

Tomales Bay Living Shorelines Feasibility Project

Summary of Project Goal, Approach, and Timeline

Project Goal:

Assess the feasibility of living shorelines in Tomales Bay to

- maintain public access,
- develop preliminary designs for pilot projects,
- support vibrant recreational opportunities for users of all socioeconomic circumstances,
- provide flood and erosion protection against future sea-level rise, and
- extend living shoreline applicability

Project Approach and Timeline:

- 1) Develop a stakeholder advisory process (**completed**)
- 2) Compile maps of existing Tomales Bay habitats (**completed**)
- 3) Identify an initial list of 6-8 opportunity areas where living shorelines could be implemented or enhanced (**January-June 2020**)
- 4) Develop a regulatory roadmap (**March-September 2020**)
- 5) Evaluate initial sites and prioritize 2-5 that are most promising for protecting shoreline communities (**June-August 2020**)
- 6) Develop conceptual designs for 2-5 priority sites (**September 2020 – August 2021**)
- 7) Develop recommendations and next steps (**August 2021**)

TOMALES BAY LIVING SHORELINES FEASIBILITY PROJECT

Important Terms

- Accretion – deposition of sediment (e.g. sand or silt) evident by seaward advance of a shoreline or vegetation line
- Armoring – placement of fixed engineering structures on or along a shoreline to reduce coastal erosion and protect infrastructure
- Beach Berm – feature usually mid-beach, characterized by a break in slope separating the flatter dry beach from the seaward-sloping foreshore
- Benthic zone – ecological region in a body of water comprising the bottom sediment surface and sub-surface layers
- Erosion – physical removal of sediment/rock from the beach/backshore which is transported offshore, alongshore, into bays and lagoons, resulting in landward retreat of the shore/backshore
- Longshore sediment transport – sediment transport along the beach (parallel to the shoreline) caused by waves approaching the shore and longshore currents
- Nearshore – underwater area close to the beach where sand is actively moved by waves and currents
- Recession – landward movement of the shoreline due to loss of sediments and/or direct inundation of the land
- Revetment – engineered protective layer or mound of stones or other material placed to prevent erosion
- Riprap – un-engineered protective layer or mound of stones or other material randomly placed to prevent erosion
- Shoreline – boundary between land and sea, typically defined as the mean high water line

Adaptation Terminology

- Adaptation Measures - individual actions taken to help communities and ecosystems cope with changing climate conditions (e.g. beach nourishment, shoreline armoring, raising structures)
- Adaptation Benefits - avoided damage costs or accrued benefits resulting from the adoption and implementation of adaptation measures
- Adaptation Costs - costs of planning, preparing for, facilitating, and implementing adaptation measures, including transition costs
- Adaptation Pathway – a series of individual adaptation actions (e.g. beach nourishment, armoring, raising homes) scheduled through time meant to deal with increasing sea-level and associated hazards. Multiple potential adaptation pathways may exist for a given location or group of assets
- Adaptive Capacity – the ability of a system to adjust to climate change (including climate variability and extremes), to moderate potential damages, to take advantage of opportunities, or to cope with the consequences
- Assets – built (e.g. home, road, utility) or natural (e.g. beach, salt marsh habitat) resources that are valuable to the community or environment
- Climate Change – any change in climate over time, whether due to natural variability or as a result of human activity
- Resilience – amount of change a system/asset can undergo without changing its state
- Sensitivity – is the degree to which a system is affected, either adversely or beneficially, by climate-related stimuli. The effect may be direct (e.g., a change in crop yield in response to a change in the mean, range, or variability of temperature) or indirect (e.g., damages caused by an increase in the frequency of coastal flooding due to sea level rise)
- Trigger Point – a point at which adaptation actions are initiated, based on thresholds of impacts and lead time needed to prepare for taking action (e.g. design and permitting)
- Threshold – a measurable property of a system beyond which a marked change occurs (e.g. sea-level at which a home or road is flooded)
- Vulnerability – the degree to which a system/asset is susceptible to, or unable to cope with adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the magnitude to which a system is exposed, its sensitivity, and its adaptive capacity