ago -- a magnitude 9 quake (HUGE). These events result in generate coastal tsunamis that throw sand up onto the coastal plain.





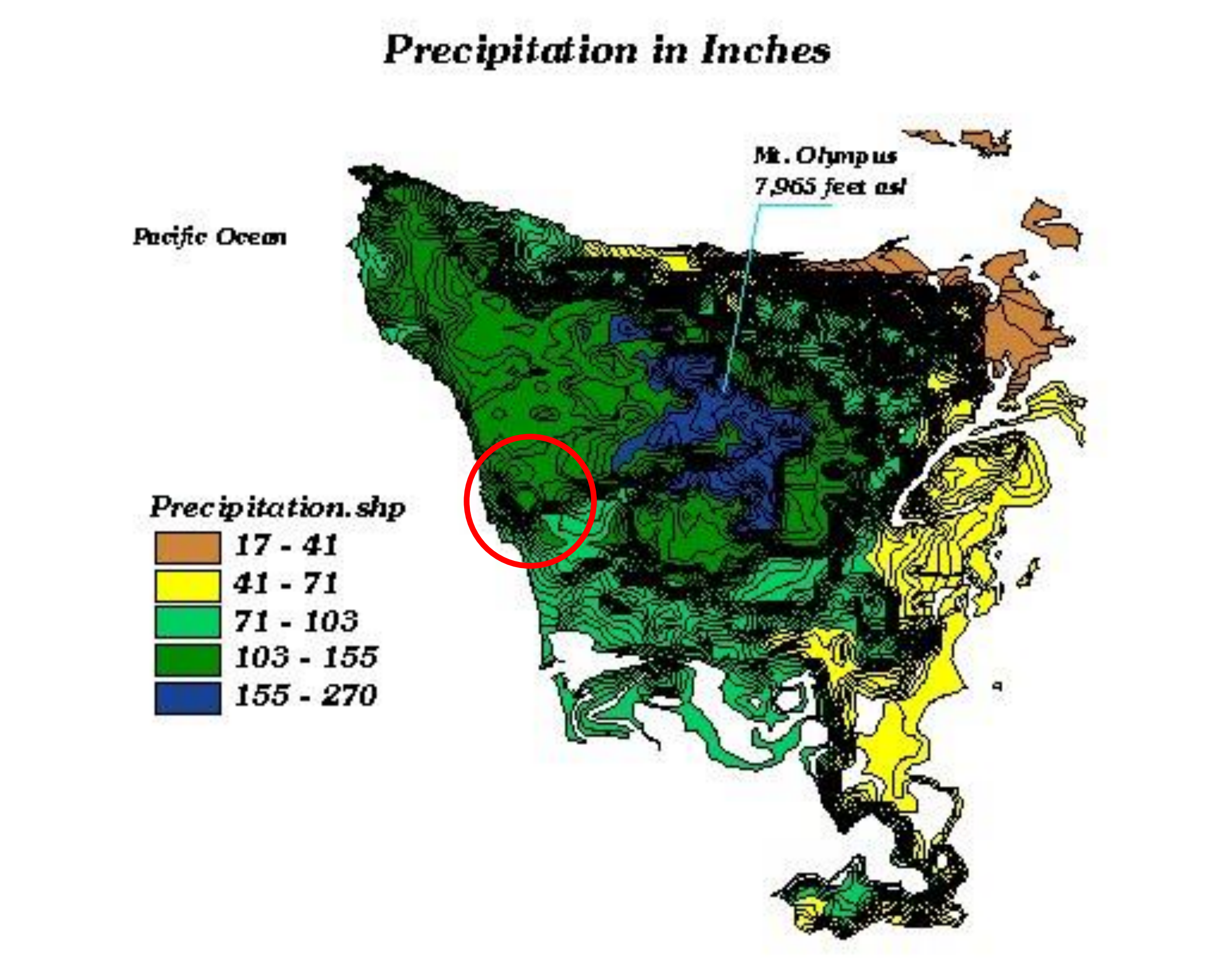
Tsunami Deposits and Subsided Landscapes Along the Coast

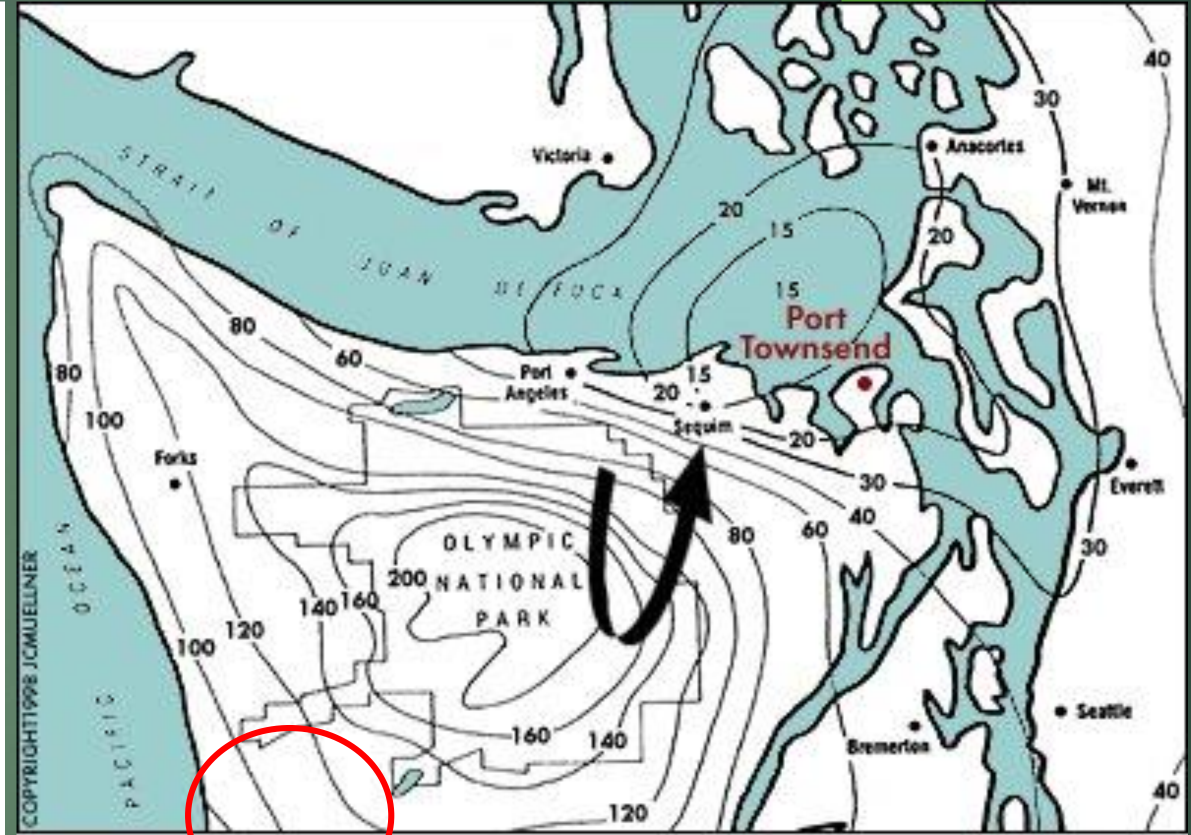


Can we Plan for Tsunami Impacts?

YES!

Olympia Peninsula Rainfall Patterns





Annual Inches of Rain
(Note Sequim - 15 Inches)

Landslides affecting critical infrastructure

Landslides affecting upland management

<u>Shoreline Analysis Areas</u>

1. <u>Proposed **Coastal** Shoreline Analysis Area</u>

   a. Starts at the Mean High High Tide (MHHT) elevation line at the beach

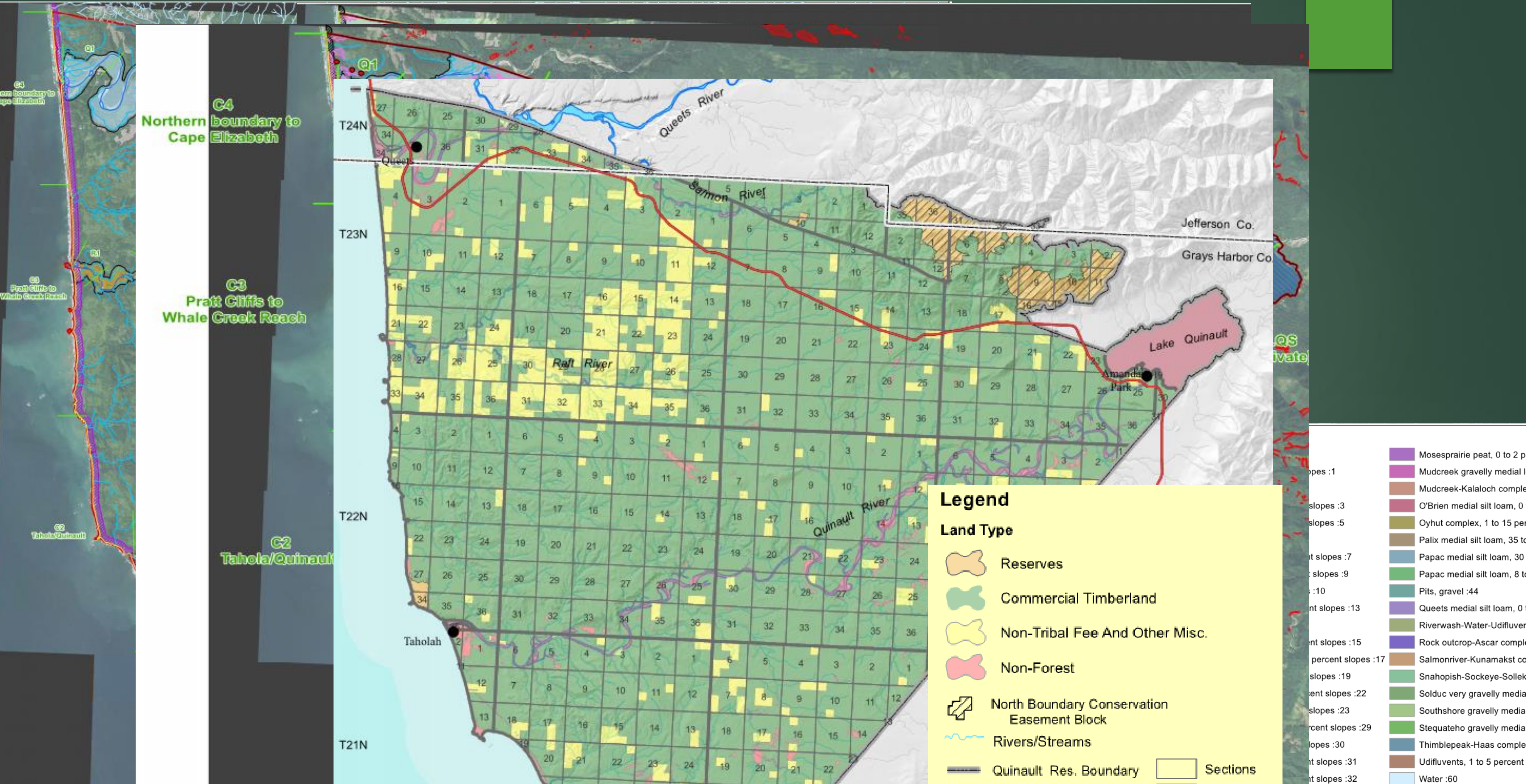
   b. Upland edge is 800 feet inland from MHHT line.

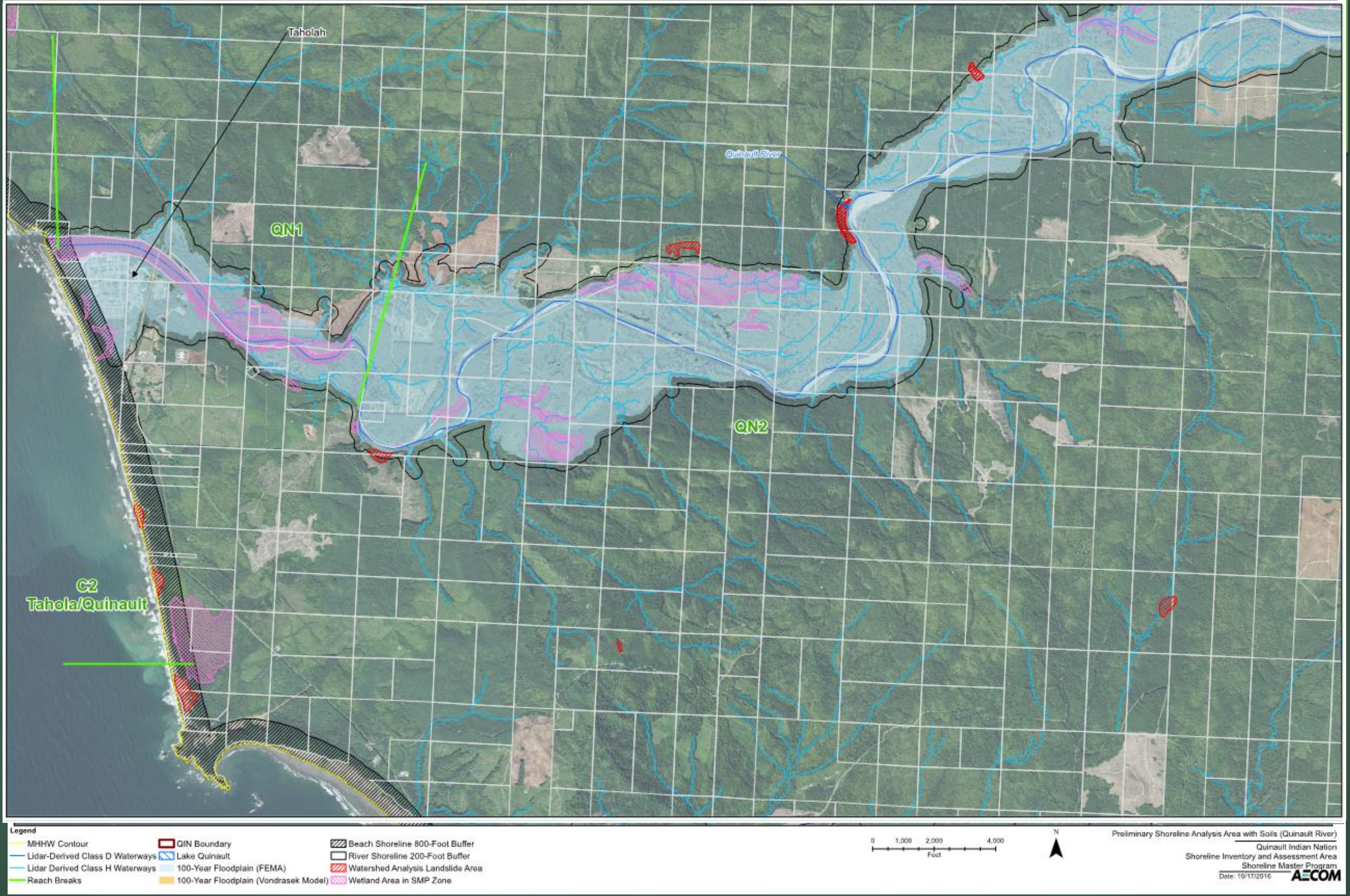
2. <u>Proposed **Riverine** Shoreline Analysis Area</u>

   a. On D-Rivers (larger, fish-bearing systems), starts at the edge of the 100-year floodplain

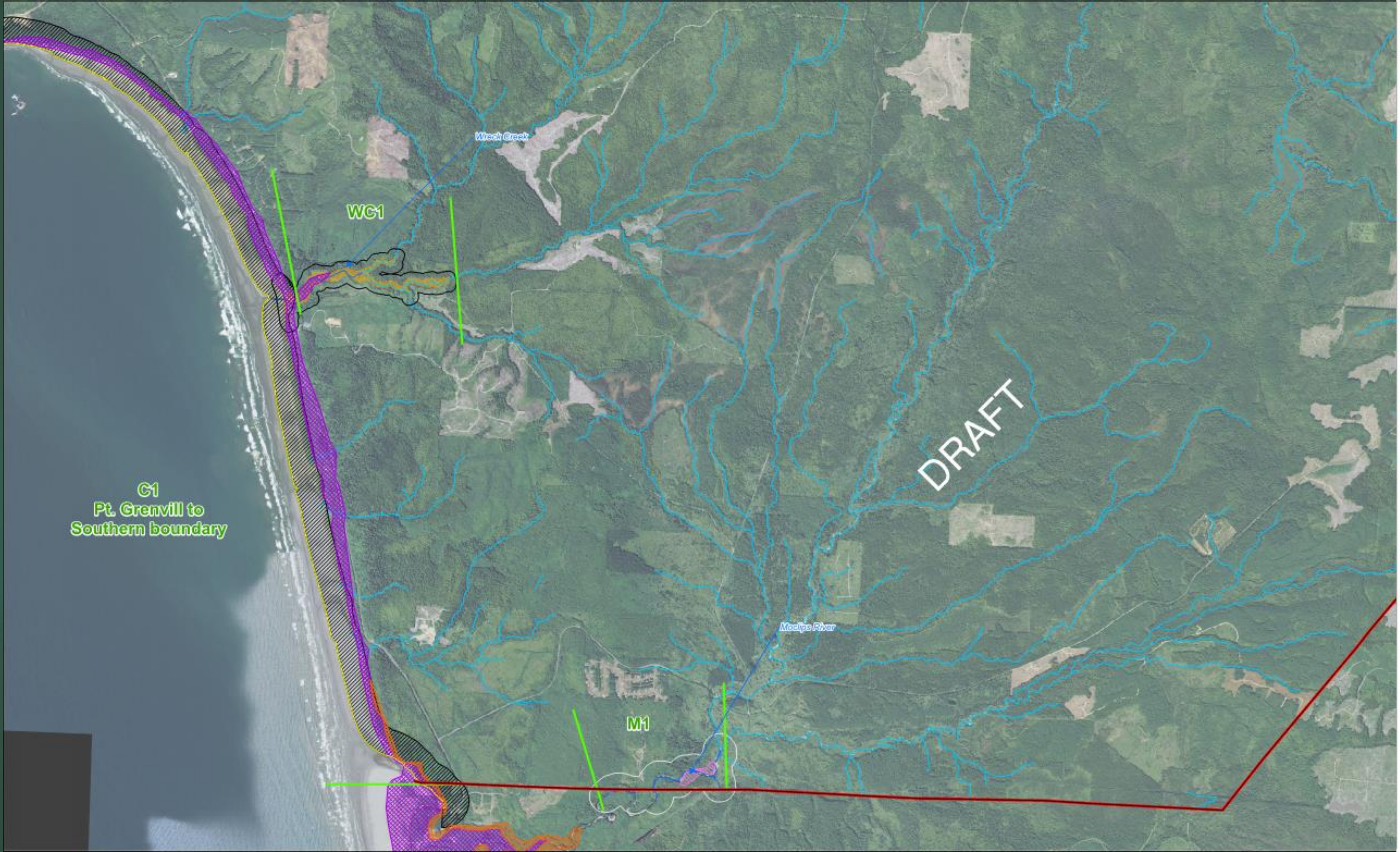
   b. Upland edge is 200 feet inland

The SAA may be widened in some sections if needed to include areas determined to be higher risk -- such as landslide areas, vulnerable infrastructure, or threats to important cultural heritage sites


C4
Northern boundary to
Cape Elizabeth
C3
Pratt Cliffs to
Whale Creek Reach
C2
Tahola/Quinault
Q1
T24N
T23N
T22N
T21N
Queets River
Queets
Salmon River
Raft River
Quinault River
Lake Quinault
Amanda Park
Taholah
Jefferson Co.
Grays Harbor Co.
Legend
Land Type
Reserves
Commercial Timberland
Non-Tribal Fee And Other Misc.
Non-Forest
North Boundary Conservation Easement Block
Rivers/Streams
Quinault Res. Boundary
Sections
Mosesprairie peat, 0 to 2 p
Mudcreek gravelly medial l
Mudcreek-Kalaloch comple
O'Brien medial silt loam, 0
Oyhut complex, 1 to 15 per
Palix medial silt loam, 35 t
Papac medial silt loam, 30
Papac medial silt loam, 8 t
Pits, gravel :44
Queets medial silt loam, 0
Riverwash-Water-Udifluver
Rock outcrop-Ascar compl
Salmonriver-Kunamakst co
Snahopish-Sockeye-Sollek
Solduc very gravelly media
Southshore gravelly media
Stequateho gravelly media
Thimblepeak-Haas comple
Udifluvents, 1 to 5 percent
Water :60



Taholah
Quinault River
QN1
QN2
C2
Tahola/Quinault
Legend
MHHW Contour
Lidar-Derived Class D Waterways
Lidar Derived Class H Waterways
Reach Breaks
QIN Boundary
Lake Quinault
100-Year Floodplain (FEMA)
100-Year Floodplain (Vondrasek Model)
Beach Shoreline 800-Foot Buffer
River Shoreline 200-Foot Buffer
Watershed Analysis Landslide Area
Wetland Area in SMP Zone
0 1,000 2,000 4,000
Feet
N
Preliminary Shoreline Analysis Area with Soils (Quinault River)
Quinault Indian Nation
Shoreline Inventory and Assessment Area
Shoreline Master Program
Date: 10/17/2016
AECOM


Wreck Creek
WC1
C1
Pt. Grenvill to
Southern boundary
DRAFT
Moclips River
M1

QUESTIONS?