

Living Shorelines on the Open Pacific Coast: Perspectives from a Wandering Geomorphologist



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General Approach - Geomorphology

How did the unaltered physical system likely function?

How has the system evolved?

What is causing the existing problem?

What processes are still functioning?

What are the vegetative – sediment feedbacks?

What are natural materials?

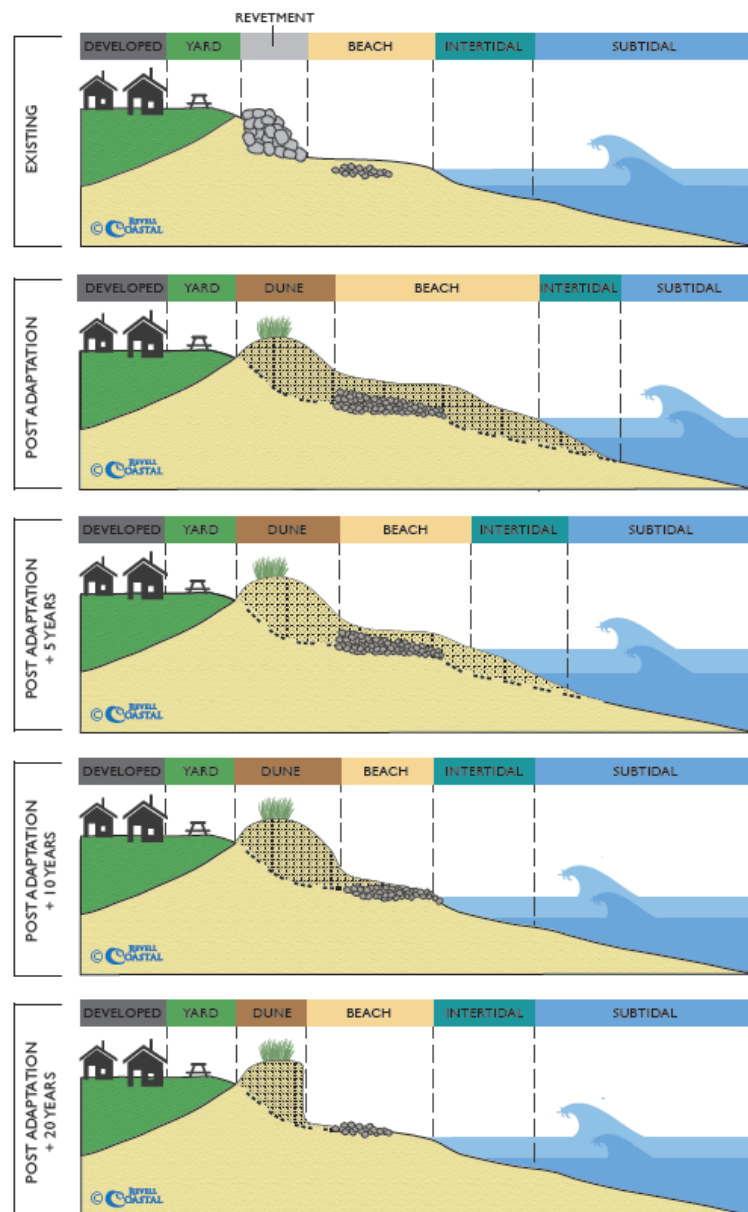
What materials are left?

How much space is there to work with?

How is the system going to evolve?

What are appropriate reference sites?

Also Non-Geomorphic considerations



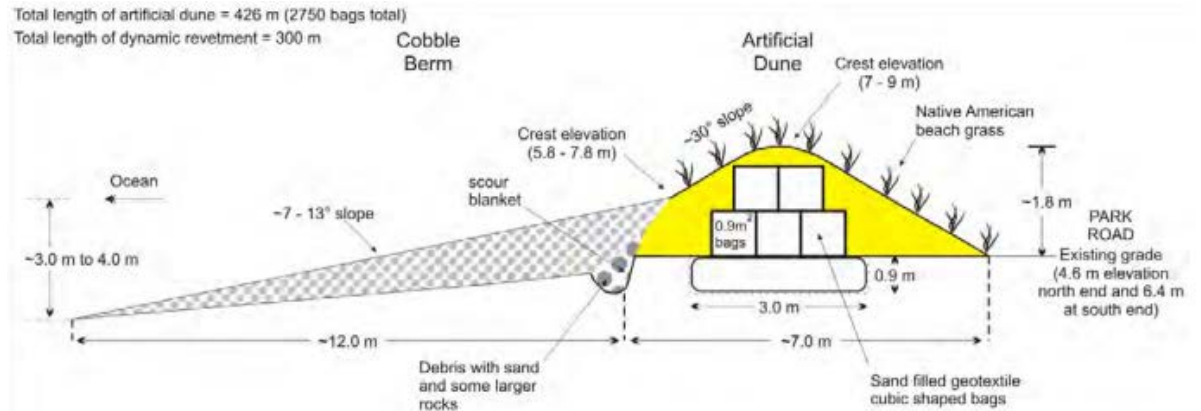
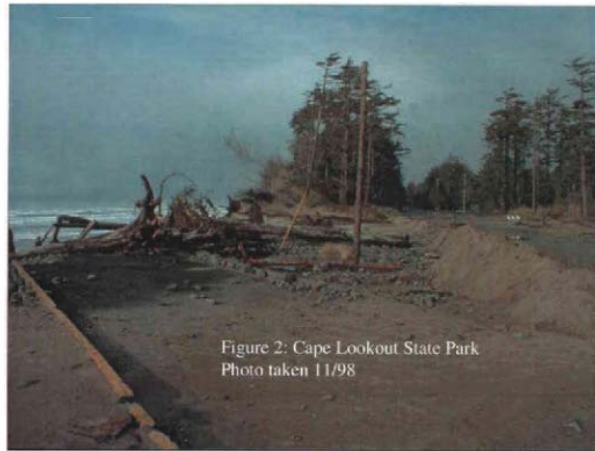
Episodic Sediment Inputs and Transport Pathways



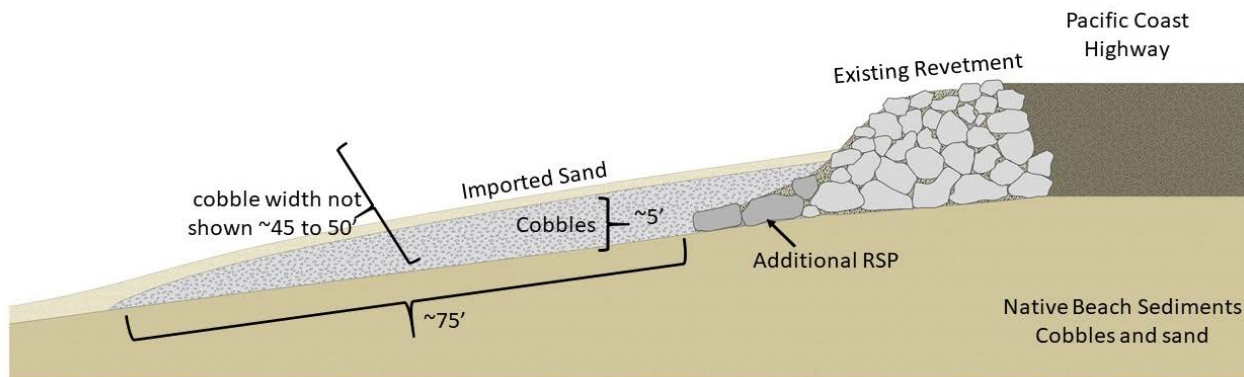
This is looking northwest of the town of La Conchita.
As you can see, a big mudflow is covering about 1/4 mile of the 101 freeway.
At least three cars are trapped in the mud but no one was injured.



Cape Lookout State Park, OR



Cobble Groins



Not for Construction

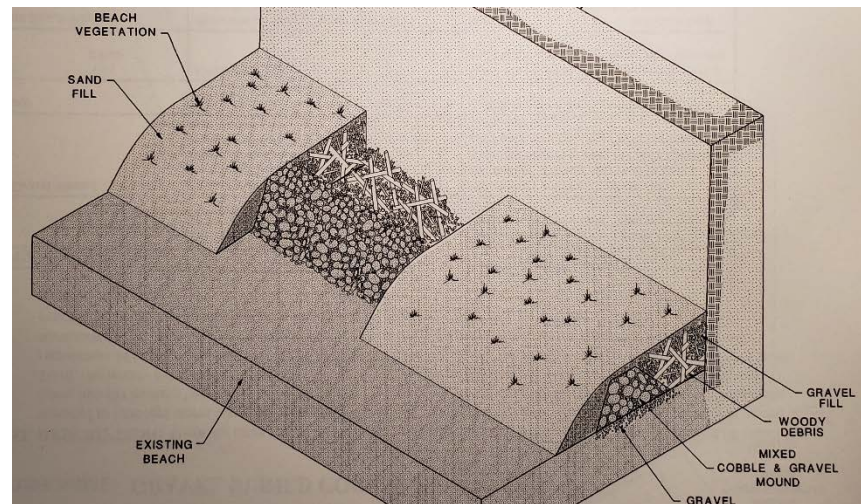
Not to scale

Use of Large Woody Debris

Enhance integrity of dunes or beach features

Provide soil moisture

Improve resiliency



Lagoon Mouth Management

Issues are high lagoon water, leading to flooding, endangered species, ocean safety

Life history needs of T and E species

Mimick – nature – use a cobble French drain

Incorporate large woody debris into backshore dunes



Enhancement of Nearshore Reefs



Next Steps

Define Living Shorelines

Pilot project

- Streamline permits
- Identify locations for experiments
- Monitor
- Report lessons learned

Funding streams

Funded Monitoring

Failures conference



Assessing a Site

Littoral Cell Location

- Sources, storage, and sinks
- Littoral cell cutoff diameter
- Closure depth

Topography

Backshore type

- Cliffs vs Bluffs
- Dunes
- Inlets

Physical Processes

- Waves
- Tides
- Winds
- Longshore Transport
- Groundwater
- River Discharge

Sediment Transport

- Sediment Supply and Sizes
- Relative volumes
- Delivery mechanisms
- Beach rotation, alongshore dominated, etc

Geomorphic Assessment

- Cause of erosion
- Natural variability
- Human altered

Human Alterations and scales

- Dams/debris, ports and harbors, armoring
- Contamination, mining, infrastructure, ordinance