

1. CALIFORNIA COASTAL TRAIL Kelly Avenue to Seymour Street

County of San Mateo &
City of Half Moon Bay

VULNERABILITY SUMMARY

The vulnerability of this segment of the California Coastal Trail (CCT) is **moderate**. The CCT's uses can be highly sensitive to erosion if it becomes severe enough to cause a collapse of the trail or bluff; however, some uses can be sustained with minor erosion or cracking along the trail. To date, the extent of coastal erosion to this segment is moderate and has not yet forced closures. The adaptive capacity of this section of the CCT is high because it would be relatively easy to relocate the trail away from the eroding bluff and there are other alternative inland routes to support the CCT's transportation function, even if recreational uses would be reduced.

SENSITIVITY Moderate	EXPOSURE Moderate	ADAPTIVE CAPACITY High	CONSEQUENCES Moderate
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ASSET CHARACTERISTICS

Kelly Avenue to Seymour Street | Half Moon Bay

Asset Description and Function:

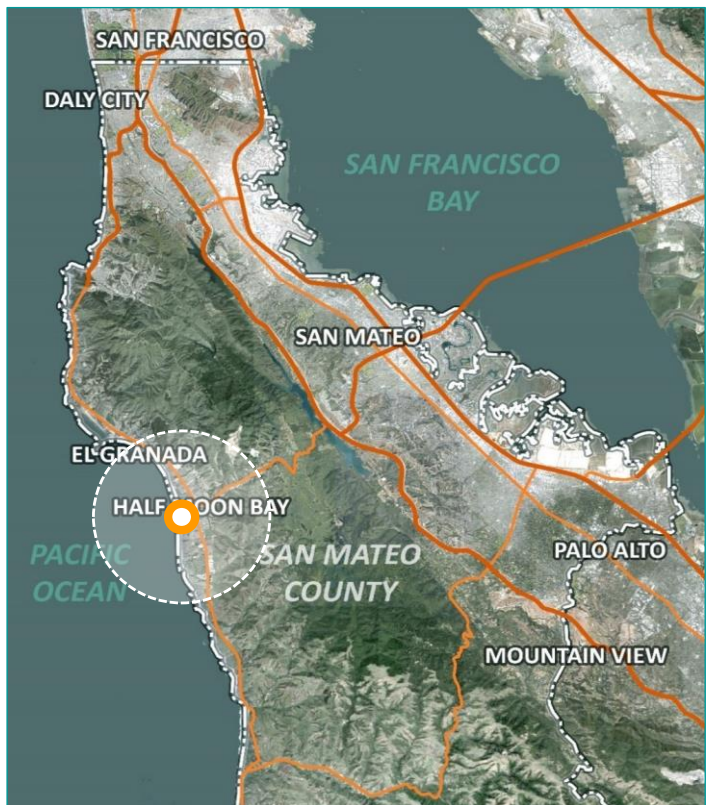
This 1.2-mile section of the CCT is designated a Class 1 bike trail and includes the Poplar Beach parking lot. It is part of the 1,200-mile-long CCT, and is a popular asset in the area that provides beach access and supports bike, pedestrian, and equestrian uses for commuting, recreation, and tourism. Parts of the CCT are pavement and asphalt, while others are packed earth. The CCT passes near long-established neighborhoods: Alsace Lorraine and Arleta Park.



Asset Type	Recreation/Trail
Asset Risk Class	1
Size (length) (width)	1.2 miles, 10 feet wide
Years of Construction	1995-2005
Elevation	54-60 feet
Level of Use	Year round, but more heavily used in the summer
Annual O&M Cost	\$23,000
Special Flood Hazard Area	N/A
Physical Condition	Fair
Landowners	County of San Mateo, City of Half Moon Bay
Underground Facilities	None

Environmental Considerations

The CCT traverses an area that has potential for the occurrence of special status plant and animal species and is shown on City maps to contain environmentally sensitive habitat areas (ESHA) as well as potential ESHAs where habitat may be present.



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ASSET SENSITIVITY

The sensitivity of this segment of the CCT is moderate; however, the sensitivity of any individual section depends fully on the extent and severity of erosion. For example, this segment of the CCT is considered to be in fair condition; it is fully open and usable today, despite the erosion, settling, and cracking. However, the areas directly along the bluff are more sensitive to erosion; once a section erodes away, or if a part of the trail falls off the bluff, the section will be closed, forcing users to take alternate routes either temporarily or permanently. Alternate routes will decrease level of service or quality of the recreational, tourism, and commuting functions.

SEA LEVEL RISE EXPOSURE ANALYSIS

Erosion Extent and Exposure

Present-day exposure to erosion is moderate, as this section of the CCT is subject to regular, and in some places severe, erosion due to daily tidal, wind, and wave effects, as well as storm conditions. The erosion study showed that human activity caused accelerated erosion rates even beyond those attributed to weather and other events. Future exposure is likely to increase with sea level rise, as much of the segment is located within the area identified by the Pacific Institute study (2012) as the possible extent of erosion by 2100 (light yellow band). Evidence shows cracking in many places, and while this segment remains intact, other parts of the bluff trail have collapsed entirely. Foot traffic off the CCT trail has contributed to soil erosion. There is evidence that shows areas of soil compaction and associated changes to grading and drainage result in many small inlays along the bluff edge. Erosion is exacerbated by runoff and is most severe where the CCT crosses several drainages including Kelly, Miramontes, Central, Myrtle, Magnolia, and Seymour Drainages. In particular, severe erosion over the last 10 years near the bridge over Seymour Drainage now threatens the long-term safety of the bridge, and it will be relocated. Poplar Beach parking lot and beach access are also exposed to erosion. Sections of the CCT farther inland have not yet been exposed, but the physical extent of erosion of this section of the CCT is likely to increase with the future wind and wave action expected with sea level rise. This segment is not vulnerable to coastal inundation.

Asset is nearly entirely within the 2100 erosion zone.



Paved section of trail with coastal views.



Cross-Cutting Vulnerabilities

Some of the overall value of this asset lies in its connectivity with the rest of the 1,200-mile-long CCT along the coast. This segment in particular provides trail connection between various neighborhoods and downtown Half Moon Bay via Kelly Avenue and Poplar Street. Nearby Half Moon Bay State Beach receives roughly 1 million visitors annually. The southern end of this segment of CCT abuts a closed Half Moon Bay landfill (see AVP #7). Impacts that affect this section of CCT could affect nearby assets and vice versa.

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ADAPTIVE CAPACITY, CONSEQUENCES, AND POTENTIAL ADAPTATION

Adaptive Capacity

Adaptive capacity of this section of the CCT is high, as it would be relatively easy to relocate the trail inland or use an alternate path, and most functions of the CCT could be maintained, albeit with reduced levels of service. For example, it would be possible for trail users to through-connect by taking Railroad Avenue or the Highway 1 Naomi Patridge Multi-Use Parallel Trail. However, both options are less desirable and less safe for pedestrians and cyclists. Railroad Avenue is not a Class 1 bike trail, and the Naomi Patridge trail has numerous street crossings, in contrast to the CCT, which is undisrupted by street crossings. Both are less scenic options, which could discourage recreational use, and Railroad Avenue requires winding through neighborhoods to get from point to point, which could be inconvenient and take longer. If erosion were to affect the parking lot or access to Poplar Beach, pedestrians and cars could access the beach at other access points. This segment provides the only ADA access to the bluff tops and ocean views in this area.

Consequences

The consequences of the loss of this unique segment of the CCT and parking lot are moderate. While interruption of any segment of the CCT could be considered a regional loss to an important state recreational asset, the geographic scale of the direct impact would be local. It is likely that closure of the CCT could impact the quality of life most acutely for nearby residents. However, the level of use of adjacent parks suggests that thousands of trail users could be affected, making the scale of impact more broad. Despite the availability of other routes and beach access points, permanent loss of the CCT would result in the loss of public lands along with unique public recreational options in the area. Loss of this section would also reduce recreational opportunities for people in wheelchairs or access and functional needs. Economic costs of rebuilding the section of trail would depend on the size and location of the particular segment, and whether repairing it would require realigning it into private property (which would be more expensive or impractical). For example, preliminary estimates based on similar projects indicate that the bridge replacement would cost around \$500,000; meanwhile, emergency erosion repair would cost roughly \$80,000. An incomplete CCT would also result in fewer visits of many types, including hotel stays, camping, day visits, dining, and shopping at local businesses. Relatively speaking, though recreation would be lost, direct and indirect economic damages from a loss of the section of CCT are small, and it is unlikely that loss of this section of CCT would significantly affect public health and safety.

Additional Important Information

The City of Half Moon Bay has completed an erosion study that examined the existing conditions and trail planning recommendations. The Seymour Bridge has been replaced, however erosion continues to be an issue, and the City is conducting additional studies to address this. The City's next steps are to engage with local partners, residents, and trail users before making trail management decisions. Nearby, in the Wavecrest area, plans are underway for a Coastal Trail Improvement Project, led by the Coastside Land Trust. The \$3 - 5 million project has encountered habitat and sensitive species issues and includes stairs funded by Ocean Colony Partners. Coastside Land Trust plans to finalize permit application in 2017.

Asset-Specific Adaptation

Alternatives to adapt this segment of the CCT include removing the existing section of trail and gradually relocating it inland of the anticipated "erosion retreat zone" on the bluff. While most of the land is publicly owned, relocation inland could be challenging in some locations due to private property ownership. Other potential, but likely more costly, measures to minimize erosion include beach nourishment and revetment placement. Drainage, vegetation and other management techniques could be beneficial for reducing human-induced erosion.

Vulnerable Trails

This is the only Asset Vulnerability Profile focusing on vulnerable trails in the County. The vulnerability assessment analysis shows that there are 91.2 miles of vulnerable trails in San Mateo County, including sections of the CCT, the San Francisco Bay Trail, the West Belmont Slough Trail, and the Pillar Point Trail.

Severe erosion adjacent to CCT at drainage.

