

2016 Washington Tribal -State Transportation Conference
September 29, 2016

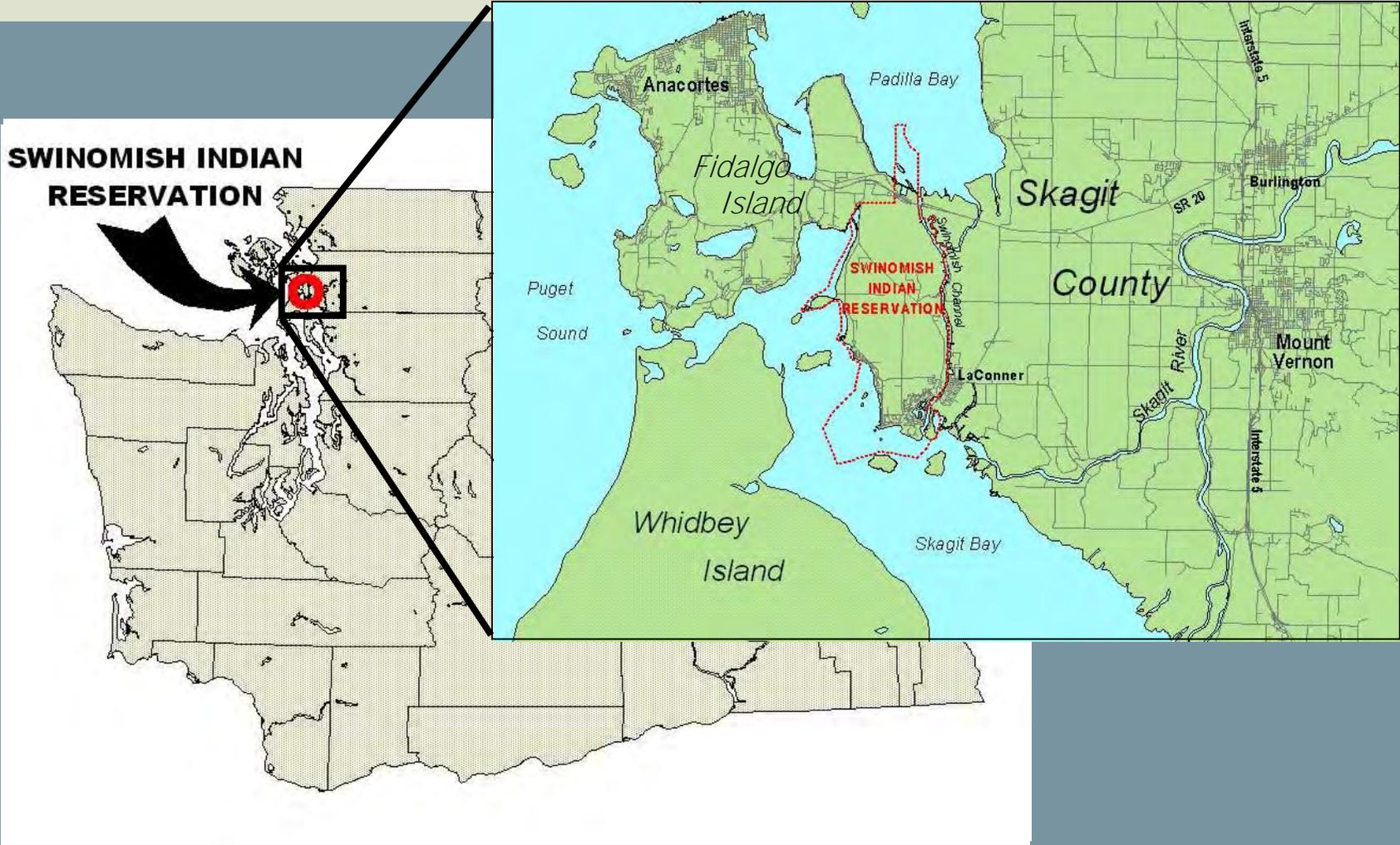
Partnering to Adapt for Climate Change



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Location of Swinomish Indian Reservation



Swinomish Climate Change Initiative

Tribal Leadership issued a proclamation recognizing potential significant impacts to the human and natural systems on the future of the Swinomish Community, Reservation homeland, and U&A areas. It is the responsibility of the Tribal Senate to provide for the well-being of the SITC, as well as attend to the well-being of those resources; natural systems and human systems that provide crucial support for the Community and Reservation .

Swinomish Climate Change Initiative



- 2-Year, \$400,000 project (80% federal, 20% tribal)
- CIG/ King County: Preparing for Climate Change Guidebook for Local, Regional, & State Governments
- Partners: UW-Climate Impacts Group, Town of La Conner, Skagit Co., Shelter Bay Community
- Inter-disciplinary process: Planning, Public Works, Water Resources, GIS, Housing and Utilities, THPO, Communications, Environmental Health.

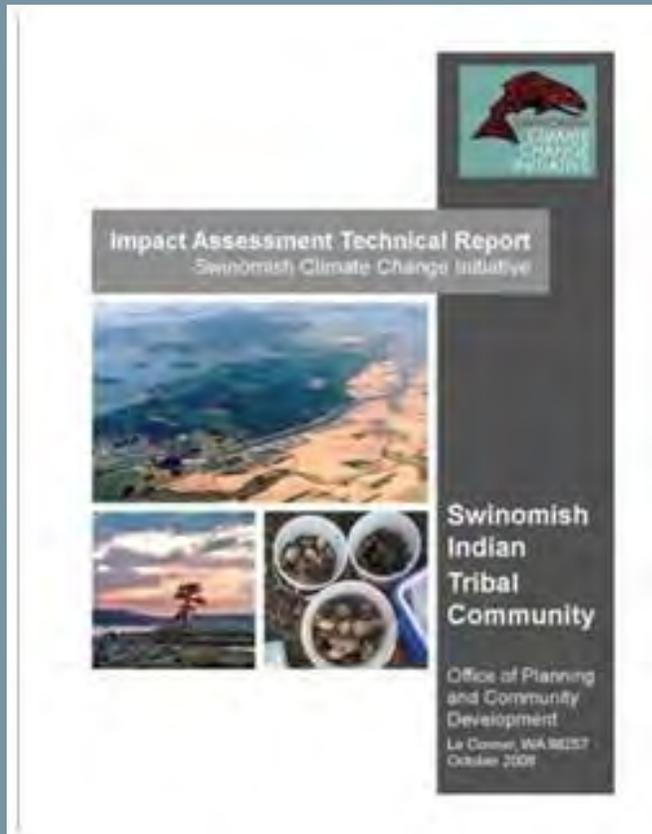
Assessing Climate Impacts

Phase 1– Technical Report (2009):

Comprehensive effort aimed at assessing and responding to the negative impacts of climate change on community members, tribal land, and regional ecosystem.

Impact assessment

- Data review/analysis
- Risk analysis
- Policy Scoping (intergovernmental)
- Vulnerability assessment
- Risk zone mapping /inventory

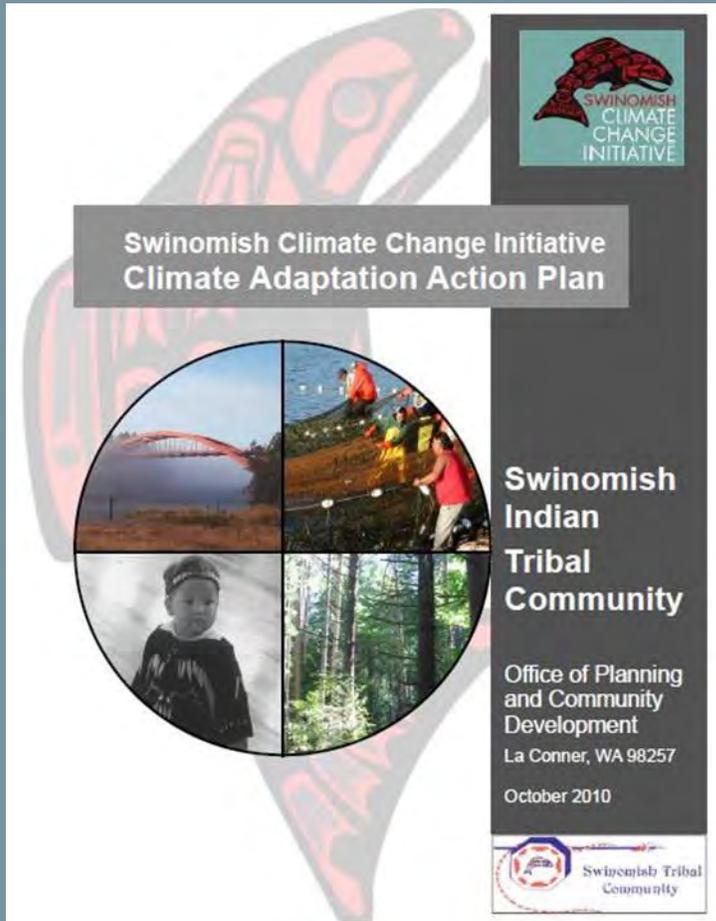


Community Outreach And Inclusion

Process: “This work entails establishment of an *honorable engagement* process for the Swinomish community by raising awareness of climate impacts on the tribal community, and it opens a pathway for community input to inform and guide policy and decisions about how the tribe will adapt and prepare to deal with the impacts of climate change.”



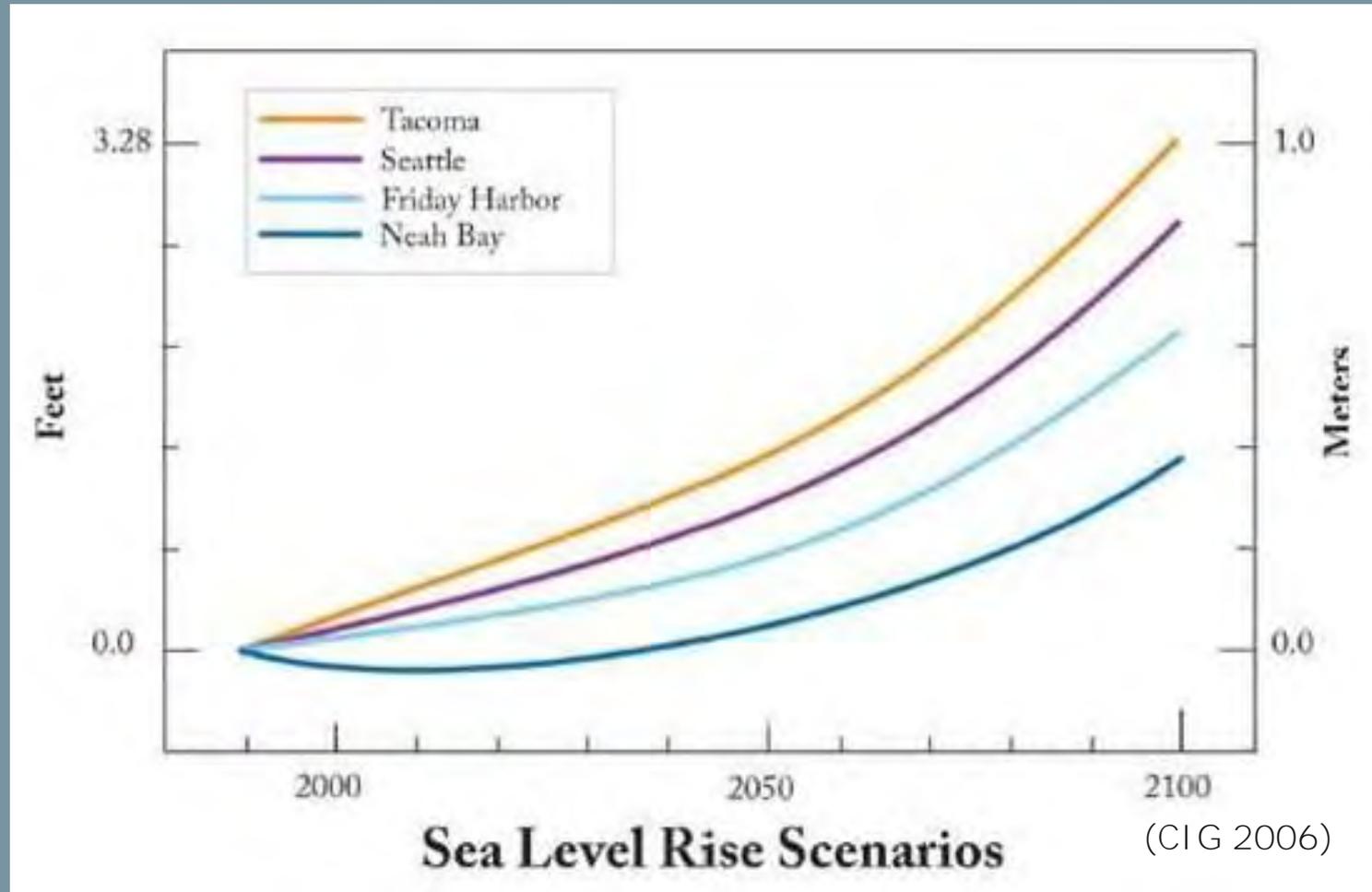
Climate Adaptation Action Plan



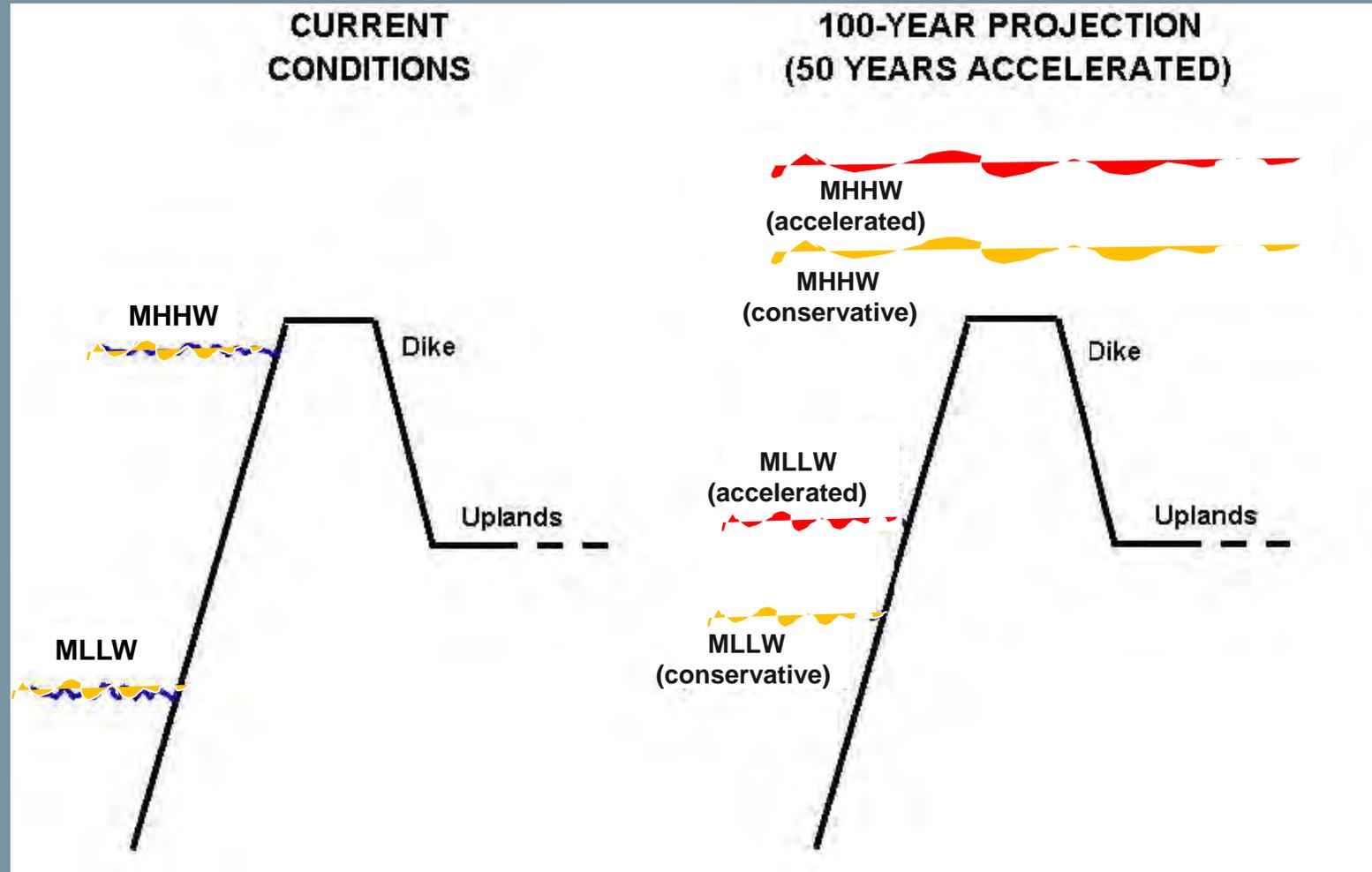
Phase 2 – Action Plan (2010):

- Adaptation Goals
- Review strategies, criteria, and priorities
- Assess requirements (coordination/funding)
- Develop/prioritize recommendations

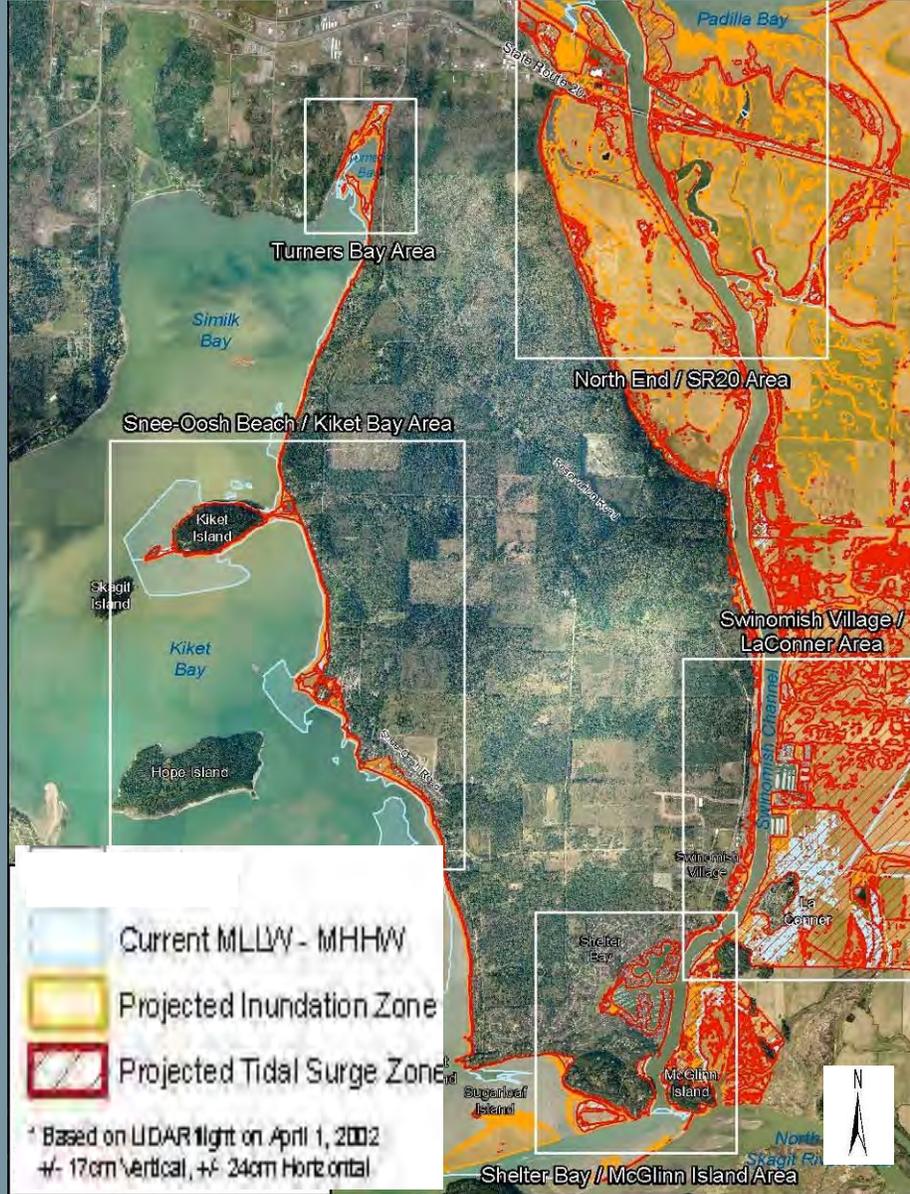
Potential Sea Level Rise, Puget Sound



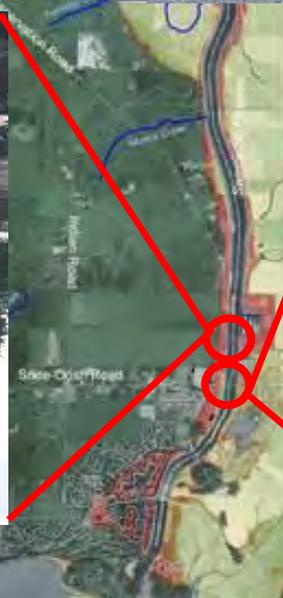
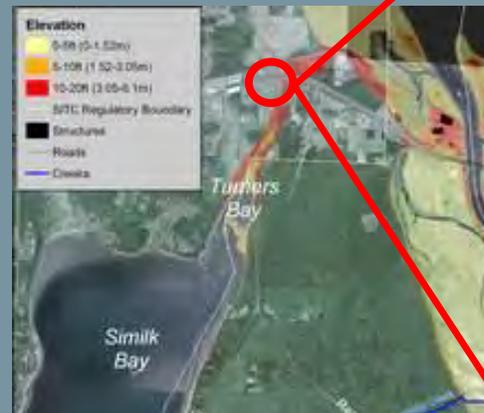
Sea Level Rise Scenarios, Low-lying Areas



Inundation Risk Zones – Sea Level Rise & Tidal Surge



Tidal Surge, Swinomish Reservation – 2006, 2009, 2010, 2012



Access Routes to Fidalgo Island and Swinomish Reservation



Climate Impacts to Transportation

Transportation Element	Potential Impacts	Vulnerability (impact level)	Estimated Risk	Potential Priority
Access/ Circulation	Inundation of access routes, travel disruption, isolation from mainland (long-term impact)	High	High	High
	Higher, more frequent storm/ tidal surges, road closures, restriction of access (short term duration events)	Medium-High	High	High
Road System Integrity	Flood damage from storm/tidal surge, higher temperatures	High	High	High
Bridges	Erosion of bridge footings from higher tides/ storm surges	Medium	Medium	Medium
	Deterioration of bridge structures from increased or prolonged heat	High	Medium-High	High
Marine Transport Facilities	Inundation of marine facilities and ports from gradual sea level rise, higher tides	High	High	High

Adaptation Goal(s):

- A transportation network should be provided that will adequately satisfy the requirements for everyday access, tourism, and emergency vehicle access and evacuation in a safe and effective manner, while protecting and restoring coastal and natural resources.
- Road and utility construction should be prohibited from areas subject to excessive erosion and/or accretion.

Adaptation Strategies:**8.4.1.1 Build/raise dikes**

Description: Build dikes or raise the elevation of existing dikes protecting roads located in the inundation risk zone, particularly low lying roads and bridge approaches.

Required Authority/ Capacity: The Tribe owns existing dikes on the north end of the Reservation, but lacks an established diking program; protection of off-Reservation access routes requires inter-jurisdictional coordination and substantial funding.

Potential Partners/Coordination: Diking District (off-Reservation fee lands), Town of LaConner, possibly US Army Corps of Engineers (USACE).

Timeframe for Implementation: Short term strategy, 3 to 10 years.

Priority: HIGH (with consideration of other options, possibly as a short term strategy)

8.4.1.2 Raise road level

Description: Raise elevation of roads in the inundation risk zone that are highly vulnerable to inundation from sea level rise and/or high tidal storm surges. Raising road elevation would maintain the existing routes and access to the Reservation.

Required Authority/ Capacity: Owners; Tribe, Skagit County, or Washington State Department of Transportation (WSDOT). The Tribe has limited capacity; requiring assistance from outside sources for planning, construction, and funding.

Potential Partners/Coordination: Depending on road ownership, Skagit County and/or WSDOT.

Timeframe for Implementation: Long term strategy, greater than 10 years.

Priority: HIGH (with consideration of other options)

8.4.1.3 Relocate route

Description: Relocation of routes within the inundation risk zone for better long-term protection of low-lying roads from inundation and of coastal resources from adverse impacts related to such routes.

Required Authority/ Capacity: Owners; Tribe, Skagit County, or WSDOT. The Tribe has limited capacity; requiring assistance from outside sources for planning, construction, and funding.

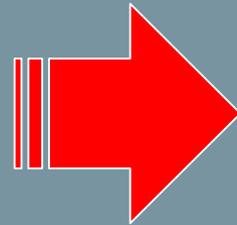
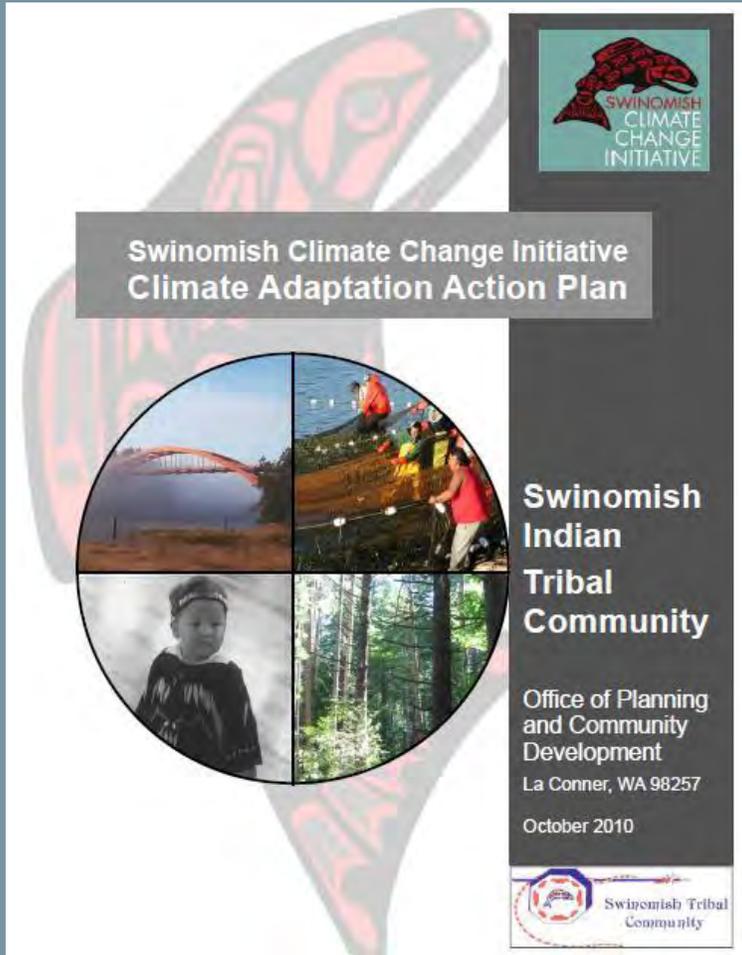
Potential Partners/Coordination: Depending on road ownership, Skagit County and/or WSDOT.

Timeframe for Implementation: Long term strategy, greater than 10 years.

Priority: HIGH (with consideration of other options)

Action Plan Priorities for Implementation

(\$ = relative estimated cost per \$1000)



Regional access preservation
(\$\$\$\$\$)

Dike maintenance/repair
(\$\$\$\$\$)

Coastal zone protection
(\$\$\$?)

Local emergency planning
(\$)

Significant Regional Issues

- Short-term threat to connectivity, mobility (storm/surge)
- Long-term risk, potential isolation from mainland (sea level rise)
- Collective population of ~ 45,000 potentially affected
- Impacted communities – Swinomish, LaConner, Anacortes, Oak Harbor, Coupeville, etc.
- Impacted facilities – ferry terminals, services, refineries, Whidbey NAS

Transportation Planning – Actions

- Identify/refine adaptation needs; (e.g, Access Corridor Preservation)
- Build partnerships with local agencies and communities
- Work with local jurisdictions and WSDOT to prioritize potential projects
- Identify funding opportunities and contributions

Ongoing Adaptation Efforts

- Coastal Climate Impacts to First Foods, Cultural Sites, and Tribal Community Health and Well-being. Dept of Community Health, USGS, SRSC.
- Shoreline and Beach Enhancement – Olympia oyster restoration in Similk Bay. Fisheries Dept and Dept of Environmental Protection.
- Code Updates – Zoning, Building, and Shorelines and Sensitive Areas. Dept of Environmental Protection.
- Forestry Management Planning – landscape eco-system approach and CO₂ Bank Feasibility Study. Dept of Planning and Ecotrust

Thank You

More information and complete copies of reports are available on Swinomish Climate Change web site:

www.swinomish-nsn.gov/climate_change/project/reports.html

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