

Adapting to Rising Tides



Parks and Recreation Vulnerability and Risk Profile

Parks and recreation areas in the ART subregion provide a wide variety of services to the public. Resources and activities at these sites include scenic views; walking, running, and biking on paths and trails; nature viewing; interpretive displays; educational facilities and activities; swimming; paddleboating; sailboarding; motorboating; picnicking; playgrounds; family/group event areas and facilities; dog recreation; historic or cultural activities; team sports; and golf. Parks also provide habitat for terrestrial and aquatic species, including endangered salt marsh harvest mouse and clapper rail. Parks and recreational areas in the ART project area serve users at three scales: regional shoreline areas attract visitors from the entire Bay Area and beyond; county-wide parks or community centers provide event and sports facilities used primarily by Alameda County residents; while community level small shoreline parks serve the surrounding community or neighborhood.

The ART Project assessed the vulnerability and risk of 18 shoreline parks, 5 golf courses and a portion of the San Francisco Bay Trail. While these are not the only parks and recreation areas in the subregion, they are representative of the different services and scales of use in the ART project area. There were a number of parks and recreation areas that were not evaluated, in particular, only a few of the numerous neighborhood parks were considered because the main focus of the ART Project is on regional and subregional (i.e., county-wide) assets.

Key Issues

Shoreline recreation, a unique quality of Bay Area living, may be significantly impaired due to sea level rise impacts. The recreation uses and services that are most sensitive to the effects of sea level rise and storm event flooding include trails designed for people with limited mobility, unpaved trails close to the shoreline, the beaches at Crown Memorial State Beach, and grassy areas. People with limited mobility will find it more difficult to move through and detour around inundated and storm damaged areas. Unpaved trails located close to the shoreline will be subject to erosion, flooding, and storm damage that may wash away portions of the trail. Additionally, Bay Trail segments within shoreline parks are often located on top of levees, which may be damaged by storm events. Sports fields, golf courses and other grass areas are sensitive to salt water flooding, and can be permanently damaged if flooding lasts for long periods of time, or sediment and debris is deposited after the water levels subside. The beaches at Crown Memorial State Beach are already eroding and require replenishment.

Park infrastructure such as restrooms and parking lots are vulnerable to flooding, and may be closed for significant periods if damaged. Park facility closures and repairs will limit recreation opportunities and shoreline access, and will place a particular burden on limited-mobility and socially vulnerable populations. The majority of shoreline parks and recreation sites evaluated in the ART project area are at risk of being lost by the end of the century, and there are not enough alternative parks or recreation areas to make up for their loss.

Vulnerabilities	Consequences
<p>Timing</p> <ul style="list-style-type: none">• By mid-century two of the parks and one golf course evaluated will be exposed to the daily high tide, and more than half of the park and recreation assets will be exposed to storm event flooding.• By end of century, eight parks and two golf courses will be exposed to daily high tide, and nearly all will be exposed to storm event flooding.	<p>Scale</p> <ul style="list-style-type: none">• Damage and closures at parks will reduce access recreational and shoreline access currently enjoyed by residents from nearby neighborhoods, the county, and the entire region.• Damage to unique recreation resources such as the Hayward Shoreline Interpretive Center or the sand beach and accessible tide ramp at Crown Memorial Park would have region-wide effects on interpretation and barrier-free recreation.

Vulnerabilities

Physical and Functional Qualities

- Unpaved segments of the Bay Trail and those that are located on the top of shoreline levees are vulnerable to erosion, damage, and closure.
- Sports fields, golf courses, and other grass areas are sensitive to salt water and cannot tolerate long duration flooding.
- Parks, recreation areas, and golf courses that have existing drainage problems will likely be subjected to flooding and potential damage due to sea level rise sooner than areas with adequate drainage.
- Sandy beaches, such as at Crown Memorial State Beach, are highly erodible and already require sand replenishment. Sea level rise and the concomitant change in wave and tidal energy will increase the amount of erosion and damage of these key shoreline resources.

Management Control

- Planning and implementing improvements or use changes at shoreline parks is complicated because often parks are managed by one agency while the land is owned by another. Some parks have multiple managers and owners, adding complexity to funding and decision-making.
- Sea level rise and more frequent storm impacts may change the needs at some parks, and resource reallocation may be needed to accommodate shifts in management demands.
- Changes to the park shoreline or park use to address sea level rise and storm events will require coordination with adjacent landowners, multiple regulatory agencies, and numerous stakeholders.

Consequences

People

- Closure of the Bay Trail would impact commuters and shoreline recreational users, and in locations where the trail provides emergency access, would limit region's ability to respond during a disaster.
- Disruption and closure of barrier-free access to park facilities will place a disproportionate burden on those with limited mobility.
- Parks often serve low income residents and elderly that lack the mobility to access other recreation sites. Park damage or closure would place a disproportionate burden on these populations.
- Population growth, increasing urban density, and ethnic diversification will tax existing shoreline park are recreation areas that are already heavily used.
- Existing unmet needs and a growing demand for recreation means that cumulative loss of shoreline access and recreation opportunities would have significant societal consequences.
- Park closures would affect low-income residents living near parks who rely on these free, easily accessed sites for family gatherings, weekend recreation, and sports activities.

Economy

- Damage and closures of park and recreation areas will lead to lost or reduced revenues for facilities that have fees or commercial enterprises.
- Closure of the Bay Trail closures will disrupt travel to jobs and school, potentially causing lost work days or a higher cost to the commuter.
- Increases in required maintenance and repair of park facilities will have significant consequences on the capacity to provide recreation services and could affect the ability to maintain services in other parks in outside of the project area.
- The total loss of all amenities and uses at shoreline eight parks is almost \$190 million (in today's dollars) at mid-century. This value takes into account the replacement costs for major structures (e.g. an interpretive center, a boathouse), the loss of revenues (e.g. from field rentals), and the value of loss of recreational activities. The analysis did not take into account the costs to replace all park infrastructure and a conservative approach was used in estimating the value of recreation activities. For example, the annual recreation value at MLK Jr. Regional Shoreline was estimated to be worth \$4.8 Million.

Ecosystem Services

- Loss of tidal or managed marsh within the shoreline parks will result in lost of significant habitat for the endangered clapper rail and salt-marsh harvest mouse and other wetland species.
- Disruption or closure of park facilities will reduce the opportunity for interpretation, education, and wildlife and nature viewing that are unique, regionally significant, and serve to protect endangered species, fragile habitats, and ecosystem services at each site.