

November 16, 2016

“We Can” Community Engagement

Welcome

Charlene Nelson

Shoalwater Tribal Council

Lisa Ayers

Pacific County Commissioner District #3

Agenda

Time	Topics	Action	Leader
:20	Geo-Engineering Assessment	Inform	Vladimir Shepsis Coast & Harbor Engineering, Inc
:90	Perspectives: <ul style="list-style-type: none"> • What's at risk? • What's being done? • Accomplishments? • Challenges, obstacles? 	Inform	David Cottrell Grayland Drainage District #1
			Nick Wood Grayland Cranberry Growers
			Charlene Nelson Shoalwater Bay Tribe
			Tim Crose Pacific County DCD
			Chad Hancock WA Dept of Transportation
			Bob Merrill Community of North Cove
			David Michalsen US Army Corps of Engineers
			Kevin Decker WA Sea Grant
:15			Your Input!

Outcomes

Your Feedback

- **Priorities for action?**
- **Support or comments for speakers?**

"We Can" Community Engagement
November 16 2016
Comments & Priorities

Your feedback is important! Please share your comments, questions, and priorities.

Questions? Comments?

Your Priorities:

#1

#2

#3

Optional

Name: _____

Address: _____

City/State/Zip: _____

Email: _____

Attention: _____

Phone: _____

email WeCan@co.pacific.wa.us

2016 Professional Engineer of the Year

Washington Society of Professional Engineers

Vladimir Shepsis, PhD, PE

Coast and Harbor Engineering, Inc.

NORTH WILLAPA BAY SHORELINE EROSION ASSESSMENT

Pacific County, WA

WILLAPA EROSION COMMUNITY ACTION NOW (WECAN)

Study Results
November 16, 2016

Objective:

Conduct a pre-feasibility level engineering assessment of the project area utilizing existing data and studies to assist in formulating an understanding of current conditions, develop a range of potential erosion mitigation concepts to protect the identified critical areas, and identify next steps for project planning.

Summary from September 21, 2016 Meeting

- The coastal processes controlling shoreline erosion significantly differ along the coastline of North Willapa Bay. In order to adequately evaluate these shoreline erosion controlling processes and develop shoreline stabilization measures the entire coastline area is divided into three regions:
 - Region 1, West Area – Predominately controlled by tidal channel northward migration.
 - Region 2, Middle Area – Stable channel conditions, but erosive shoreline subjected to impact from waves and localized hydrodynamic effects.
 - Region 3, East Area – None-uniform redevelopment of the bottom slope that provides increased wave energy propagation to the shoreline.
- Shoreline erosion solutions shall address local (regional) conditions and controlling processes; thus, would differentiate along the North Willapa Bay shoreline. The path forward for developing a range of erosion mitigation concepts at each region is as follows:
 - Complete engineering assessment and develop a consensus on identified coastal processes.
 - Prioritize shoreline erosion protection projects along the coastline and develop criteria for alternative assessment.
 - Develop feasible shoreline stabilization alternatives



Develop shoreline erosion protection criteria and feasible alternatives.

Region 1

Region 2

Region 3

Region 1, West Area – Predominately controlled by tidal channel northward migration.

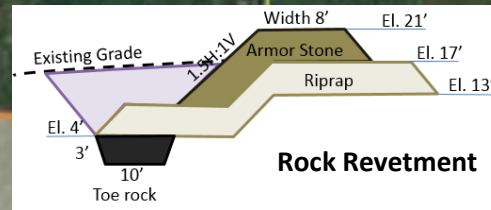
Region 2, Middle Area – Stable channel conditions, but erosive shoreline subjected to impact from waves and localized hydrodynamic effects.

Region 3, East Area – Deepening of the bottom slope that provides increased wave energy propagation to the shoreline.

Criteria for Shoreline Erosion Protection Scenarios

- Area-Object
 - SR-105
 - Cranberry bogs
 - Tribal lands
 - Private lands
- Durability
 - Short-term (10-20 years)
 - Long-term (>20)
- Environmental Aspects
 - Coastal wetlands protection
 - Snowy plover habitat enhancement and protection
- Coastal Flood Protection
- Coastal Resilience Aspects
- Navigation
- Other

Region 1, Scenario 1

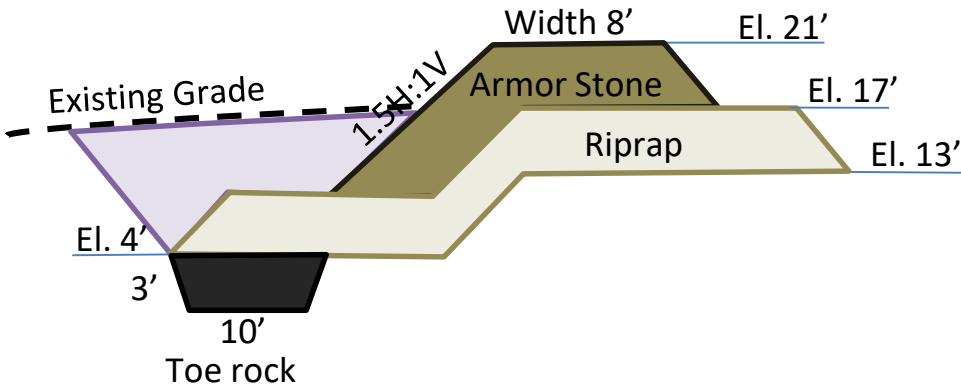


Region 1

Criteria Applied

- Area - Object
 - SR-105
 - Cranberry bogs
- Durability
 - Long-term

Region 1 – Scenario 1 (Rock Revetment)



Construction Cost Estimates ~ \$10M

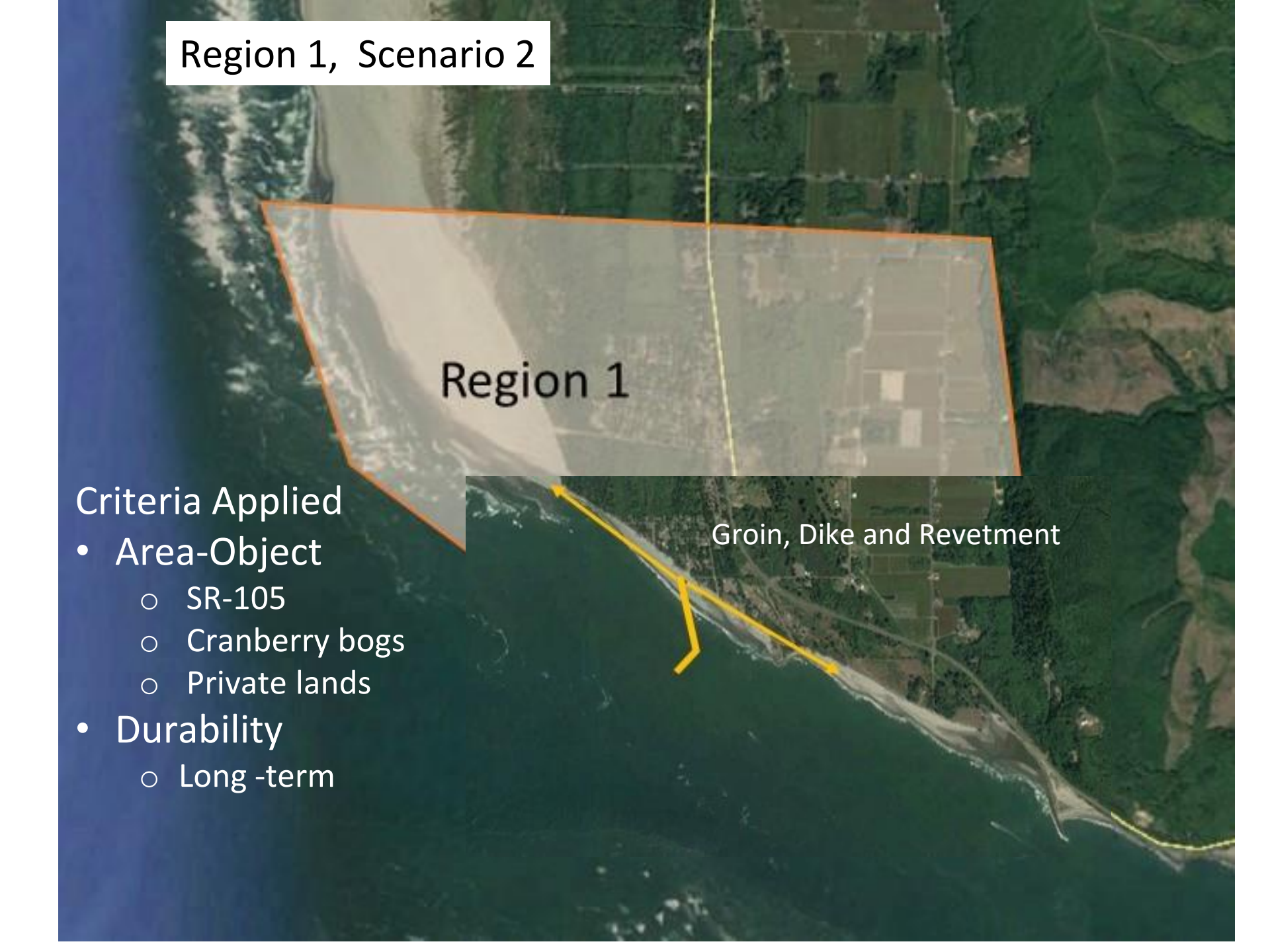
Assumptions:

- Rate and pattern of erosion as determined up to date
 - Length of protection = 8,000 ft
- No contingencies
- Based on current prices that is a subject to change with time
- Does not include design and permitting efforts
- Does not include tax and bonds
- Does not include mitigation, if requires
- Does not include modifications to the tidal gate



Region 1, Scenario 2

Region 1

An aerial photograph of a coastal area. A semi-transparent orange polygon highlights a region labeled 'Region 1'. This region covers a sandy beach and extends inland to include agricultural fields and some buildings. A yellow line follows the coastline, with arrows pointing towards the shore, and is labeled 'Groin, Dike and Revetment'. The ocean is visible in the bottom left corner.

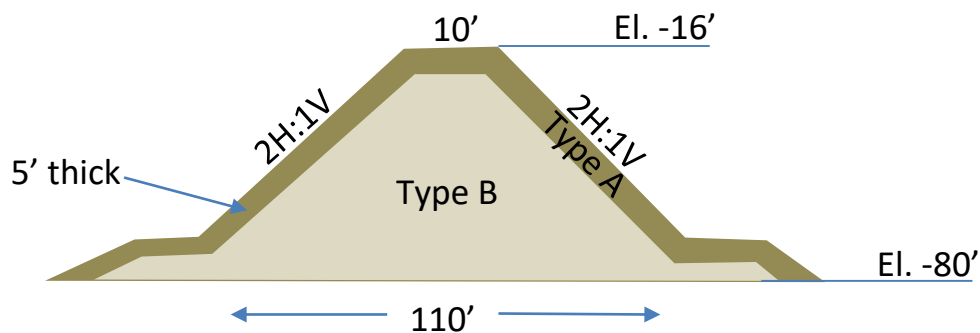
Criteria Applied

- Area-Object
 - SR-105
 - Cranberry bogs
 - Private lands
- Durability
 - Long -term

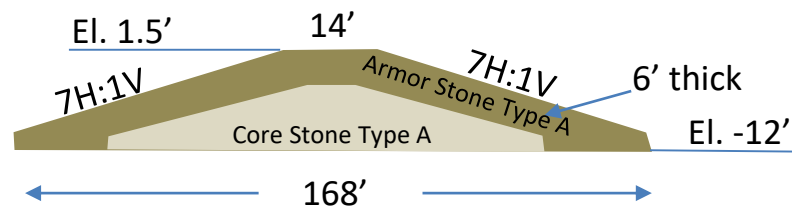
Groin, Dike and Revetment

Region 1 – Scenario 2

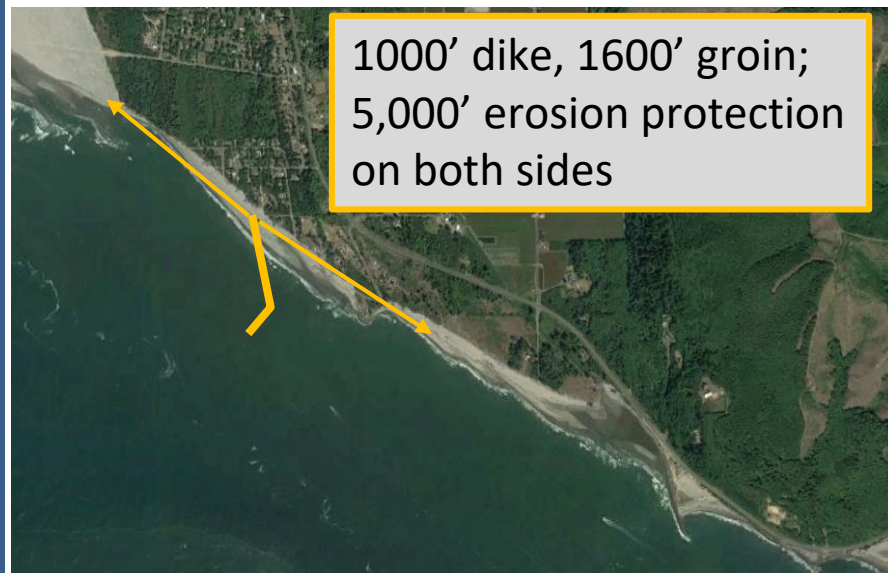
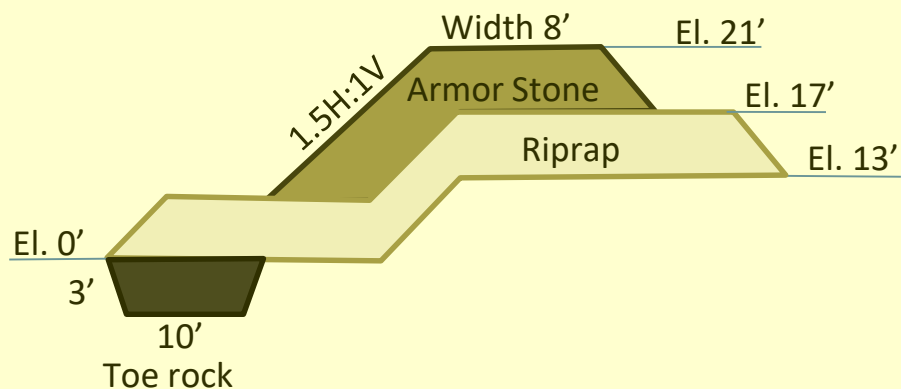
Dike Cross-section



Groin Cross-section



Vladimir why is this here?



Region 1 – Scenario 2

Construction Cost Estimates ~ \$34M

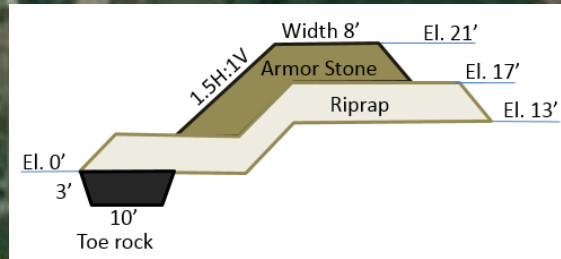
Assumptions:

- Length of groin = 1,600 ft
- Length of dike = 1,000 ft
- Length of revetment = 10,000 ft
- No contingencies included
- Based on current prices that is a subject to change with time
- Does not include design and permitting efforts
- Does not include tax and bonds
- Does not include mitigation, if requires

Region 2, Scenario 1

Rock Revetment on SR-105

Region 1



Criteria Applied

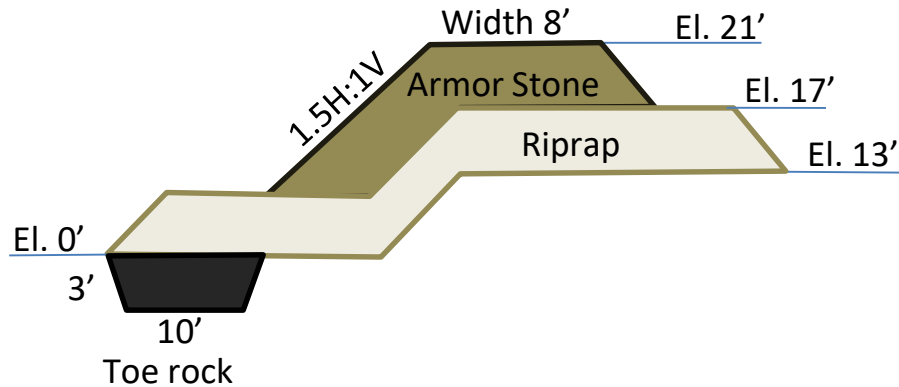
- Area - Object
 - SR-105
 - Cranberry bogs
- Durability
 - Long-term

Region 2

Existing Groin and Dike
rehabilitation

Region 3

Region 2 – Scenario 1



Construction Cost Estimates ~ \$14 M

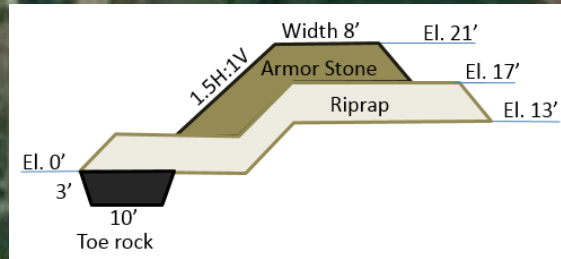
Assumptions:

- Length of protection = 7,000 ft
- Include rehabilitation of existing groin and dike
- No contingencies
- Based on current prices that is a subject to change with time
- Does not include design and permitting efforts
- Does not include tax and bonds
- Does not include mitigation, if requires
- Does not include modifications to the tidal gate

Region 2, Scenario 2

Rock revetment on shoreline

Region 1



Criteria Applied

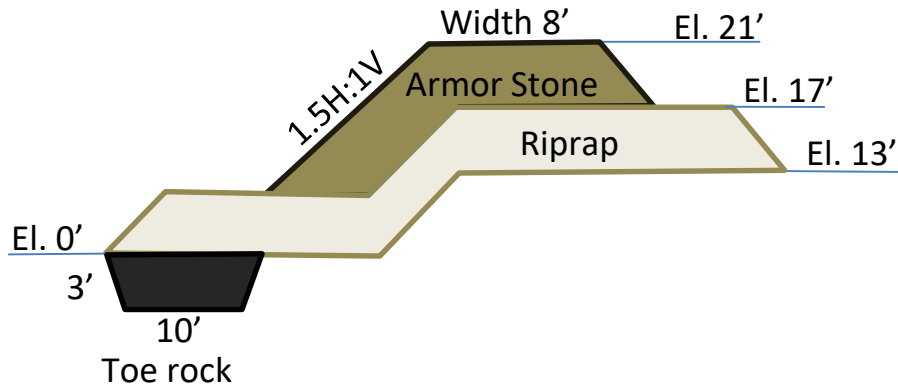
- Area - Object
 - SR-105
 - Cranberry bogs
 - Private property
- Durability
 - Long-term

Region 2

Existing Groin and Dike rehabilitation

Region 3

Region 2 – Scenario 2

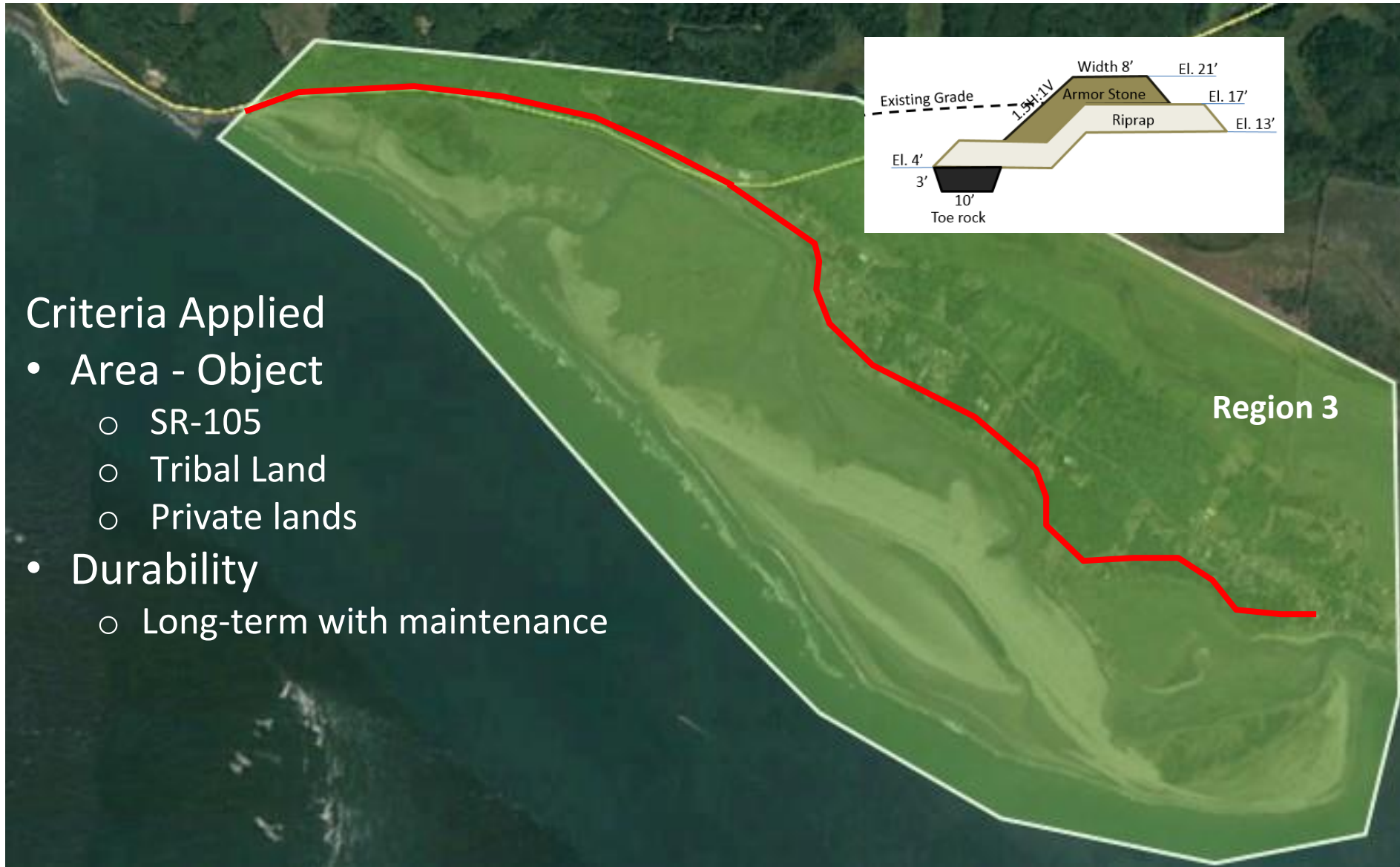


Construction Cost Estimates ~ \$14 M

Assumptions:

- Length of protection = 7,000 ft
- Include rehabilitation of existing groin and dike
- No contingencies
- Based on current prices that is a subject to change with time
- Does not include design and permitting efforts
- Does not include tax and bonds
- Does not include mitigation, if requires
- Does not include modifications to the tidal gate

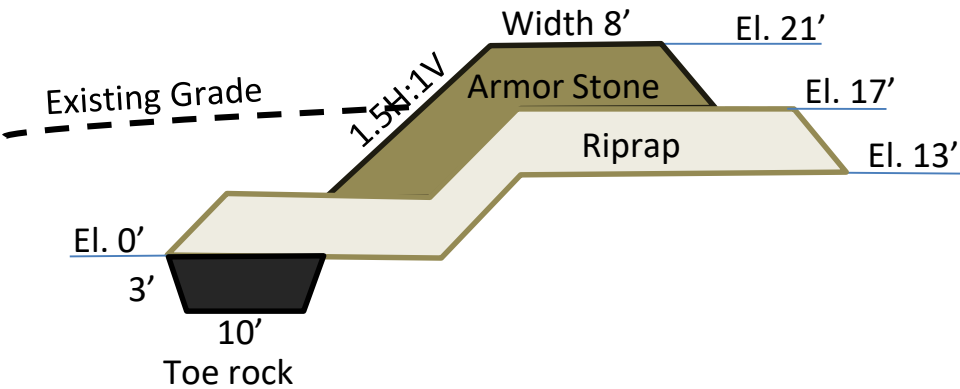
Region 3, Scenario 1: Rock revetment



Criteria Applied

- Area - Object
 - SR-105
 - Tribal Land
 - Private lands
- Durability
 - Long-term with maintenance

Region 3 – Scenario 1



Construction Cost Estimates ~\$22 M

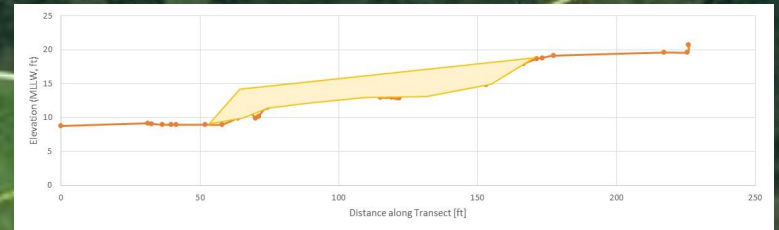
Assumptions:

- Length of protection = 20,000 ft
- No contingencies
- Based on current prices that is a subject to change with time
- Does not include design and permitting efforts
- Does not include tax and bonds
- Does not include mitigation, if requires

Region 3, Scenario 2: Beach Nourishment

Criteria Applied

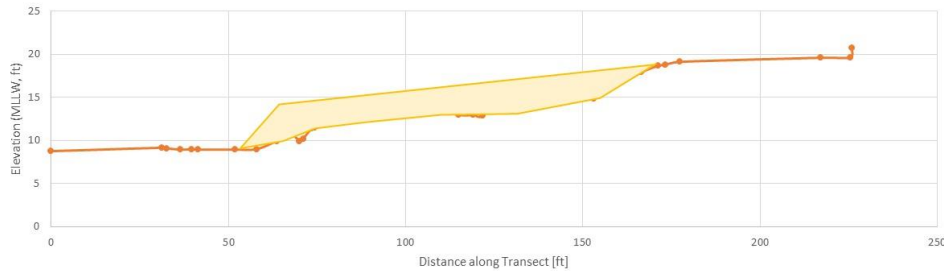
- Area - Object
 - SR-105
 - Tribal Land
 - Private lands
 - Potential for snowy plover habitat
- Durability
 - Long-term with maintenance



Region 3

Note: Cost estimates are based on current criteria and durability

Region 3 – Scenario 2



Construction Cost Estimates ~\$ 10 M

Assumptions:

- Length of protection = 20,000 ft
- Maintenance every 10 years
- No contingencies
- Based on current prices that is a subject to change with time
- Does not include design and permitting efforts
- Does not include tax and bonds
- Does not include mitigation, if requires

Region 3, Scenario 3: Dynamic Revetment

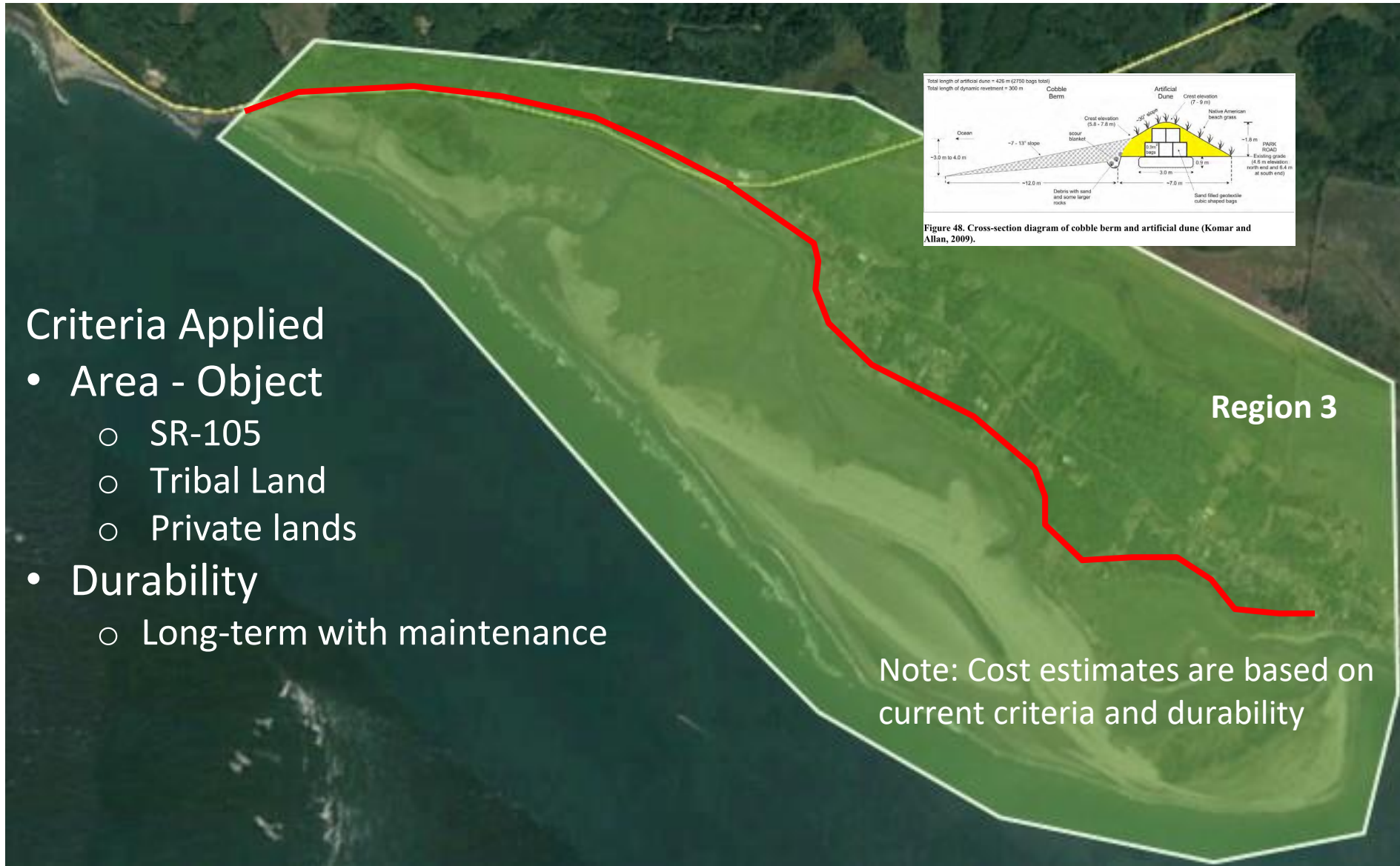


Figure 48. Cross-section diagram of cobble berm and artificial dune (Komar and Allan, 2009).

Criteria Applied

- Area - Object
 - SR-105
 - Tribal Land
 - Private lands
- Durability
 - Long-term with maintenance

Note: Cost estimates are based on current criteria and durability

Region 3 – Scenario 3

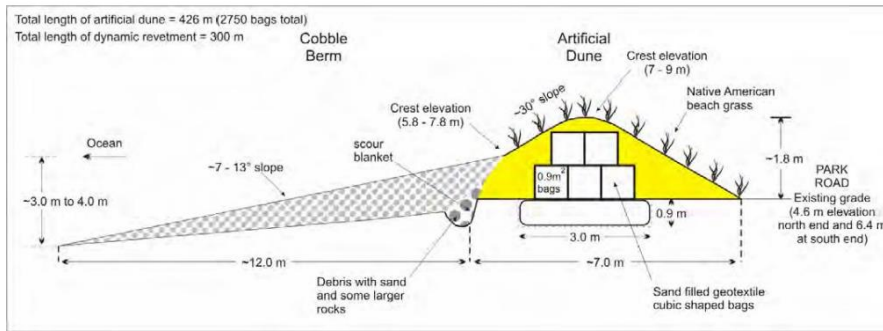


Figure 48. Cross-section diagram of cobble berm and artificial dune (Komar and Allan, 2009).

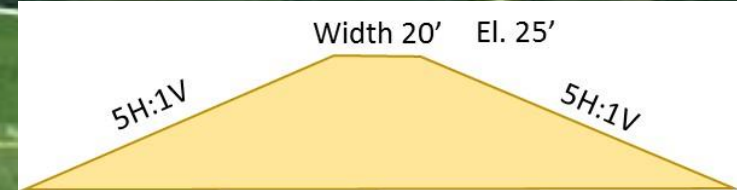
Construction Cost Estimates ~\$ 33 M

Assumptions:

- Length of protection = 20,000 ft
- Maintenance every 10 years
- No contingencies
- Based on current prices that is a subject to change with time
- Does not include design and permitting efforts
- Does not include tax and bonds
- Does not include mitigation, if requires

Region 3, Scenario 4:

Berm

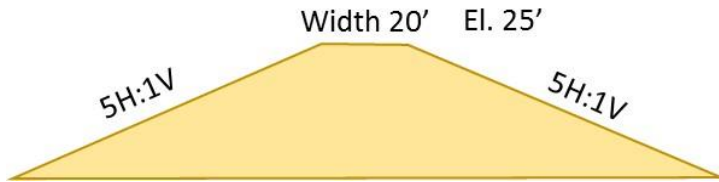


Criteria Applied

- Area - Object
 - SR-105
 - Tribal Land
 - Private lands
 - Snowy plover habitat
- Durability
 - Long-term with maintenance

Note: Cost estimates are based on current criteria and durability

Region 3 – Scenario 4



Construction Cost Estimates ~\$10 M

Assumptions:

- Length of protection = 14,000 ft
- Maintenance every 5 years
- No contingencies
- Based on current prices that is a subject to change with time
- Does not include design and permitting efforts
- Does not include tax and bonds
- Does not include mitigation, if requires

Cost Estimate Summary

Region	Scenario	Criteria	Total Cost
1	1: Buried rock revetment	SR-105, cranberry bogs	\$ 10 mil
1	2: Dike/Groin	SR-105, private lands, cranberry bogs	\$ 34 mil
2	1: Rock revetment on SR-105	SR-105, cranberry bogs	\$ 14 mil*
2	2: Rock revetment on shoreline	SR-105, cranberry bogs, private lands	\$ 14 mil*
3	1: Rock revetment	SR-105, tribal lands, private lands	\$ 22 mil
3	2: Beach nourishment (10 years frequency of maintenance)	SR-105, tribal lands, private lands, potential for snowy plover habitat	\$ 10 mil
3	3: Dynamic revetment	SR-105, tribal lands, private lands	\$ 33 mil
3	4: Berm (5 years frequency of maintenance)	SR-105, tribal lands, private lands, snowy plover habitat	\$ 10 mil

Cost estimates:

- Are based on the specified criteria and durability
- Applicable for current shoreline conditions
- Include mobilization/demobilization
- Are based on current prices that are subject to change

Cost estimates do not include:

- Design and permitting efforts
- Tax and bonds
- Mitigation, if requires
- Contingencies

NORTH WILLAPA BAY SHORELINE EROSION ASSESSMENT

Pacific County, WA

WILLAPA EROSION COMMUNITY ACTION NOW (WECAN)

Study Results
November 16, 2016

Objective:

Conduct a pre-feasibility level engineering assessment of the project area utilizing existing data and studies to assist in formulating an understanding of current conditions, develop a range of potential erosion mitigation concepts to protect the identified critical areas, and identify next steps for project planning.

David Cottrell

Grayland Drainage District

David Cottrell

Grayland Drainage District

Our Responsibility

Charged by the state to maintain drainage within the district and guard against outside water intrusion

Breach of the dike...

At Risk?

- 4000 acres of land (>1000 acres of cranberry farms)
- hundreds of homes and farm buildings,
- hundreds of acres of protected wetlands,
- infrastructure serving the whole of Grayland

David Cottrell

Grayland Drainage District

Being Done?

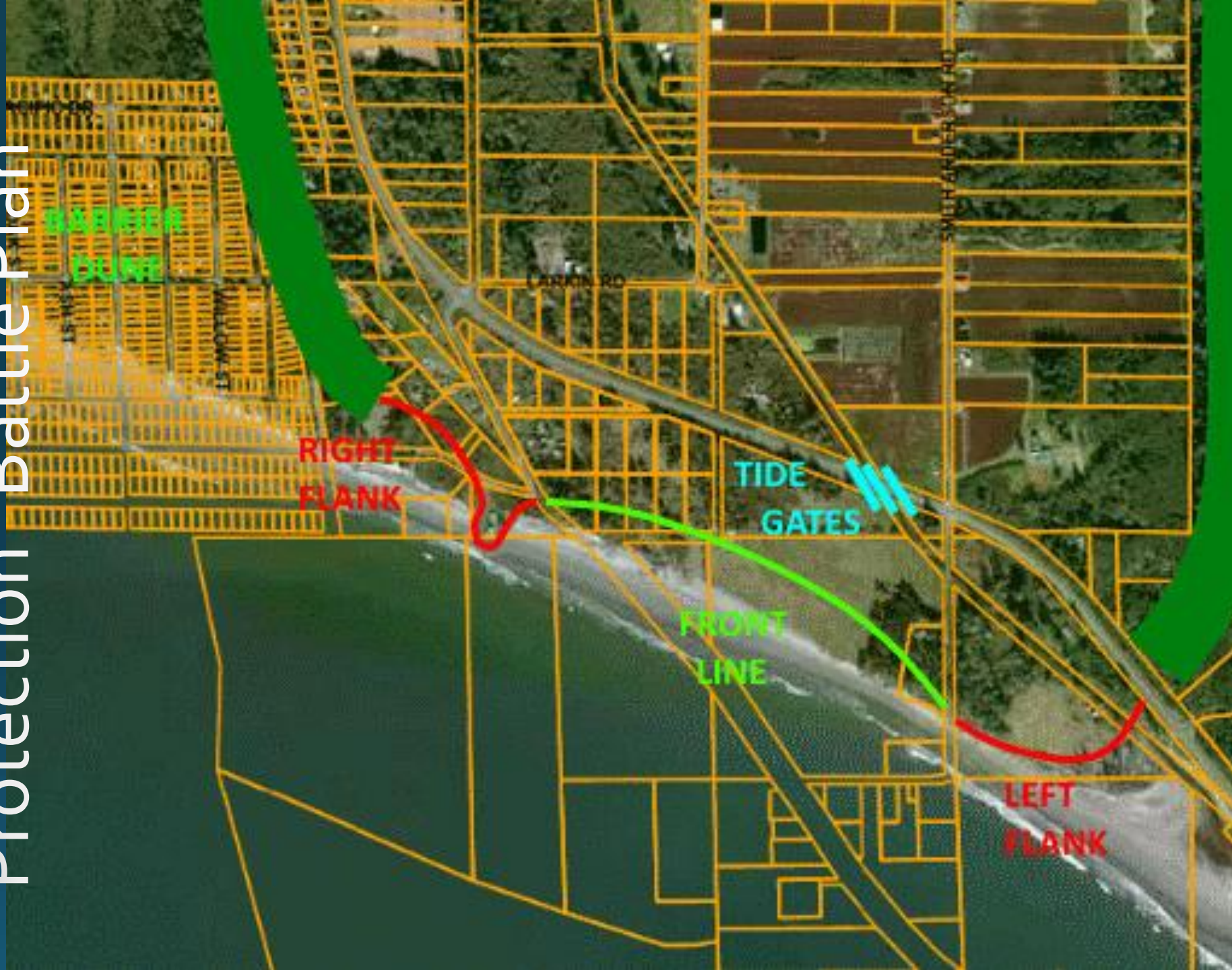
Active Maintenance...

- Placing large wood and rocks at the mouth of the drainage ditch to allow the main drainage to flow while slowing the advance of the erosion from the southeast.

Buried Rip-rap Revetment...

- will protect from erosion from the southwest (“right flank”). Still vulnerable to the south.

Protection "Battle Plan"



David Cottrell

Grayland Drainage District

Priorities

Urgency

- Just one major winter storm...

Scope: Need partner alliance

- 1 ¼ miles of vulnerability
- Financial assistance for “bandaid” defenses 2017-2018
- Propose: Expand ACE “big fix” beach nourishment program

Nick Wood

Grayland Cranberry Growers

Nick Wood

Grayland Cranberry Growers

At Risk?

>1100 Acres

- >13,000,000 lbs production
- \$8,000,000 (annual) crop value

What if....?

Lowest 300 acres
permanently destroyed ?

➔ \$2,000,000 (annual) loss
to local economy



Charlene Nelson

Shoalwater Bay Tribe

Charlene Nelson

Shoalwater Bay Tribe

At Risk?

Heritage

Public Safety

Natural Resources



Tim Crose

Pacific County

Dept of Community Development

Tim Crose

Pacific County

Dept of Community Development

Focus

Code Enforcement

- Safety
- Health
- Environment

Service

Resource

- Permitting assistance
- Liaison with agencies



DEPARTMENT
OF
COMMUNITY DEVELOPMENT

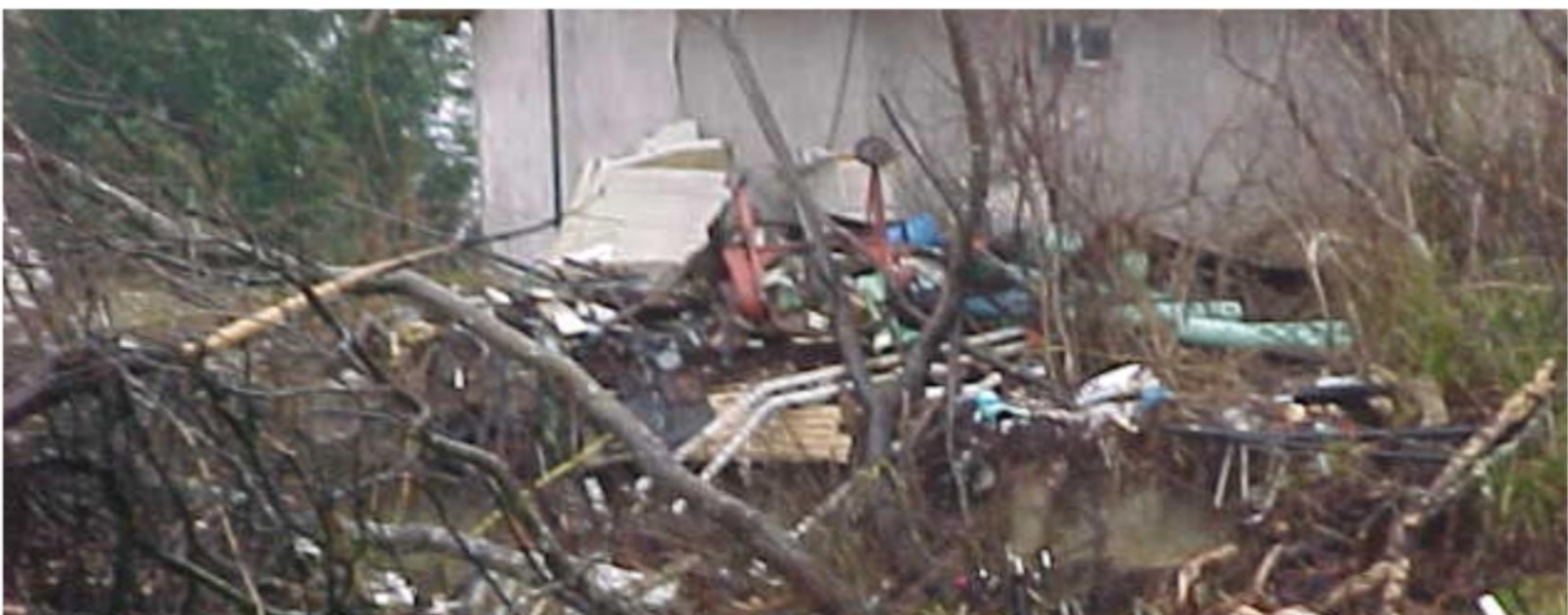


Abandoned

Still, it's private
property...

Who's Responsible Now?





Aftermath
Environmental and Health Hazard

Tim Crose

Pacific County

Dept of Community Development

Propose

Pre-emptive Action

- Cleanup
- Septic de-commissioning

Scope

Estimate (min) 26 Structures

- Assessed value: \$443K
- Cleanup cost @ \$10K average
- Total costs ~\$500K over 15 years



DEPARTMENT
OF
COMMUNITY
DEVELOPMENT

Bob Merrill

Community of North Cove

Bob Merrill

Community of North Cove

At Risk?

- Homes and Property
- Wetlands and Habitat
- County/state tax base
- PUD Infrastructure
- Environmental pollution

Being Done?

Community Action
Petition August 10,
2016

Recommend (urgent)
rip-rap stabilization on
shoreline from
Bennett property to
Warrenton Cannery
Road

Obstacles?

- Need prepare engineering plans
- Need coordinated government/agency attention

Chad Hancock

Washington Dept of Transportation



WASHAWAY BEACH

WECAN PRESENTATION

CHAD HANCOCK, LOCAL PROGRAMS ENGINEER
November 16th, 2016

WSDOT & SR 105



PAST REPAIRS



EMERGENCY ROCK ARMOR



DRAINAGE DITCH REVETMENT



2017 EROSION PROTECTION



DYNAMIC REVETMENT



DRAINAGE DITCH REPAIR



David Michalsen

US Army Corps of Engineers

Willapa Bay meeting – USACE, Seattle District

David R. Michalsen, P.E. USACE, Seattle District

david.r.michalsen@usace.army.mil



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What's at stake

- Coastal flooding / erosion
 - ▶ Loss of SR-105 corridor, private homes/property, cranberry bogs
 - ▶ Economic impact to Tokeland/Shoalwater Tribal facilities
 - ▶ O&M to USACE Shoalwater dune restoration project



What's been done to date

- USACE led technical studies
 - ▶ [USACE/WADoE/USGS feasibility study \(2007\)](#)
 - ▶ [USACE navigation feasibility study \(2000\)](#)
 - ▶ [USGS geologic survey of Graveyard/Empire Spit \(Morton et al. 2000\)](#)
- USACE led actions
 - ▶ Dune Restoration (2013)
 - ▶ Annual Bar/Entrance condition surveys
 - ▶ CMAP survey of Graveyard/Empire Spit (2014-2016)
 - ▶ Establishment of Beneficial Use Site for Dredged Material offshore of Empire Spit



What's been achieved/accomplished (funding, resources, and commitments)

- FY17 Planning Assistance to States funding to cost-share study with WSDOT to investigate potential alternatives for SR-105 (50/50 cost share)
- FY17 Floodplain Management Services (FPMS) for participation in stakeholder meetings
- FY17 DOTS request funding to have USACE Field Research Facility (Duck, NC) team develop a detailed scope of work for a full geological survey of shoreface geology

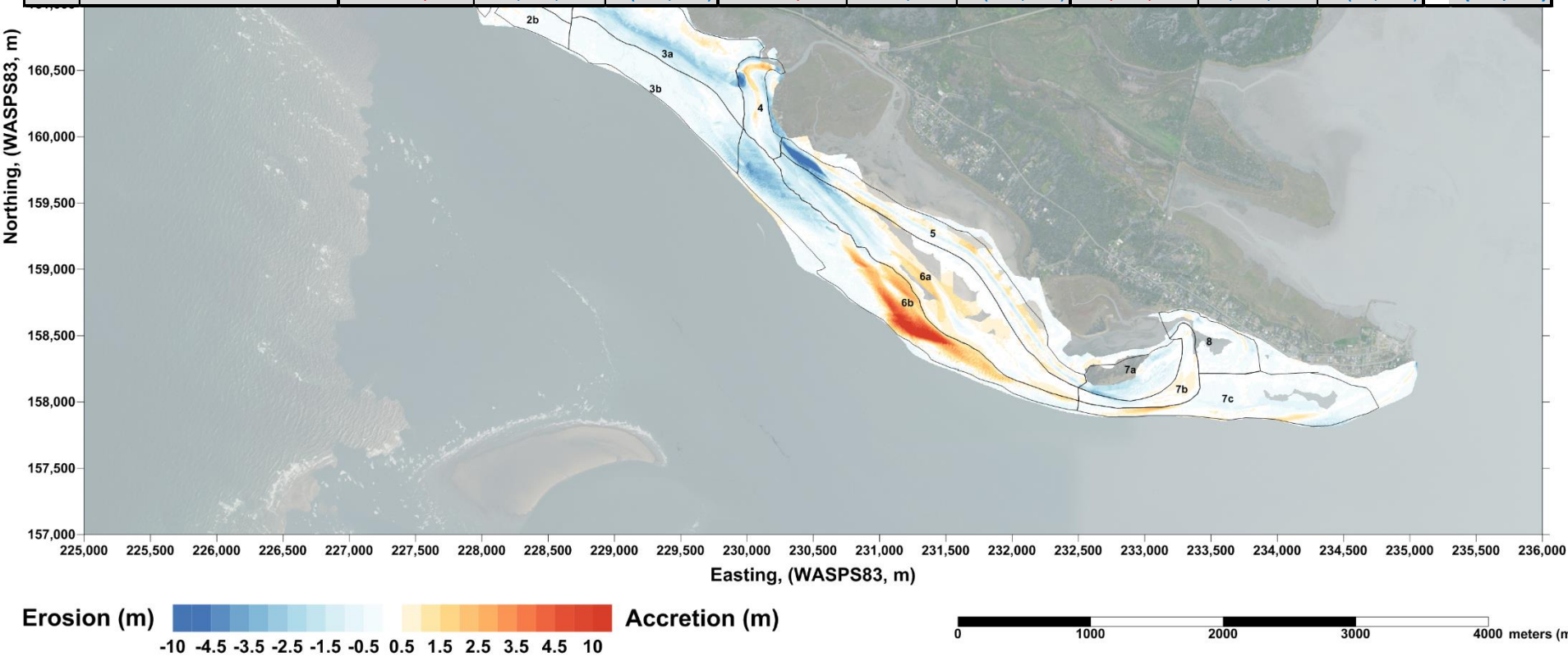


What obstacles/challenges are hindering progress

- Authorization of Shoalwater dune restoration is only 12,500 linear feet.
 - ▶ Post-authorization modification to project would need to be completed to extend footprint/location (Congressional action)
 - ▶ Additional sponsor (in addition to Tribe) would likely be required and a positive benefit cost ratio must be shown
- Time is fleeting
 - ▶ dune restoration becomes more difficult after barrier islands are overwashed (Zone 2 area)

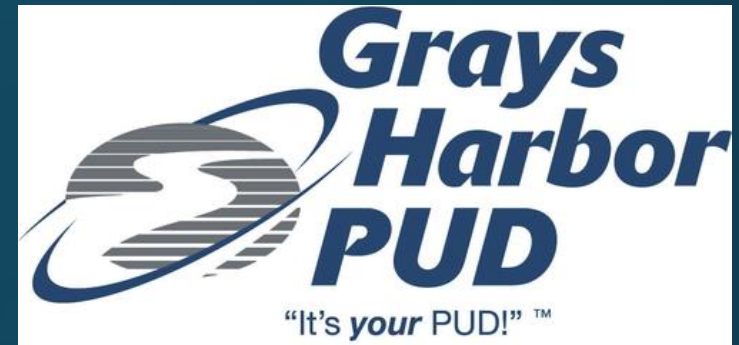


		2014_09	2015_04	Net	2015_04	2015_08	Net	2015_08	2016_04	Net	Total Net
	Sediment Budget Polygon	accretion (+)	erosion (-)	m ³	accretion (+)	erosion (-)	m ³	accretion (+)	erosion (-)	m ³	m ³
1a	drainage_ditch_intertidal	14,448	62,682	(48,235)	23,087	19,108	3,979	17,704	47,397	(29,693)	(73,949)
1b	drainage_ditch_subtidal	-	-	-	-	-	-	47,534	28,906	18,627	18,627
2a	groin_intertidal	39,374	17,227	22,147	23,979	28,423	(4,445)	24,380	29,676	(5,296)	12,406
2b	groin_subtidal	6,525	7,204	(679)	2,759	8,228	(5,469)	11,962	7,904	4,058	(2,090)
3a	graveyard_spit	40,455	240,498	(200,043)	70,241	52,431	17,809	77,398	263,492	(186,094)	(368,328)
3b	graveyard_spit_subtidal	10,648	74,202	(63,555)	7,789	59,251	(51,462)	25,884	87,870	(61,986)	(177,003)
4	cranberry_slough_inlet	29,228	69,846	(40,619)	22,340	21,006	1,334	32,507	76,239	(43,731)	(83,016)
5	constructed_dune	113,750	61,720	52,030	28,439	104,177	(75,738)	110,459	170,755	(60,296)	(84,004)
6a	empire_spit_intertidal	154,338	150,398	3,940	139,827	67,997	71,830	138,989	202,648	(63,660)	12,111
6b	empire_spit_subtidal	241,924	139,442	102,482	81,551	179,596	(98,045)	520,665	228,839	291,826	296,263
7a	se_dune	7,660	97,365	(89,705)	9,409	12,589	(3,179)	15,956	15,598	357	(92,527)
7b	se_dune_intertidal	19,949	15,020	4,929	10,895	9,087	1,808	21,736	8,239	13,497	20,234
7c	se_dune_subtidal	38,143	81,229	(43,087)	29,915	19,867	10,048	47,627	20,203	27,424	(5,615)
8	fisher_inlet	9,636	24,453	(14,817)	7,272	7,202	70	13,026	8,689	4,337	(10,410)
Net		726,078	1,041,288	(315,211)	457,503	588,963	(131,461)	1,105,826	1,196,455	(90,629)	(537,300)



Dave Ward / Ian Cope

Grays Harbor PUD



At Risk?

- ~1300 customers
- Infrastructure (critically) depends on Hwy 105
- >30 poles lost since 2010
- No backup redundancy; service interruptions expected to be extensive

Being Done?

Removal and repositioning of poles, pads, and transformers to protect grid and prevent spill of pollutants if further erosion

Scott Johnson

Pacific County Sheriff's Dept

At Risk?

- Response time
- Infrastructure (critically) depends on Hwy 105

Being Done?

Collaborative emergency response agreement with Grays Harbor



Bob Burkle / Marcus Reaves

Washington Dept of Fish & Wildlife

At Risk?

Habitat

- Fish and wildlife would benefit from sustained breach, creating new intertidal saltmarsh and increasing tideflats.
- Long-term positives to fish, shellfish, crab, shorebirds, migrating waterfowl, ungulates

Action?

Armoring

- Can result in significant loss of critical habitat
- Potential to limit public beach access
- Sufficient to protect from seasonal flooding and expected sea level rise?
- Mitigation opportunities exist in Willapa Bay to offset loss of critical habitat



Kevin Decker

Washington Sea Grant

At Risk?

Economic Loss: Eroded land, destroyed homes, damaged infrastructure, lost cranberry production, reduced tourism revenue, etc.

Being Done?

Impact Research:

- Identify priorities of evaluating economic risks
- Assess economic impacts to evaluate policy options
- Identify potential difficulties of analysis & data sources
- \$30K Sea Grant funding to conduct the analysis

Independent Brainstorming

- Fill out the worksheet independently
- Describe the economic impact
 - What is at risk? What are potential scenarios that should be evaluated?
- Challenges
 - What might prevent an accurate analysis? Why might the results be insufficient?
- Opportunities
 - How can the challenges be overcome? What makes the analysis unique & important?
- Resources
 - Where can data be collected to do the analysis? Be specific: list name and contact information or location of information.
- Rank the impact on scale between the lowest priority and the highest priority.

Outcomes

Your Feedback

- **Priorities for action?**
- **Support or comments for speakers?**

"We Can" Community Engagement
November 16 2016
Comments & Priorities

Your feedback is important! Please share your comments, questions, and priorities.

Questions? Comments?

Your Priorities:

#1

#2

#3

Optional

Name: _____

Address: _____

City/State/Zip: _____

Email: _____

Attention: _____

Phone: _____

email WeCan@co.pacific.wa.us

Contact Info

Contact Email

WeCan@co.pacific.wa.us

Charlene Nelson
Shoalwater Bay Tribe
cnelson@shoalwaterbay-nsn.gov

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Transportation
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Thank You!