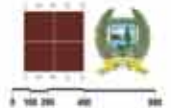


Fort Casey - Context Map
 Washington State Parks Sound-Friendly Vision Plan



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Hydrologic Analysis

Fort Casey State Park is located in the rain shadow of the Olympic Mountains and typically receives only 18 inches of rainfall per year. A majority of the state park is heavily forested; however, there is a historic military base located within the park. In the areas of the military installation, most of the water infiltrates into the ground or is collected into a subsurface drainage system. The historic buildings and the campground at Fort Casey are served by a small road network and parking areas, which are surfaced with gravel or asphalt. Runoff from these impervious surfaces is dispersed into adjacent vegetated areas. There are no creeks or streams located within Fort Casey State Park. However, Crockett Lake receives runoff from the surrounding residential areas and adjacent ditches, and draws water via Keystone Harbor and Admiralty Inlet.

Biogeomorphology / Shoreline Physical Processes Analysis

Fort Casey State Park is located at Admiralty Head. The park's south- and west-facing shorelines endure the winds and waves associated with the long fetch from Puget Sound to the south and the Strait of Juan de Fuca to the west. Wake from ferry traffic creates additional energy on the adjacent shorelines.

Sediment sources to the park shoreline are entirely intact or managed (U.S. Army Corps of Engineers dredging) to mimic natural processes. Natural sediment sources consist of eroding bluffs north of the park extending north toward Point Partridge for the west half of the spit, and south along Admiralty Bay for the east half of the spit (source: Johannessen and Chase, 2005). North drift cell begins 6 miles to the north of Admiralty head at Point Partridge/ Fort Ebey State Park and extends south then east around Admiralty Head to Keystone Harbor. Prevailing west winds from the Strait of Juan de Fuca create the wave energy that transports the sediment from Pt. Partridge to the spit. South drift cell begins 3 miles south of the spit in a divergence zone at Lake Hancock (a tidal marsh). Prevailing south winds from Admiralty Inlet create the wave energy that transports the sediment north and west from Admiralty Bay to the spit. The eroding bluffs to the north of the park are an intact sediment source due to the protected status of this shoreline. The bluffs south of the park are in private ownership but are generally not bulkheaded, and therefore; are still active sediment sources. Most of the shorelines within the park are "sediment sinks" or accretion shorelines that rely on these off-site sources for their supply.

The Army Corps of Engineers constructed Keystone Harbor in 1948. The harbor interrupts movement of sediment from west to east. Sediment builds up in the harbor, and is blocked from accreting on the beach to the east by the jetty. This structure also causes erosion of the beach to the east. The Corps dredges 16,000 to 30,000 cubic yards (CY) from the channel every 5 to 7 years (since 1950). The Corps completed dredging in 2006 (State Parks, 2006-pers. Communication). Nearly 100,000 CY of sediment has been dredged from channel has been placed east of the breakwater to re-nourish the beach and this has generally been successful in supplying the spit with sufficient sediment to mimic natural processes (Ecology, 1986).

The campground area and spit are at long term risk from predicted sea level rise associated with climate change. The sea level rise predicted for the North Puget Sound/San Juan Islands (Friday Harbor) is approximately two feet by the year 2100 (Puget Sound Action Team, 2005).



Fort Casey State Park shoreline areas that are accretionary and depend on sediment from feeder bluffs outside of park



Keystone Harbor

Habitat Analysis

Aquatic Habitats and Species

The park and most of western Whidbey Island have no salmon-producing streams. However, high densities of juvenile salmon have been documented in Keystone Harbor. Surf smelt, an important "forage fish" for numerous aquatic species, including salmon, and birds, have been documented spawning on the west side of Admiralty Head. Surf smelt deposit eggs in small gravel in upper intertidal zones. Cobble substrate along the park's south-facing spit is too coarse for forage fish spawning. The coarseness is due to the high wave energy that hits the beach (long fetch to south) and could be in part due to interruption of sediment movement at Keystone Harbor. Very little eelgrass occurs along the park shoreline, but patchy overstory kelp (e.g., bull kelp (*Nereocystis leutkeana*)) occurs along the west-facing park shoreline, and continuous understory kelp (e.g., sugar kelp (*Laminaria saccharina*)) grows along the south-facing park shoreline.



Coarse substrate on spit

Crockett Lake is a significant coastal wetland. A topographic sheet from late 19th century indicates that the lake was historically freshwater with an overflow channel (T sheet map, and State Parks pers. communication). Currently, brackish marsh species such as pickleweed (*Salicornia virginica*) dominate the lake shoreline today. Significant saltwater intrusion was observed at the tide gate. Additional saltwater moves through the spit berm



Crockett Lake

and via the ditch at the east end of the lake. The lake's management, in particular the tide gate and lake level, has been the subject of significant study and litigation. The National Park Service is studying the historic habitat condition of the lake currently, and there is not agreement on the degree of pre-settlement tidal fluctuations, saltwater inundation, and anadromous fish use. Extensive information on the history and management of the lake is available in the Ebey's Landing National Historical Reserve Final General Management Plan and EIS (National Park Service, 2006).



Salt water flowing into Crockett Lake through tidegate



Shoreline of Keystone Harbor near WSF terminal

The lower park area, in particular around Keystone Harbor, is less conducive to a high level of habitat function because the harbor shoreline is armored with riprap and there are several active uses. Washington State Ferries operates a ferry terminal in Keystone Harbor. The future alignment of the ferry terminal is an issue that State Parks is tracking. One potential realignment scenario would require cutting back the shoreline at the RV campground. Another issue related to the ferry terminal is that run-off from the vehicle holding area flows directly into water, presumably impacting water quality.

The park campground along the western shoreline of Keystone Harbor provides little separation between the campground and beach. No riparian vegetation grows in this area. Riparian vegetation functions as source for organic material to support food web, terrestrial-origin prey items for salmon and other aquatic organisms, shoreline stabilization, and water quality. Intended and unintended campground uses (e.g., RV use of campground and RV washdown while in campground, respectively) may impact water quality. A public boat ramp is also located on eastern shoreline of Keystone Harbor.

South of Keystone Harbor is a derelict pier and dock, known as “Quartermaster Wharf.” The structure supports pigeon guillemot (*Cephus columba*) nesting. It is not known whether the wood used in the structure is creosote-treated. A small jetty and reef ball located at the mouth of the harbor provides thriving fish and aquatic habitat.

Along the spit forming the south-facing portion of the park shoreline, creosote treated logs were removed from beach, but about 1/3 of the quantity have returned within approximately one year, indicating an ongoing problem. Fort Casey Road (Hwy 20) may impede movement of the salt and freshwater under the spit separating Lake Crockett and Puget Sound.



Terrestrial Habitats and Species

Vegetation in the top of bluff portion of the park includes a mix of open grass, shrub thickets, and evergreen woodlands with considerable fragmentation from roads, trails, buildings, and mowed lawns. Meadow and shrub thickets occur on bluff faces with low level of fragmentation. Spit uplands have extensive driftlog deposits and open beachgrass and herbaceous perennial vegetation with linear disturbances from roads and trails paralleling the shoreline. Extensive information on the upland habitat is available in the Ebey’s Landing National Historical Reserve Final General Management Plan and EIS (National Park Service, 2006). Large maintained lawn areas occur at the campground and gun emplacement area.

Golden paintbrush (*Castilleja levisecta*) is a herbaceous perennial plant that is a federally listed “threatened” species under the Endangered Species Act and is listed as “endangered” by the State of Washington. There are thirteen known populations, of which five are located on Whidbey Island, and one is within Fort Casey State Park. The plant grows at the bluff crest on well-drained soils. Extensive information on the golden paintbrush is available in the Ebey’s Landing National Historical Reserve Final General Management Plan and EIS (National Park Service, 2006). The park’s Vegetation Management Plan has led to an increase in the abundance and spatial distribution of Golden Paintbrush.





Cultural/Historic Analysis

Fort Casey is a cultural landscape contained within the Ebey's Landing National Historical Reserve (ELNHR). Ebey's Landing is unique in that it is the first "historical reserve" in the National Park System, and it is a "partnership park" that uses a cooperative strategy to bring together private and public resources at the local, state, and federal level. Planning efforts at Fort Casey State Park should be considered within this context.

Good documentation exists detailing the historic development of the site and its cultural and historic significance. Several historic assessment documents have been completed for Fort Casey, which is part of the Central Whidbey Island Historic District. Washington State Parks and its partners are very active in preserving this legacy landscape.

WSPRC plans to reconstruct the Fire Commander's Station in its original location. Park staff discussed its possible use as an interpretive center. This effort would be consistent with efforts to restore the park's cultural landscape.

WSPRC intends to remove parking lot near the batteries in order to re-establish the historic appearance of an open field. The existing parking lot would be relocated elsewhere within the park in an effort to restore the cultural landscape. The balance of the existing field consists of mowed lawn. Forty-seven acres of lawn occur throughout the park, more acreage than historically existed. It was discussed whether selectively replacing some lawn with native grasses would be more consistent with the historic landscape and Sound-Friendly mission.

The present lighthouse was built in 1904 and replaced an 1860s structure that was located on the point about one-half mile to the south. Future project work on the lighthouse will focus on the preservation and repair of the historic structure. The lighthouse has a historic water collection system with a baffle that can channel water to the ground or a cistern. It was also noted that historically there was a garden next to the building that was used for growing vegetables. The existing parking lot and access road could be removed so that the garden could be re-established. If the cistern is rehabilitated, collected rainwater could be used to water the garden.

The park recently cleared brush/understory at forest edge to restore sight lines across the Parade Ground between the lighthouse and the batteries. Prior to the brush clearing, it was reported that many visitors missed seeing the historic lighthouse and interpretive facilities that are housed there. Now the lighthouse is more clearly visible and connected to the Parade Ground; visitors more often explore the lighthouse along with the rest of the site. However, understory vegetation is favored songbird habitat and perhaps could be replaced or expanded elsewhere on the site.



Recreation Site Analysis:

The following recreational opportunities are available within Fort Casey State Park:

- Boating
- Camping
- Diving
- Fishing
- Kite flying at Parade Ground
- Picnicking
- Birding
- Guided and self-guided tours

Recreation at the park is a vital activity that brings people close to the water. Sound-Friendly strategies and programming can promote recreational activities that enhance education and landscape immersion experience while protecting the health of the Puget Sound. Improvements could be made for boaters and campers that would further reduce the impacts of their actions, e.g., providing a boat rinse-off facility that would capture any harmful chemicals from boats and motors, educating campers as to techniques and practices that are more Sound-Friendly.

The existing riprap wall along the shoreline at the campground impedes beach access to the beach and is inconsistent with the natural shoreline environment. Although its removal or reconfiguration could reduce the number of campsites, restoration of the beach to a more natural arrangement could benefit fish and bird habitat. Further environmental and engineering assessments of the shoreline would provide the feasibility data required to model the appropriate level and type of change.

Community Site Analysis:

Fort Casey State Park has been the focus of public interest and planning efforts for quite some time, and Sound-Friendly low impact development strategies build upon this ongoing work. Washington State Parks and Recreation Commission's Second Century Planning Team for Fort Casey has drafted several long-term plans promoting sustainable management. Fort Casey State Park is a Model Stewardship Park for the Washington State Parks and Recreation Commission's long-term management vision. It is intended that management decisions will emphasize conservation and protection of key resources while assuring and facilitating public access.

Fort Casey is part of the Coastal Fortification Interpretive Master Plan. The Fort was one of the coast artillery posts established during the late 1890s for the defense of Puget Sound. The "Puget Sound Triad of Defense" consisted of Fort Casey, Fort Worden (near Port Townsend), and Fort Flagler (on Morrowstone Island). Technological advances in the science of warfare made fixed coastal batteries obsolete during World War II, and the fort was deemed unnecessary for national defense purposes.

Camp Casey, originally part of the historic fort site, is owned by Seattle Pacific University. Coordinating Sound-Friendly management and events at Fort Casey State Park with Camp Casey could be beneficial for both organizations.

Washington State University (WSU) manages the Interpretive Center including the Beachwatchers Program and Environmental Program out of the lighthouse. Through the Sound-Friendly model, Washington State Parks can develop additional stewardship and educational programs in coordination with WSU. These programs could learn from and build upon the successes that the existing programs have demonstrated.

Fort Casey is a beloved park for Whidbey Island community members who enjoy its spectacular Puget Sound setting, its recreational and educational opportunities, and its rich history. It is also connected to the larger Puget Sound region via the ferry system and regional road system and is a popular destination on Whidbey Island. Finally, it is a world-class destination for all visitors who wish to experience the unique Sound environment and cultural history.

