BAY MODEL VISITOR CENTER

SAUSALITO, CALIFORNIA

APPENDIX B ENVIRONMENTAL ASSESSMENT

1.0. Introduction

This Environmental Assessment (EA) has been prepared in conjunction with the completion of a Master Plan for the Bay Model Visitor Center (BMVC) located in Sausalito, Marin County, California. This EA has been prepared in accordance with the requirements of the National Environmental Policy Act (NEPA) of 1969, as amended (42 USC 4321 *et seq*), Council on Environmental Quality (CEQ) regulations published in 42 Code of Federal Regulations (CFR) part 1500, and the U.S. Army Corps of Engineers (USACE) *Implementing NEPA,* Engineering Regulation ER-200-2-2.

The Master Plan is intended to guide the future use, development, and management of resources at the Bay Model consistent with USACE regulations laws and policies. In general, the primary goals of this Master Plan are to memorialize a number of activities, uses, partnership and stakeholder collaborations and management responsibilities that have been in place for a number of years to ensure the sustainability of the BMVC and assets into the future. The location of the BMVC is shown in Figure 1 and the project boundaries outlined in Figure 2.

The purpose of this EA is to provide sufficient information of potential environmental effects of adopting the proposed Master Plan in order to determine whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI).

1.2 Purpose, Need for Action, and Authorization

Master Plans are required for civil works projects and other fee-owned lands for which the USACE has administrative responsibility for management of natural and historic resources.

1.3 Project Location and Setting

The BMVC is located in the City of Sausalito, Marin County, at 2100 Bridgeway Boulevard on USACE's Baseyard property. The property contains the BMVC complex, the Bay Model Marin dock, and a USACE marine debris storage area. The BMVC is a fully accessible education center that hosts a working hydraulic model of the San Francisco Bay and Sacramento-San Joaquin river delta system. The Baseyard property covers approximately 10 acres and is bordered northeast by Richardson Bay, a finger of the greater San Francisco Bay, and southwest by Bridgeway Boulevard. Residential and retail properties are located on the opposite side of Bridgeway Boulevard southeast of the Baseyard property. The property is also bordered by the Marinship Park to the northwest and commercial and industrial properties to the southeast. The location of the Bay Model Visitor Center is shown in Figure 1 below.

Figure 1: Project Location

This EA will discuss the BMVC organized by its five management units (Table 1), which have been fully defined in the Master Plan and are summarized below. The project boundaries are outlined in Figure 2.

Table 1 Bay Model Visitor Center Management Units

Management Unit #	**Description**
1	Visitor Center
2	Parking Lot
3	Native Plant Garden
4	Pier
5	General Education

Figure 2: Project Boundaries

1.4 Scope of the Action.

ER-1130-2-550 establishes policy for the preparation of master plans and Operational Management Plans. Master plans should be reviewed on a periodic basis, generally every five years, and should be revised as required.

This EA addresses the proposed adoption and implementation of the first BMVC Master Plan. The intent is to provide a holistic view and understanding of the potential environmental, cultural, and human impacts resulting from implementation of the BMVC Master Plan. This EA analyzes anticipated impacts of the proposed Master Plan.

The Master Plan presents future development needs and offers recommendations for each management unit in the Master Plan. It is infeasible to anticipate all potential impacts of all future management actions and proposals. Therefore, future environmental consequences may be less than or may exceed what is described in this EA. To ensure potential environmental impacts of future actions are identified and analyzed in accordance with NEPA and other applicable environmental laws and regulations, additional NEPA analysis and appropriate agency coordination would be conducted for future projects that are carried out in association with the proposed Master Plan.

Implementation of the BMVC Master Plan in its entirety may require additional NEPA analysis. Conducting NEPA on the implementation of a the BMVC Master Plan is useful because it can help identify potentially controversial issues during the planning process; result in efficiencies for project execution at later stages and cost savings through the use of tiered NEPA documentation; and ultimately inform the decision maker of environmental consequences from implementation of the Proposed Action and subsequent resulting actions.

The decision to be made is to adopt the current proposed BMVC Master Plan, modify the current proposed BMVC Master Plan, or adopt the No Action alternative. If appropriate, the final decision would be documented in a FONSI, which would include mitigation measures to reduce identified adverse impacts.. This EA analyzes the Master Plan in as much detail as is currently available; however, this document is intended to provide guidance for further site-specific projects under the guise of the BMVC Master Plan. In addition, for projects with potential to adversely affect historic properties, the Cultural Resources Manager would be involved in the planning and design to ensure that the projects are meeting the goals of the Integrated Cultural Resources Management Plan and that adverse effects are mitigated in accordance with the National Historic Preservation Act (NHPA) Section 106 process.

2.0. PROPOSED ACTION AND ALTERNATIVES

This EA examines two alternatives: i) the Proposed Action Alternative (also referred to as the agency-preferred alternative) adoption of the Master Plan and ii) a No Action Alternative in which no BMVC Master Plan would be adopted.

2.1 No Action

Inclusion of the No Action Alternative is prescribed by CEQ regulations and is the benchmark against which federal actions can be evaluated. Under the No Action Alternative, the District would not adopt or implement the BMVC Master Plan and would not meet current regulations or the objective of regularly updating a master planning document. Future major developments or resource management policies would require approval on a case-by-case basis without the benefit of

evaluation in the context of an overall plan.

2.2 Preferred Alternative

Preferred Alternative: Adopt the BMVC Master Plan. Adoption of the proposed Master Plan is USACE's preferred alternative. Under this alternative, the USACE would adopt and implement the BMVC Master Plan described in the main body of this text (to which this EA is an appendix). The Master Plan provides a management plan that follows current federal laws and regulations while maintaining BMVC's cultural and natural resources, and providing local educational and recreational experiences. The revised plan also lays out future recommendations for each management unit as summarized below.

Table 2 Master Plan Development Needs Summaries by MU

Management Unit #	Description	Development needs/potential future actions
1	Visitor Center	1. Refurbish the oral history exhibit to ensure that all the listening devices work properly. 2. Refurbish and renovate the Marinship history exhibit. Provide better protection for the photographs, and models to protect from light and other damage. 3. Maintain and improve space for educational events. 4. Develop and install sea level rise, climate change and bay educational materials, signage, and demonstrations to support the educational mission of the BMVC. 5. Place recycle and compost bins where appropriate throughout the BMVC. 6. Solar panels, carpets, restrooms, maintenance as needed. 7. Evaluate the model itself for historical designation for engineering.
2	Parking Lot	1. Traffic circulation improvement. Better signage needs to be installed to alert drivers of one way roads and directions to the BMVC. 2. Pedestrian safety improvements. 3. Improve existing signage and directions from the parking lot to the BMVC, Sea Trek Kayaking, and Call of the Sea Tall Ships. 4. Repaint parking lot lines to better indicate divisions between parking spots. 5. Design and construct a drainage system in the parking lot which can puddle up and flood during heavy rain events. 6. Construct a "rain garden" to capture and filter stormwater runoff from the parking lot. The rain garden can also be an educational experience and help with the situational puddling and flooding that occurs in the parking lot.

	Native Plant Garden	1. Regularly host public events to learn about the garden, volunteer, maintain, and planting days. 2. Partner with local schools to host site visits to the garden at various stages to educate local children about the natural cycles of native plants. 3. Increase the partnership between the BMVC staff, the Native Plant Society as well as other groups such as SeaTrek and Call of the Sea in order to promote each other and provide visitors to the BMVC a holistic experience. 4. Better connect native plants to climate change and improve signage about how native plant gardens can help mitigate environmental consequences.
4	Pier	1. Renovate and repair the pier as needed, including the development of higher safety barrier on the pier, given the current and projected increased access on the pier from groups of the public, especially children. 2. Increase access for kayak launching by allowing another floating platform to be docked off of the pier. 3. Development of a ferry terminal to allow access for transportation to the region by ferry or water taxi. 4. Develop and allow space for recreational, temporary docking of boats. 5. Improve and maintain the vitality of the pier to help serve the region in the event of an emergency (i.e. space for boats to bring people, supplies). 6. Plan for sea level rise for future updates on the pier to be able to accommodate changing water levels.
5	General Education	**1.** More information and new exhibits relating to the Reber Plan to spread the information about how the Bay Model changed the course of history for the entire region. **2.** Walking tour of the waterfront to better explain the Marinship history of Sausalito. **3.** Further build partnerships with stakeholder groups and other regional entities that have similar programs as USACE for regional plans for education. **4.** Partner with school districts in the region to develop a curriculum about bay science and education. **5.** Continue partnering with Sausalito's sister city, Sakaide, Japan, to develop a cross culture teaching program at the Bay Model. **6.** Educational and rotating signage supporting the aquarium in the foyer of the BMVC.

3.0 AFFECTED ENVIRONMENT AND RESOURCES

This section describes the baseline environmental conditions (also described in the BMVC Master Plan) that maybe affected by or may affect the proposed project or the No Action Alternative. The USACE considered potential impacts of the alternatives.

3.1 Physical Environment

Southern Marin county is characterized by urbanized low-lying lands (reclaimed mudflat) adjacent Richardson Bay to the southeast and very steep terrain, largely open space, of the Marin Headlands abutting the Pacific Ocean to the west. The area's marine and Mediterranean climates and rich open-water resources lend themselves to relatively wet winters and dry summers with an abundance of wildlife, waterfowl, and shorebirds.

3.1.1 Geology, Topography, Soils, and Geologic Hazards

The BMVC is located within the central portion of the Coast Range Geomorphic Province of California (City of Sausalito 2019, section 5) at the base of the foothills southeast of Mount Tamalpais, home to valleys and mountain ranges parallel to the San Andreas fault systems (see Figure 4). The geology is comprised of underlying bedrock of the Franciscan Assemblage unit of the upper Jurassic to Cretaceous age (140 to 65 million years old). Colluvium soil is found in the hillside swales and valleys, while the low-lying areas adjacent Richardson Bay, such as the BMVC, overly natural bay mud and man-made fill. The Baseyard property was built in the 1940s on fill overlying the original tidal flats of Richardson Bay. No mineral resources are known to exist within or around the property.

Elevations above mean sea level range from 2580 feet in the Marin Headlands (Northern California Coast Range), to mean sea level along the Richardson Bay shoreline. The BMVC and Baseyard property sit at roughly 11.5 feet. Primary ground cover in the Baseyard property, is asphalt.

Geologic Hazards. The BMVC is vulnerable to a number of natural hazards as it sits in in a seismically active region (mainly the San Andreas Fault system 6.5 miles southwest) and adjacent Richardson Bay (See Figures 3 & 4). The last active ground rupture in the county was in 1906 (Marin County Open Space District 2013) and studies suggest a 62 percent probability of a fault rupture with a magnitude of 6.7 or greater by the year 2032 that could affect the Bay Area. Because the BMVC was built on fill overtop of bay mud, it is particularly susceptible to ground shaking and subsequently, more potential damage to the BMVC.

Regionally, liquefaction was caused by large earthquakes (see Figure 5). However none is documented on site of the BMVC. According to the Association of Bay Area Governments (ABAG) Resilience Program (2019), the BMVC property is very highly susceptible to liquefaction (Figure 5). Though the surrounding areas have been vulnerable to landslides during heavy precipitation, reports from the USGS suggest few have occurred in the area of the BMVC (USGS 1997 cited in MCOSD 2008).

Landslides have been concentrated in the northwestern part of Sausalito near the hillside terrain, however in February 2017, a landslide occurred south of the BMVC on San Carlos Avenue near Bridgeway Boulevard which caused power outages. Furthermore, debris flows caused during landslides and heavy rains could come to rest in the low-lying areas like the BMVC.

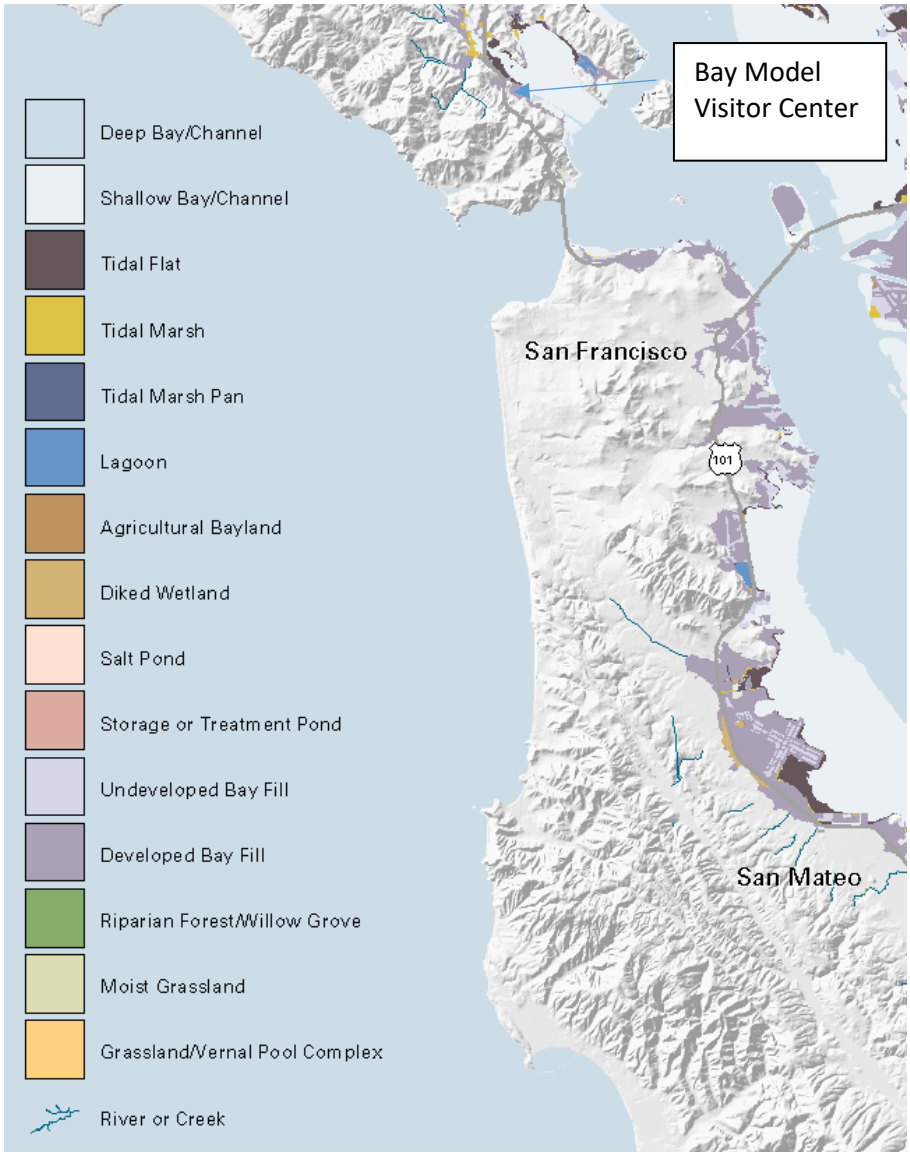

Figure 3: Fill and Habitat in the BMVC region; map courtesy of the San Francisco Estuary Institute (SFEI)

Figure 4: San Andreas Fault and historic ruptures; Map courtesy of usgs.gov

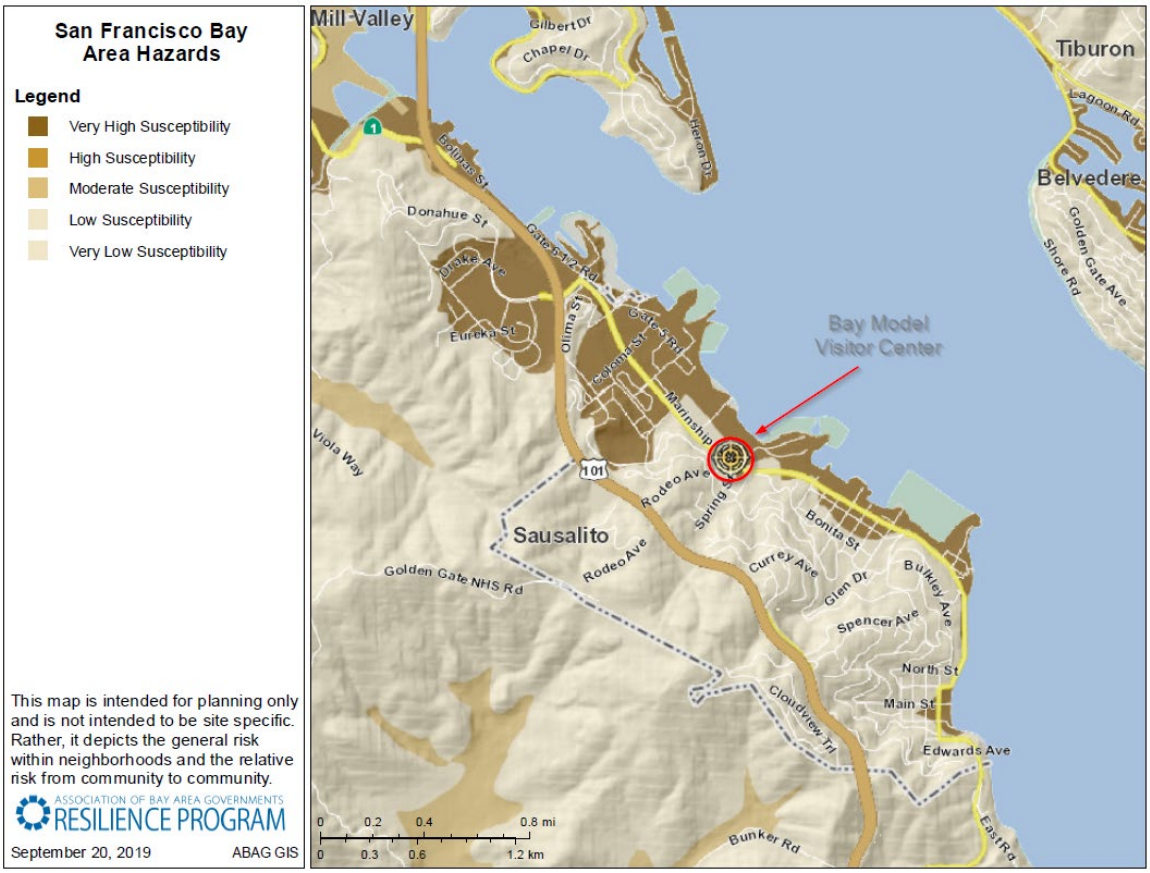

Figure 5: Liquefaction susceptibility in the project area

3.1.2 Water Resources.

At the base of the Marin Headlands, Sausalito and the BMVC are in the Richardson Bay watershed (Marin Watershed Program 2019), connected to San Francisco Bay. The open-water estuarine community hosts a diversity of aquatic and bird habitat, as well as other beneficial uses of surface waters. The San Francisco Bay Regional Water Quality Control Board (Waterboard) identified beneficial uses of surface waters in Richardson Bay to inform the local water quality objectives (standards). These uses are: industrial service supply, commercial and sport fishing, shellfish harvesting, estuarine habitat, fish migration, preservation of rare and endangered species, fish spawning, wildlife habitat, water contact recreation, noncontact water recreation, and navigation (Waterboard 2017).

Water Quality.

The BMVC does not manage any water resources as a part of the BMVC, however it is adjacent Richardson Bay so activities on site could affect water quality in the bay. The mechanisms for these effects would likely be from surface water runoff from the Baseyard property (i.e., the parking lot, MU 2, into Richardson Bay, or from use of the Marin dock (MU 4) which extends into Richardson Bay.

The San Francisco Bay Conservation Development Commission (BCDC) (1983) found that because of its enclosed shape, shallowness, and minimal tidal flushing action, Richardson Bay has poor pollutant dispersion capability and low assimilative capacity which makes it susceptible to pollutant concentration. The Sausalito General Plan update (2019) notes that the most recent Marin County

Stormwater Pollution Prevention Program Annual Report identified Richardson Bay as exceeding coliform bacteria water quality standards (Appendix G-2), and BCDC found that stormwater runoff is the principal source of pollution entering surface and ground waters in the San Francisco Bay region (BCDC 2003).

Tidal flooding poses additional risk to local water quality because high waters from Richardson Bay spill onto roadways and adjacent properties, and when the waters recede, they bring with them contaminants picked up on those surfaces. In the Marinship area, for example, flood waters may have nitrogen, herbicides, and insecticides that come from residential areas and city parks; or toxic chemicals and oil from urban runoff or US Highway 101 (City of Sausalito 2019).

Groundwater. There is no groundwater basin in or near the project area (California Department of Water Resources Bulletin 118, 2019) although the depth to the water table is quite shallow in areas developed on fill, like the Baseyard property. This means that as sea levels change around Richardson and San Francisco Bay, so would the water table along with it.

Surface water. No creeks run through or near the Baseyard property. Information is not available indicating the presence of underground creeks. The General Plan Update (City of Sausalito 2019) recommends a study to identify and inventory underground creeks within the City. Rainfall as stormwater runs as overland flow and conveyed along curbs, gutters, culverts, and smaller individual storm drain pipe networks. Overland flooding on the Baseyard property is not typically a concern. In the parking lot (MU 2) and nearby in the Marinship, there is often ponding and localized flooding due to poor drainage and when rain events coincide with high tides.

*Tidal Flooding and Sea Level Change***.** Poor drainage in the area would make properties along the Marinship shoreline more vulnerable to flooding over time. When high tides coincide with rain events, stormwater is unable to drain into Richardson Bay and backs up overland. Continued subsidence and sea level rise could increase the frequency at which these heavy precipitation events and high tides coincide, causing more frequent flooding along the shoreline (City of Sausalito 2010).

The Baseyard property is not frequently exposed to flooding during high tides. While most tidal flooding today would affect the northern parts of Marinship, including Gate 5 Road between Harbor Drive and Coloma Street, the BMVC is expected to be more vulnerable to flooding with the anticipated increase San Francisco Bay's water surface elevation.

Sausalito's effective Flood Insurance Rate Map (FIRM) indicates that the parcel on which the BMVC sits and the dock is in the AE zone, or within the special flood hazard area, an area with 1% chance of flooding. However, the BMVC building and parking lot are not in the AE zone. A base flood (1%) elevation has not been determined for this area, according to the FIRM (2016).

The General Plan update supporting documents note that areas built on fill or bay mud like the Marinship (and BMVC) would experience long term settlement or subsidence. Supporting documentation suggests that between 1968 and 2007, area around the BMVC has settled between 1 and 2 feet. This settling increases the relative water elevation, which can further increase the frequency of flooding.

Marin County performed sea level change studies and vulnerable analyses called BayWAVE,

This used modeling information to identify assets that would likely to be exposed to tidal flooding from sea level change (County of Marin 2019). This study found that the BMVC may be exposed to storm surge in the long-term scenario, or in the scenario of 60" of sea level rise plus the water level associated with a 1% storm surge. The study also identifies the BMVC as an emergency evacuation shelter due to its capacity to house many people, offer refrigeration for medications, and provide backup generators.

3.1.3 Air Quality.

The City of Sausalito is located within the San Francisco Bay Area Air Basin and includes part or all of each of the followingnine counties: Marin, Sonoma, Napa, Solano, Contra Costa, Alameda, Santa Clara, San Mateo, and San Francisco. For purposes of air quality management and implementation, these regions, including Sausalito, are under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). Sausalito's General Plan update contains a table (EA-1) that identifies the primary pollutants and their state and national attainment status.

Table EA-1: San Francisco Bay Area Air Basin Attainment Status (City of Sausalito 2019)

TABLE AQ-1: SAN FRANCISCO BAY AREA AIR BASIN ATTAINMENT STATUS

POLLUTANT	STATE ATTAINMENT STATUS	NATIONAL ATTAINMENT STATUS
OZONE	Nonattainment	Nonattainment
CARBON MONOXIDE	Attainment	Unclassified/Attainment
NITROGEN DIOXIDE	Attainment	Unclassified/Attainment
SULFUR DIOXIDE	Attainment	Attainment
PM_{10}	Nonattainment	Unclassified
$PM_{2.5}$	Nonattainment	Nonattainment
LEAD	Attainment	Unclassified/Attainment

Notes:
PM_{10} = particulate matter with aerodynamic diameter less than 10 microns
$PM_{2.5}$ = particulate matter with aerodynamic diameter less than 2.5 microns
Source of State status: California Air Resources Board 2015.
Source of National status: U.S. Environmental Protection Agency 2016.

In January 2017 of BAAQMD's Attainment Status website (BAAQMD 2017), the Bay Area (and by extension, Sausalito) is not in attainment for Ozone, PM 10, and PM 2.5. Sausalito is in attainment for carbon monoxide, nitrogen dioxide, sulfur dioxide, sulfates, and lead. Status was unclassified or not available for hydrogen sulfide, vinyl chloride, and visibility reducing particles. Motor vehicles are the primary source of air pollution (General Plan update 2019—Environmental Setting Appendix 5).

3.1.4 Climate.

The City of Sausalito's climate is temperate with cool and wet winters, and cool and dry summers with frequent fog or wind (City of Sausalito 2019). The climate is classified as CSC, or "cold-summer Mediterranean climate" by the Koppen climate classification system. Sausalito receives most of its annual 29 inches of precipitation between November and April, with the rainiest month being January, similar to the rest of the Bay Area which has a Mediterranean climate. The city is dominated by a semi-

permanent subtropical with generally northwesterly wind. Coastal temperatures are roughly high 50s (Fahrenheit) in the winter and low 60s in the summer with the warmest months being September and October (see Figure 6).

Sitting on the Bay and very near the Pacific Ocean, Sausalito has a high incidence of maritime air, with heavier winds occurring in the summer (City of Sausalito 2019). In the winter, the ocean keeps the temperatures relatively mild (roughly 50 F) with little temperature fluctuation throughout the year, reaching the low 60s in the summer.

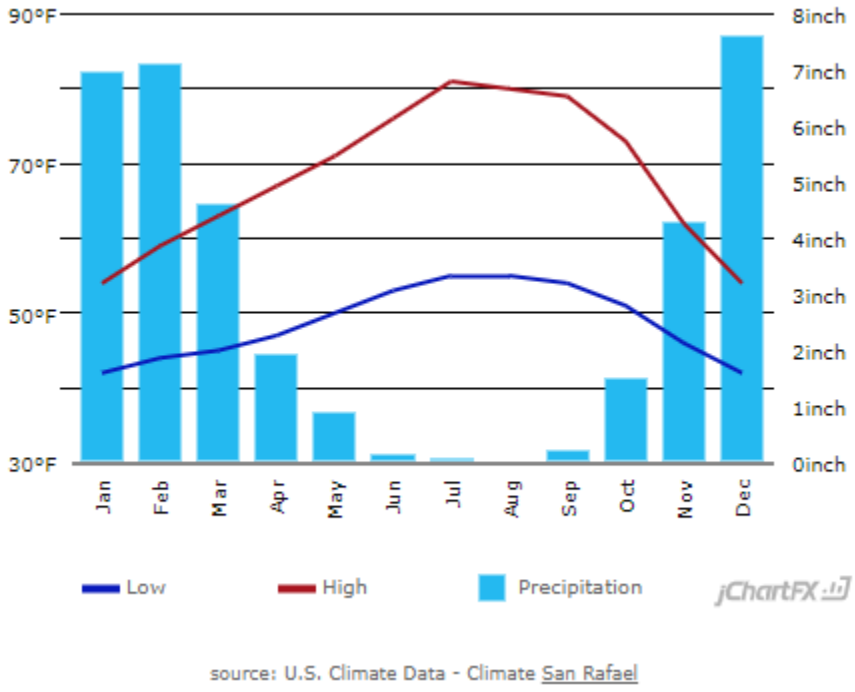

Figure 6: Rainfall and temperature data, City of Sausalito (source: U.S. Climate Data 2019)

3.1.5 Noise.

The Proposed Action area is surrounded by commercial and industrial properties, Marinship Park, and Richardson Bay. The BMVC is close to Bridgeway Boulevard, a major roadway. Background noise in the vicinity results from vehicle traffic and from the BMVC, Baseyard building, Marin dock, marine debris storage area, and other surrounding commercial properties. The nearest noise-sensitive receptors are likely to occur at the Marinship Park recreational area on the northwest side of the Baseyard property and residential and retail properties on the opposite side of Bridgeway Boulevard.

Chapter 12.16 of the Sausalito Municipal Code governs noise and noise inducing activity in Sausalito. A preliminary review of Master Plan activities suggest that the noise ordinance would not affect facility operations with the exception of potential construction equipment operation once implementation of activities in the Master Plan commences. As the Master Plan is implemented, construction activities would comply with any noise ordinance and would provide appropriate abatement and mitigation as

required.

3.1.6 Hazardous Materials,

Sites in the Marinship Shipyard and surroundings (though none on Baseyard property) were previously polluted due to industrial activities associated with shipbuilding, including paint, metalworking, maintenance and manufacturing. Many of these locations have been remediated as part of the Clean-up Program (City of Sausalito 2019).No hazardous or toxic materials are known to existing within or immediately around the Proposed Action area.

3.1.7 Recreation and Aesthetic Resources.

Richardson Bay provides many opportunities for recreational activities at or near the Bay Model, including open-air parks and the Bay Trail, which runs through the BMVC property (In addition, many water-related activities occur on and around BMVC property. For example, Sea Trek Kayak Company operates off the BMVC pier and offers kayak rentals, guided trips, memberships, education and instruction to many groups including school-aged children, businesses, and people with disabilities. Call of the Sea, an educational, nonprofit also operates off of the BMVC pier. Call of the Sea operates off of traditional sailing vessels and teaches marine science, nautical heritage, and provides information about careers in the maritime profession. Both Call of the Sea and Sea Trek partner with USACE, the Bay Ecotarium, and Sausalito Community Boating Center in a group called For the Love of Water and Wildlife (FLOW). FLOW provides coordinated programs to connect people to water education and recreation.

3.2 BIOLOGICAL RESOURCES

3.2.1 Vegetation Communities

The BMVC is in an urban area and the project site is mostly paved. As a result, the project footprint encompasses relatively low-quality habitat for robust vegetation communities. The upland areas of the facility are mostly landscaped with ornamental trees and little to no natural habitat (see Figure 7). On site, the Marin Chapter of the California Native Plant Society designed and built a native plant garden in front of the visitor building. The garden is over 100 ft. long and contains more than 75 species of native plants, including *Salvia mellifera* (Black Sage), *Arctostaphylos glandulosa f. repen* (Manzanita), and *Ceanothus thyrsiflorus repens* (California Liliac).

Existing structures within the immediate vicinity of the action area include the BMVC and Baseyard buildings and the Bay Model Marin Dock (Marin Dock or pier). Marinship Park is adjacent to the northwest border of the existing Baseyard parking lot and includes a large area of ornamental grass with additional trees along its north edge. Richardson Bay, adjacent to the northeast of the Baseyard property, provides the only aquatic habitat located in the vicinity of the Proposed Action area. Large eelgrass beds are abundant in Richardson Bay near the project site and are described in more detail in the following section.

Figure 7: Ornamental trees and flowers at the BMVC

3.2.2 Sensitive Communities

Sensitive communities are those of special concern to resource agencies because of their rarity and/or value as wildlife habitat. These communities are afforded specific consideration under Section 404 of the Clean Water Act (CWA) and other applicable regulations, such as riverine, riparian, marsh, and seasonal wetland habitats. Communities may be considered sensitive by the locally or regionally declining status of a particular habitat type, or because they are important habitat for common or special-status species. Many of these communities are tracked in the California Department of Fish and Wildlife's Natural Diversity Database (CNNDB) which is an inventory of the locations and conditions of the state's rarest plant and animal taxa and vegetation types.

The nearby Richardson Bay includes several aquatic species including eelgrass (the second largest eelgrass bed in the Bay is found near Sausalito). Specifically, *Zostera marina* in Richardson Bay along the shoreline is the only sea grass found in San Francisco Bay (City of Sausalito 2010). Eelgrass provides essential food, shelter, and spawning habitat for local birds, like the California least tern, the Pacific herring, and invertebrates (See Appendix A). They also offer a haven for crabs and scallops (City of Sausalito 2019). A 1989 survey indicated that at that time, eelgrass populations in San Francisco Bay were "patchy" and "stressed" (City of Sausalito 2010).

Eelgrass can be adversely affected by certain land use types, channel dredging and construction, use of marinas and ferry terminals, and propeller wash (City of Sausalito 2010). They are also negatively impacted reduced sunlight from piers and berths in marinas. There is also an issue with moored vessels taking out swaths of eelgrass with their mooring lines.

3.2.3 Fisheries.

The Marin Watersheds Program (2019) identifies a number of fish species present in Richardson Bay, including Bay pipefish, bat ray, black surfperch, northern anchovy, Pacific herring, striped bass, and threespine stickleback. Pacific herring in particular are an important commercial fish—attaching their eggs to the eelgrass during the spawning season (City of Sausalito 2019). The General Plan Update notes that over 100 marine fish species pass by the Sausalito coastline on their way from San Francisco Bay to the Pacific Ocean. Richardson Bay is particularly a lucrative spawning region for the Pacific herring, which return every year to Richardson Bay, spawning and feeding various species of birds such as ducks

and gulls, which feed on the roe (Simons, 2014).

3.2.4 Wildlife.

Because the project site and proposed action area consists primarily of asphalt and ornamental vegetation, the project site provides minimal terrestrial habitat for biological resources. Notable organisms that could potentially occupy the site include species commonly associated with human-dominated landscapes and near-shore areas (— e.g., songbirds, pigeons, gulls, squirrels, and rodents (USACE 2009)). Additionally, there is a heron roosting tree right next to the native plant garden where heron can be seen nesting from time to time.

However, there are several marine mammals that frequent the waters next to the BMVC and that overlap the Marin Dock (Management Unit 4) area that are protected under the Marine Mammal Protection Act if 1972. These include Harbor seal *Phoca vitulina*, California sea lion (*Zalophus californianus*), the Harbor porpoise (*Phocoena phocoena),* and the Southern Sea Otter (*Enhydra lutris nereis*). The latest General Plan (City of Sausalito 2019) update also notes that the substrate along the coast line may house marine works and clams, whereas the rip rap along the shore may support mussels and barnacles.

Avian Fauna

Richardson Bay supports numerous waterbirds, shorebirds, and waterfowl (Marin Watersheds Program 2019) including Great blue heron and great egret nesting colonies, cormorants, brown pelicans, grebes, and diving ducks (City of Sausalito 2019). In addition, the BMVC is located on the Pacific Flyway, which is an important migratory bird corridor. Several migratory bird species may occur within the project area, including the Bald eagle (*Haliaeetus leucocephalus),* the Black oystercatcher *(Haematopus bachmani),* and Common Yellowthroat (*Geothlypis trichas sinuosa*). A comprehensive list of migratory bird species in the area is shown in Appendix X…

3.2.5 Threatened and Endangered Species.

In order to identify listed species or critical habitats with the potential to occur in the project area, USACE obtained a list of threatened and endangered species and critical habitats potentially associated with the proposed project vicinity from the US Fish and Wildlife Service (USFWS). (Sacramento Fish and Wildlife Office, personal communication, January 4, 2016). USACE EAs for previous projects at the Baseyard property (2009 and 2010) were also reviewed to identify additional special-status plant and animal species that may be found in the region where the Baseyard property is located. These resources cover i) federal and state listed species; ii) proposed, and candidate threatened and endangered species (and designated critical habitats) iii); CDFW species of Special Concern and Fully Protected species; iv) plants listed as rare or endangered under the California Native Plant Protection Act (California Fish and Game Code, Section 1900 et seq.); and, v) plants considered by the California Native Plant Society to be rare, threatened, or endangered in California.

Appendix A provides a table of the listed and special-status plant and animal species that have the potential to occur in the region. The table is a summary of the expected occurrence of each listed and special-status species at the project site.

Endangered and Threatened Species.

Endangered species are species that are in danger of extinction throughout their habitat. There are no endangered species expected on the project site except the least tern (sternula antillarum) that may forage occasionally over the water. Additionally, the project site and the water underneath the pier could be a passage route to Winter-run Chinook Salmon. Appendix A shows a list of federally-listed species potentially affected by activities at this location, using the USFWS IPAC tool.

Endangered species of mammals in the region include the Salt marsh harvest mouse (*Reithrodontomys raviventris*), the California Clapper Rail (*Rallus longirostris obsoletus*), and others.

Threatened species are those species likely to become endangered within the foreseeable future due to human activity. There are no threatened species on the project site. However, threatened species in the San Francisco Bay region include the Southern Sea Otter (Enhydra lutris nereis). This species is protected by the Marine Mammal Protection Act, and may be subject to additional protections (U.S. Fish & Wildlife)

Critical habitat.

There is critical habitat as defined in the Endangered Species Act. Richardson Bay is a critical estuarine habitat for Winter-run Chinook salmon and the least tern, according to the National Marine Fisheries Service (NMFS).

3.2.6 Wetlands.

The BMVC property is primarily terrestrial, but the dock (MU 4) is located in an area classified as estuarine and marine deepwater habitat type (U.S. Fish and Wildlife Service 2016) Subsystems include the subtidal zone, where habitats are continuously covered with tidal water (U.S. Fish & Wildlife Service).

3.2.7 Invasive Species.

Executive Order (EO) 13112 provides direction and asks federal agencies to identify and reduce actions that introduce or spread invasive species. All federal land and water management agencies within the Department of Interior (DOI), National Oceanic and Atmospheric Administration (NOAA), and Department of Defense (DOD) have authority to control and manage invasive species as well as restore affected areas on their lands and waters. This authority arises from the various agency regulations and other statutes that govern management, uses, and planning on the lands and waters under their jurisdiction. The level of effort and budgetary resources for management, control, and restoration vary with each department. None of them has the resources to control every invasive species present on federal lands and waters. Departments and their agencies also work in partnership with states and private landowners to control invasive species on public lands.

Invasive species that may occur within the estuary include the Gemme gemma clam, a prominent member of Bay mudflat clam communities. While this species is prevalent in San Francisco Bay, their abundance decreases as distance from the Golden Gate increases.

3.3 SOCIOECONOMIC CHARACTERISTIC**s**

3.3.1 Population and Economy.

As of the 2010 Census, 7,061 people lived in the City of Sausalito. The population estimate for 2018 was 7,100. In 2010, the median age was 54.4 years and the average household size was 1.74 persons. The median household income in 2016 was $110,385. The majority of residents in Sausalito identified as white, with Hispanic being the largest minority group in 2010, representing 8.5% of the population (see table EA-2). Population and income information is presented in Table EA-3.

Table EA-2: County Demographics, courtesy of U.S. Census Bureau

Region	Population Characteristics	Percentage
California	White	72.10%
	Asian	15.30%
	Hispanic	39.30%
	African American	6.50%
Marin	White	85.50%
	Asian	6.50%
	Hispanic	16.10%
	African American	2.80%
Sausalito	White	90.40%
	Asian	2.40%
	Hispanic	8.50%
	African American	2.60%

The majority of people in Marin County live along the north-south corridor that follows U.S. Highway 101 on the central and southern portions of the county near transportation networks
The BMVC, is in southern Marin County, which also includes the cities of Mill Valley, Corte Madera,

Larkspur, San Anselmo, Ross, Tiburon, and Belvedere. Nearby communities include Strawberry, Tamalpais Valley, Marin City, Kentfield, and Greenbrae. The great majority of the population that utilizes the BMVC resides in or near Marin County.

Table EA-3. Current Population, growth rate, and income, 2010 as base year

Region/County	Estimated Population, 2018	Population percent change	Median household income in 2017 dollars (years 2013-2017)
California	39,557,045	6.2%	67,169
Marin	259,666	2.9%	104,703
Sausalito	7,100	2.1%	110,385

An economic and demographic profile of Marin County was completed by Data USA in 2017. The study revealed a comprehensive analysis of the Marin County economy. Government jobs comprised the highest percentage of overall jobs in 2008 for Marin County, followed by retail and health care/social assistance jobs. Figure 8 shown below indicates the distribution of jobs in Marin County.

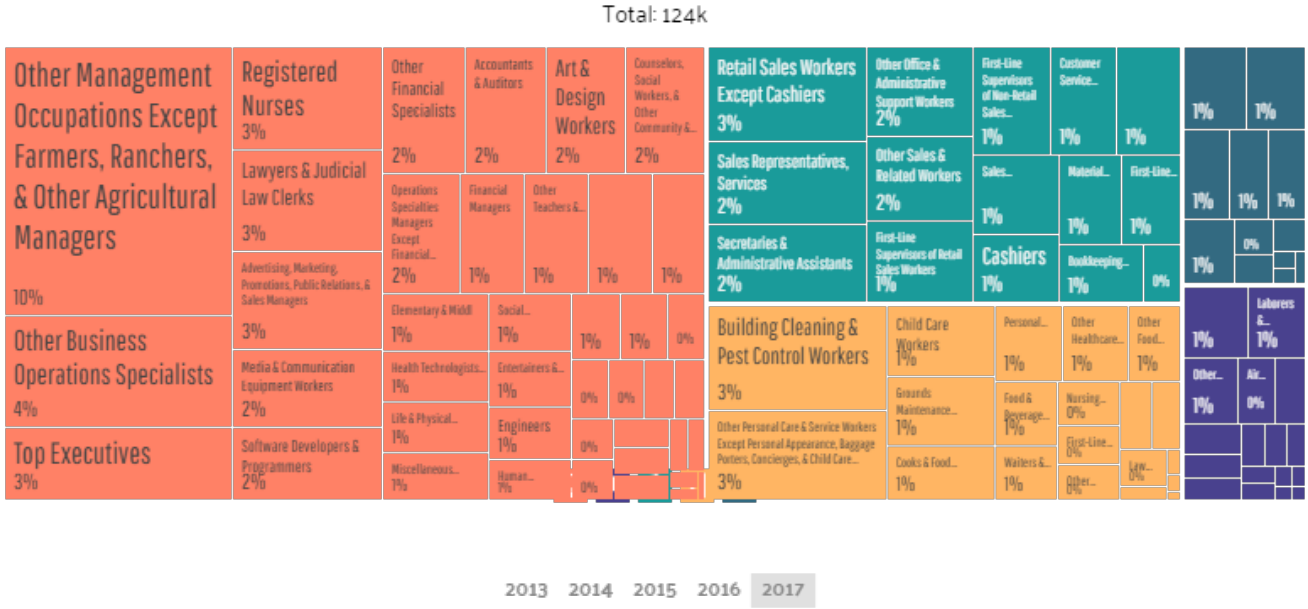

Figure 8. Distribution of jobs by industry in Marin County in 2017.

3.3.2 Transportation.

The proximity of the project to U.S. Highway 101 places it at the northern end of the Golden Gate Corridor, the major north-south transportation and transit corridor linking the urbanized areas of Marin and Sonoma Counties to San Francisco. U.S. Highway 101 provides freeway services from a point just south of Cloverdale to Healdsburg, Santa Rosa, Petaluma and southward through Marin County to the Golden Gate Bridge and San Francisco. Access from U.S. Highway 101 to the project area is by county-

designated arterial roads (See Figure 1).

Marinship Way and Bridgeway Boulevard border the Baseyard property on the southwest side. On the northeast side of the property, Richardson Bay, a navigational route borders the site. A paved access way, or pedestrian/bike path, runs between the northeast front of the Baseyard building parking lot and the riprap-protected slope of Richardson Bay. The access way has parking lots and is sometimes used as a pedestrian walkway along Richardson Bay. Southeast of the BMVC is a private boat dock.

The majority of the proposed action area is comprised of a building, a parking lot, and boat dock. Very little traffic flows in and out of the site, except to visit the site or use the boat dock. On western side of the Bay Model, a two lane road (Marinship Way) was recently converted to a one-lane road with a side walk; neighbors provided feedback that traffic flow is bad but the Master Plan does not contain plans to address this issue.

Because the topography at the Baseyard is flat with poor drainage, rains often cause ponding in the BMVC's parking lot impacting accessibility and use. As such, recommendations in MU 2 include constructing drainage improvements in the parking lot.

Public transportation is provided by Marin Transit and Golden Gate Transit, two local bus companies. Additional services are provided by West Marin Stagecoach, the Muir Woods Shuttle, and Novato Dial-a-Ride, amongst others.

There are no airways near the project site, though Marin County is home to Gnoss Field County Airport (a public airport), Smith Ranch, a private airstrip, and the Richardson Bay Heliport.

3.3.3 Safety.

Since roughly 2002, the BMVC (MU 1) has been a staging area for fire and police coordination and trainings. In addition, The BayWAVE (2019) identifies the BMVC as an emergency evacuation center due to its capacity to house many people, offer refrigeration for medications, and provide backup generators.

3.3.4 Cultural Resources.

Cultural resources are broadly defined as the buildings, structures, objects, sites, districts, and archeological resources associated with historic or prehistoric human activity. Cultural resources that are listed in, or eligible for listing in, the National Register of Historic Places (NRHP) are referred to as "historic properties." Such properties may be significant for their historic, architectural, scientific, or other cultural values and may be of national, state, or local significance.

The Bay Model Visitor Center

The Bay Model Visitor Center is a former warehouse of the Marinship yard, a massive World War II era industrial development for ship building which was constructed by the Bechtel Corporation in 1941-1942 on fill created by the Corps of Engineers. After a prolific shipbuilding period, the General Services Administration transferred a portion of the shipyard to the USACE San Francisco District in 1949 (1946 is one reported date) for their post-war Pacific Island Reconstruction project. It appears approximately 67.5 acres of the 210–acre Marinship was transferred to the District, which reduced its real estate holdings in 1979-1980 to 11.4 acres referred to as the Base Yard facility. At that time, the facility

included the Bay Model Visitor Center building, two other warehouse buildings (one housing a shop, the other a materials-testing laboratory), a storage building, and one dock used by the District to unload and process debris collected in the Bay by its specialized boats. The dock is one of the original "outfitting docks" of Marinship used to finish ships that were moved down the shipways.

The Bay Model Visitor Center building, encompassing approximately 122,500 square feet of floor space, is a wood-framed, two-story warehouse with a series of seven barrel-vaulted roofed bays running east-to-west. Exterior and interior modifications have been made over the past 50 years. In 1954, the building's interior was altered to accommodate a hydraulic model of the San Francisco Bay, and in 1980, the eastern façade of the building was remodeled to house the Visitors Center. The exterior wood siding was replaced with stucco sometime before 1979.

The building has demonstrated historical importance as one of the surviving industrial properties of the Marinship facility. The building is associated with events that have made a significant contribution to the broad patterns of United States history. The building represents a significant contribution to the war effort and is associated with the Bechtel Corporation executives, particularly W. E. Waste and K. K. Bechtel, pioneer builders in California and the West. Such industrial buildings are important architectural elements of the Sausalito working waterfront and, thus, are defining characteristics unique to the area.

It appears that the building meets two of the National Register criteria: its association with the shipbuilding effort of World War II and the Bechtel Corporation, and as a surviving example of wartime construction. The building embodies the distinctive characteristics of wartime buildings, and the 50-foot wide "areaways" have been retained between the buildings of the Base Yard, illustrating the way in which wartime shipyards were laid out. Despite the interior and exterior modifications, the building retains to various extents several measures of integrity: location, materials, design, workmanship, feeling, setting, and association. It is a contributing element to the Marinship Historic District.

Pursuant to Section 106 of the National Historic Preservation Act, the District must give the State Historic Preservation Officer an opportunity to comment on the National Register eligibility and potential effects to the building from a proposed action. The Bay Model Visitor Center EA is not the type of project that requires consultation with SHPO since no actions are proposed at this time.

Visitor Center is not eligible on its own merit for the National Register of Historic Places however it is the existing center of the 1942 Marinship Historic District. However other examples exist within the Marinship historic district that exhibit more of the original characteristics that qualify for eligibility in the National Register of Historic Places (36 CFR 60.4). Never the less the Visitor Center and Baseyard maintain their original location and many of their original characteristics such as the seven barrel vaulted roof, however the installation of solar panels on the roof introduced elements out of character with the barrel-vaulted roof design. (The existing skylights and exhaust fan system are assumed to be original features; not so for the A/C units.)

The Bay Model Visitor Center, the Baseyard, and the parking lot may meet the criteria for eligibility to the California Register of Historical Resources and Sausalito local historical register.

The development of an Environmental Assessment or a Master Plan for the Bay Model Visitor Center is an activity that would not cause effects to the Visitor Center building or the characteristics that make the structure a contributing element to the Marinship Historic District, and thus, no SHPO consultation is

recommended (36 CFR 800.3(a)(1).

ARRA 2011 – 2016 Improvements to the Bay Model Visitor Center Building
The Visitor Center was part of the design-build solicitation to fund seismic improvements, rooftop covering replacement and rooftop solar panels. The San Francisco District (SPN) project followed President Barack Obama's executive order to reduce government greenhouse gas emissions by 28% before the year 2020. The Bay Model Visitor Center project supports a clean energy economy by reducing the energy intensity in the 145,000 square-foot building that houses the San Francisco Hydraulic Bay Model. Solar panels now cover most of the roof of the Bay Model Visitor Center when installed and generate an estimated 777, 680 kW of power annually. The generation of power from solar energy would be a direct permanent benefit and would greatly reduce or eliminate the center's overall energy consumption from its current commercial electric power provider. In addition, at the completion of the project in 2016, the overall power footprint for the San Francisco District Bay Model Visitor Center was reduced by 32% which far exceeds the goal of 3% per year.

City of Sausalito
The City of Sausalito is considering the designation of a local historic district in the downtown area to raise awareness, respect, opportunities for protection and rehabilitation, and promote the character of the area.

The Bay Model is an important asset to the community of Sausalito and could play an important role in future preservation activities. On occasions groups have formed to rally around the Visitor Center but little progress has been made toward permanent protection and restoration of the Visitor Center structures.

There are many reasons for undertaking a comprehensive survey and inventory of the Historic Marinship. In addition to providing a permanent written and photographic record of the community's resources, a good inventory is the foundation for other preservation tools. A comprehensive inventory was conducted by VerPlanck in Sausalito in 2011.

Evaluation for the National Register of Historic Places
On February 19, 2016, the USACE began consultation with the State Historic Preservation Officer pursuant to section 106 of the National Historic Preservation Act, as amended and its implementing guidelines at 36 CFR 800.4 (COE_2016_0219_001).

The proposed project was the installation of a 1 CO-kilowatt PV system in the existing parking lot adjacent to the Baseyard building at the San Francisco Bay Model facility in Sausalito, California. The system would consist of approximately 500 PV panels installed on top of elevated carport structures with subsurface footings. The undertaking would include removal of the asphalt surface, installation of underground conduit, installation of concrete carport foundations, rerouting of the sanitary sewer line, vegetation removal, and repaving and repainting of the parking lot. Site photos, drawings, and the Historic Context Statement Marinship Sausalito, California prepared for the Community Development Department of Sausalito by Knapp & VerPlanck Preservation Architects in June, 2011.

The Baseyard site was constructed on the tidal mudflats and wetlands adjacent to Richardson Bay in 1942, as part of the Marinship Shipyard. The building has been used by the Corps since 1946. The depth of fill on the Baseyard site is approximately 11.5 feet. The Corps has defined the Area of Potential Effect (APE) for the undertaking as the Bay Model Visitors Center, the Baseyard Building, and the existing

parking area. The depth of project excavation would be approximately 4.5 feet, within the stratum of the Bay fill.

The Baseyard Building and Bay Model Visitors Center were inventoried and evaluated as part of the Marinship study noted above. That document noted that the Marinship yard had the potential to be a historic district but no longer retained sufficient integrity. Additionally, the Baseyard Building and Bay Model Visitors Center would not have contributed to that potential district.

The SHPO concurred with the Corps findings per 36 CFR § 800.4(a)(2); pursuant to 36 CFR § 800.4(d)(1), a Finding of No Historic Properties Affected is appropriate for the undertaking.

Marinship Survey 2011 VerPlanck

A complete history of the former Marinship site since the closure of the shipyard is beyond the scope of this report (1951-2011). The surviving buildings and structures are mainly significant for their association with World War II and events that occurred between 1942 and 1946, which is the period of significance. It is important to understand in general terms what has happened to the property since the end of the war and the subdivision of the yard and the sale of its structures to various other industries and property owners. The following sections describe the general postwar history of each of the major parts of the former Marinship yard: the outfitting zone, the assembly zone, the pre-assembly zone, the administration zone, and the west area.

Outfitting Zone -U.S. Army Corps.

The sections of the yard that are the best-documented are those that were retained by the U.S. Army Corps of Engineers. As mentioned above, after acquiring 11.4 acres in the former outfitting zone, the Army Corps converted four former Marinship buildings into warehouses and offices. In 1956, the Army Corps began building a three-dimensional model of San Francisco Bay in the former General Warehouse (Building 29). The model was built in response to a proposal to dam San Francisco and San Pablo Bays to create two huge freshwater reservoirs. The Army Corps wanted to test the viability of the project before granting a permit and the only way to do this before computer modeling was to create a three-dimensional hydraulic model. The Bay Model revealed that the proposed reservoirs would not work due to the shallowness of both bays. Its usefulness proven, the Bay Model was put to use testing the real-world effects of dredging and filling projects, as well as cleaning up oil spills, in various parts of the bay. Between 1966 and 1969, the Army Corps expanded the Bay Model to include Suisun Bay and the Sacramento/San Joaquin Delta.89 With growing general interest in the Bay Model, the Army Corps opened it to the public and in 1980 the Army Corps built a visitor center in Building 29. As part of this work an additional structural bay was added to the east side of the building to accommodate a museum, bookstore, and offices. In addition, a new toilet room structure, amphitheater, and landscaping were constructed east of the building. As part of the project, the exteriors of Buildings 15 and 29 were reclad in stucco to give them a uniform appearance. Because it did not have a public function, the former Machine Shop (Building 11) was left largely unchanged by the Army Corps of Engineers. (Telephone conversation with Chris Gallagher, Manager of the San Francisco Bay Model, U.S. Army Corps of Engineers, March 14, 2011, September 24, 2019).

Historic Context Statement Marinship, Sausalito June 2011,

39 exterior walls were clad in asbestos shingles and the vehicular entrances along the west side were paneled over in plywood. Building 11 continued in use as a materials testing laboratory until 1996. During the early 1990s, the Army Corps installed steel moment frames within the interior of the building, probably in response to the 1989 Loma Prieta Earthquake. In 1996, the Army Corps declared

the Machine Shop surplus property. GSA handled the sale, which was not finalized until 2006 when the Veterans' Administration took over the property.

THE BAY MODEL

Between 1930 and 1980 the San Francisco District undertook several navigation studies, particularly within and around San Francisco Bay Area harbors in relation to dredging and disposal methods of dredged materials (see Figure 9 for the Bay Model).

The scientific data base for the majority of the work accomplished in the Bay Area, especially in terms of environmental quality was derived from studies conducted using the San Francisco Bay and Delta Model located in Sausalito, California. The development of the Model was in turn, the outgrowth of the need to test major elements of what was known as the "*Reber Plan*."

In 1939 Congress provided 2.5 million dollars to test the Reeber Plan to develop the Bay. At the time it was a bold but questionable plan to work out unforeseen consequences and forecast the future changes to the Bay.

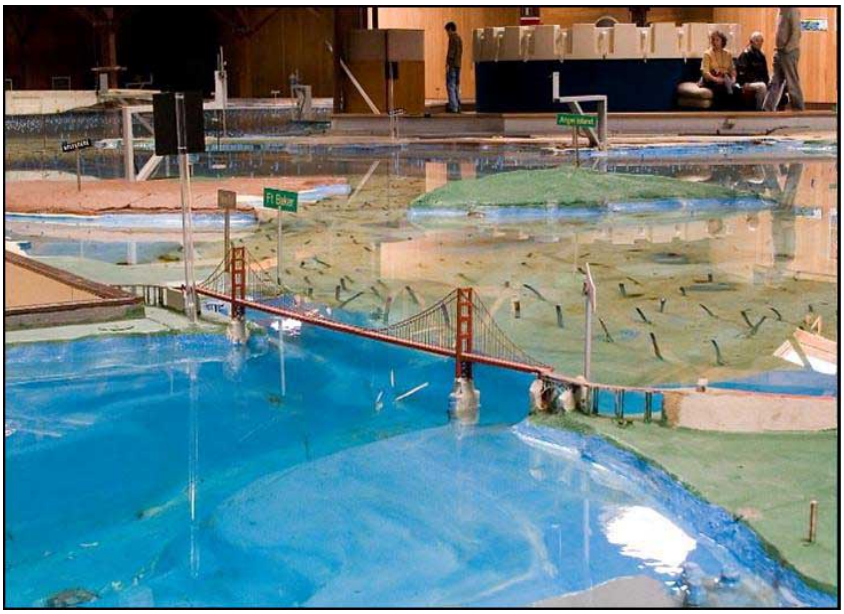

Figure 9: The Bay Model

Reber Plan

Named for John Reber, who developed it, the plan envisioned a pair of low, rock and earth-fill barriers, one to the north of San Francisco to be constructed from San Rafael to Richmond and another to the south of the City, connecting Candlestick Point to Alameda County. The latter would be wide enough to carry both rail and highway traffic. Once in place, the barriers would create two fresh water lakes covering some 80,000 acres. These new lakes could then supply irrigation water for the farm lands in the surrounding counties. Between the lakes, Reber's plan proposed the reclamation of some 20,000 acres of land that would be crossed by a deep, fresh water channel a dozen miles in length. On the west-bay

side of the channel would be airports, a naval base and a pair of locks, equal in size to those of the Panama Canal to provide access to the lakes for military and commercial shipping. The east-bay side of the channel was to be developed primarily for industrial plants. In addition to all of this, Reber proposed underground hangars and storage depots for military needs. Finally, the plan called for submarine and torpedo boat bases to be integrated into the overall scheme of things.

For several years military planners had been studying the idea of an additional bay crossing to satisfy future defense needs. As early as 1941 a joint Army-Navy Board investigated and reported on the need and feasibility of constructing a bridge between Hunters Point in San Francisco County, and Bay Farm Island, in Alameda County. Though the investigation received a negative recommendation, another Army-Navy Board was convened in 1946 to review the finding of the 1941 Board, and to study the system of dams across San Francisco Bay as proposed by the Reber Plan. While the Board recommended a new transbay crossing, they rejected the Reber Plan on the grounds that, if implemented, industry would be dislocated; economically the idea was not feasible, and from the viewpoint of navigation and military considerations it would be untenable. Interestingly enough, impact upon the bay's environment was not a major issue.

Proponents of Reber's concept persisted, a result of which Senator Sheridan Downey and members of the Senate Committee on Public Works opened, on December 8, 1949, a six-day public hearing in San Francisco relative to Senate Resolution 119, 81st Congress, 1st Session. That resolution, to investigate the needs of the San Francisco Bay Area, had been adopted on May 23rd. During the public hearing, more than a hundred civic leaders and experts in a variety of fields appeared to lend support to the Reber Plan. The following May (1950), Congress passed Public Law 516, 81st Congress, 2nd Session, and Section 110 of the River and Harbor Act, based upon Senate Resolution 119, which authorized the Corps of Engineers to conduct a preliminary examination and survey relative to the comprehensive development of the San Francisco Bay and its tributaries. The study was considered to be one of the most all-inclusive civil works projects authorized for implementation by the Corps to that time.

Though delayed because of the Korean War, the San Francisco District submitted the preliminary examination report on June 29, 1953. For the most part the report was favorable, in that it recommended a more detailed survey be undertaken - one that should include the construction of a hydraulic model capable of duplicating the functions of San Francisco Bay. Moreover, the District wanted the model located in the Bay Area so that it would be close at hand.

This last recommendation generated a considerable amount of discussion and correspondence. For, up to that time the vast majority of studies requiring the utilization of models were conducted at the Waterways Experiment Station located at Vicksburg, Mississippi. Many Corps personnel didn't feel the need to build a completely new facility somewhere else. To resolve the question the Board of Engineers for Rivers and Harbors agreed to hold their January, 1954, hearing in San Francisco. This was precedent setting action in that this was the first time such a meeting was held in the Bay Area.

The Board found in favor of the San Francisco location, and funds for construction were subsequently authorized in 1954. The existing warehouse located at the District's base yard in Sausalito wherein the model was to be housed was altered in 1955, with actual construction of the Bay Model getting under way in March 1956. That portion of the model extending east to Antioch, at the head of Suisun Bay, was completed in 1957. After completion, a two-year period of verification was done, followed by over three years of work on the comprehensive study. On July 30, 1963, data contained in the comprehensive study was released during a public meeting held at the model.

Over the years concentrated studies were conducted upon the barrier portions (the essential elements) of the Reber Plan, as well as seven other proposals. When the study was completed, the Reber barriers failed to survive critical examination.

In presenting the study to the public, Brigadier General Arthur Frye Jr., South Pacific Division Engineer, told those in attendance that the Corps now had an unequalled and unparalleled instrument for future planning that would be of extreme value to all agencies engaged in influencing the development of the Bay. The General particularly emphasized the fact that the Corps had discovered that when planning water resources development for San Francisco Bay, such planning could not be detached from State wide considerations.

During the ensuing years the model became a focal point of public usefulness and study. Tourists, school children, university students and residents of the region continually visited the project. Moreover, it was in constant use by federal, state and private agencies in the gathering of technical data about the Bay.

During the first years of its existence, studies were made of solid fill barriers, the dispersion and flushing of pollutants, the effects of reclaiming tidal and marsh lands, sedimentation, shoaling, harbor and channel dredging, and related phenomena.

Once the District had completed the initial comprehensive study, it was suggested that the model be closed down. Public opinion was such that, not only was it not disbanded, but Congress authorized expansion of the model to allow study of the Sacramento and San Joaquin Rivers and the vast Delta of those rivers. The expanded model was completed in 1969.
Using actual salinity measurements, the model illustrates the effect of such proposed man-made changes in the Bay-Delta as the peripheral canal to transport water south around the Delta and the San Luis drain for agricultural waste water. Dispersion of wastes from municipal and industrial plants is demonstrated during dye rests.

Deposits of mud and silt in Bay shipping channels continually interfere with vessel traffic. An average of 8,000,000 cubic yards of material are dredged annually at a cost of millions of dollars. From measurements in the Bay, analysis of dredging practices, and model experiments, specific information is obtained on the complex factors producing shoaling.

Since the model must perform the same as the actual Bay, but to proper scale, careful measurements are made of the natural occurrences taking place. A network of tide stations, for example, has been established around the shores of the Bay and Delta to record automatically on a chart, the rise and fall of the water surface.

The hydraulic model of the San Francisco Bay and Delta was built to a horizontal scale of 1 foot = 1,000 feet, and a vertical scale of 1 foot = 100 feet. The limits extend from Alviso to Napa and from the Pacific Ocean to the areas of Sacramento, Stockton and Tracy.

Although the model does not look exactly like the real Bay, its action is similar in reproducing to proper scale the rise and fall of the tide, flow and currents of the water, mixing of fresh and salt water, and indicating trends in the disposition of sediments. The engineers are able to conveniently examine forces in the Bay, and from model experiments, analyze what would happen should man-made changes be made in the Bay itself.

In the future, major emphasis would be on environmental quality, as affected by fill, pollution, and fresh water flows; the dispersion of pollutants from all drainage areas, including the Central Valley; and methods to alleviate problems of salt water intrusion into the Delta.
(Hagwood, 1981).

4.0. ENVIRONMENTAL CONSEQUENCES

This section of the EA describes the environmental consequences associated with the alternatives presented in Section 3.0. NEPA requires consideration of context, intensity, and duration of adverse and beneficial impacts (direct, indirect, and cumulative) and measures to mitigate for impacts. These elements are considered in the following impact analysis.

As most activities in the Master Plan are both non-physical and simply a continuation of business as usual, the adoption of the revised Master Plan would not result in any irreversible environmental conditions. Future proposed projects would be consistent with the Master Plan and may require additional environmental analysis. Only resources that have either a beneficial or possible adverse impact are be discussed in Section 4.

4.1 Effects on Water Resources.

Implementation of the No Action Alternative would not adversely affect water quality since the ongoing activities at the BMVC would remain unchanged.

If implemented, recommendations within the proposed action on MU 1, such as construction of solar panels, maintenance, or modifications to the restroom could adversely affect water quality. In addition, activities on MU 4, the pier, such as renovation of the pier, construction of another floating platform for kayaks, and development of a ferry terminal may also temporarily negatively affect water resources and water quality. Activities like these would be evaluated to include design features to minimize impacts or mitigation and environmental impacts analyzed if necessary. Any construction associated with parking lot changes would require contractors to prepare an Erosion and Sediment Control Plan documenting additional BMPs to prevent construction site pollutants from leaving the site.

The proposed Master Plan would not increase the frequency, duration, or severity of tidal flooding. However as San Francisco Bay water level rises, the region around the BMVC could become more vulnerable to flooding and managers should adapt and the asset and its function accordingly.

Activities in MU 2, including a drainage system improvement are likely to reduce ponding on site, providing an overall benefit to surface water resources. Additionally, six years ago a grouted wall was built in front of the visitor center in preparation from sea level rise.

4.2 Effects on Air Quality.

Neither the no action alternative nor the Agency-preferred alternative would affect air quality. Adoption and implementation of the Master Plan is not expected to generate pollutants that would affect air quality. It is possible that if educational and recreational activities increase over time that an unmeasurable difference of vehicle emissions would be generated due to increased traffic at the BMVC.

4.3 Effects on Climate.

Neither the no action alternative nor the proposed action would affect the climate.

4.4 Effects on Noise.

Under the no action alternative, there would be no change to existing background noise levels. Adoption of the Master Plan would not increase noise levels on a permanent basis in any of the management units. Implementation of Master Plan recommendations including traffic circulation improvements, potential drainage system construction in Management Unit 2, and pier renovation or development of a ferry terminal in MU 4 could temporarily increase noise during construction. Noise levels would return to current background levels expected under the No-Action Alternative. Appropriate analysis and mitigation would be initiated in advance of any construction activities, and all activities would comply with Sausalito's noise control regulations in the municipal code 12.16.

4.5 Effects on Recreation and Aesthetic Resources.

Under the no action alternative, there would be no change to existing recreation and aesthetic resources. Adoption of the Master Plan would likely enhance recreational and aesthetic opportunities through preserving and enhancing relationships with existing programs, and creating new activities. As Master Plan activities are implemented, analysis would be performed to understand potential benefits or adverse impacts on recreational and aesthetic resources.

4.6 Effects on Vegetation.

Under the no action alternative, no changes to terrestrial or aquatic vegetation composition or quality would occur in the project site.

Because the terrestrial section of the Proposed Action area consists of asphalt and ornamental vegetation (MUs 2 and 3), most actions occurring therein would have no adverse effects on terrestrial vegetation. Furthermore, the project site provides minimal habitat for robust biological resources. It is likely that implementation of the Master Plan would have no effect or beneficial effects on MU 3 because attention and resources could focus on maintaining and enhancing the Native Plant Garden.

If implemented, recommendations within the proposed action on MU 4, the pier, such as renovation of the pier, construction of another floating platform for kayaks, and development of a ferry terminal may temporarily negatively affect aquatic vegetation like eel grass from near-term construction disturbance or long-term loss of light due to a permanent pier structure.

4.7 Effects on Fish and Wildlife.

Under both the no action alternative and implementation of the proposed action plan, it is not expected that there would be significant effects on fish and wildlife in the area. If recommendations in the Master Plan are implemented in MU 4, and if such activities increase boat traffic and activity at the dock, those recommendations should be analyzed for impacts to those species protected by the 1972 Marine Mammal Protection act, including Harbor seal, California sea lion, and Harbor porpoise.

Actions taken in MUs 1, 2, 3, and 5 would occur outside of Richardson Bay and therefore would not affect the aquatic habitat or fish in Richardson Bay.

Implementation of actions in MU 4 (the pier) could affect habitat in Richardson Bay by reducing the light available, disturbing site and soil conditions, or temporarily affecting water quality. Therefore, prior to implementation of any actions in MU, additional analysis would be performed and any potential adverse impacts on fish and wildlife who depend on that aquatic habitat would be mitigated.

4.8 Effects on Threatened and Endangered Species.

No threatened or endangered species are expected to occur on the project site—therefore the Master Plan would likely not affect threatened or endangered species. However, Richardson Bay is a critical estuarine habitat for Winter-run Chinook salmon and the least tern, which are both endangered species. These species may occasionally be present in the bay off the pier and would need to be considered in planning any future actions.

4.9 Effects on Wetlands.

There are no wetlands in the project area, therefore neither the implementation of the no action alternative nor the proposed project would adversely affect wetlands. Furthermore, no

recommendations within the BMVC Master Plan would affect water resources or the deep water and estuarine habitat.

4.10 Effects on Invasive Species.

Implementation of the proposed action would neither adversely nor positively affect invasive species as to date, there are no recommendations or activities included in the Master Plan that have related physical effects. Nor would implementation of the no action alternative affect invasive species as business as usual would continue.

5.1 Scoping and Significant Issues.

Issues/Concerns That Arose During Agency and Public Scoping:
No major issues or concerns arose during the public scoping. The Master Plan PDT learned about the importance and how special the BMVC is to the community of Sausalito and are taking the coordination and comments from the public seriously.

4.11 Effects on Socioeconomics

The no action alternative would not be expected to significantly affect socioeconomics characteristics or demographic and economic makeup of the area. Similarly, adoption of the Master Plan is unlikely to affect socioeconomics. However, increase in educational and recreational programming would likely affect the demographics of those who visit the BMVC by increasing the number of visitors.

4.12 Effects on Transportation.

Adoption of both the no action alternative and the Master Plan are not expected to significantly affect traffic patterns or the transportation of goods and services. Connections to existing public streets or offsite public pathways wouldnot be altered by the Proposed Action. Even as recommendations of the Master Plan are implemented, it is unlikely they would significantly affect local traffic patterns or the transportation of goods and services. However, if the recommendation to modify the parking lot for a bike lane is implemented, the effects on transportation wouldneed to be evaluated through appropriate NEPA analysis.

The existing facilities on the Baseyard property are Americans with Disabilities Act (ADA) compliant and accessible to disabled persons; No changes to accessibility for disabled persons would occur as a result of the Proposed Action and the site would remain ADA compliant.

Visitors to the Bay Model generally use the Baseyard parking lot for their vehicles and upon implementation of recommendations in MU 2, including circulation improvements or construction of a drainage system parking availability in the lot would be partially or fully diminished during construction. In either case, additional parking for Bay Model visitors and the general public would be available in a small existing parking area behind the BMVC building (along Marinship Way) and slightly further away along Bridgeway Boulevard. Any impacts to parking availability would be temporary and end at the completion of construction. On the whole, implementation of recommendations in MU 2 are likely to benefit transportation, circulation, and parking in the long term.

4.13 Effects on Safety.

Implementation of the No Action Alternative would not adversely affect safety conditions at the BMVC since the day to day activities would remain unchanged. Furthermore, no hazardous or toxic materials would be used in the no action alternative or in adoption of the Master Plan. No significant hazardous or toxic material impacts are therefore expected under either the Proposed Action or No-Action alternatives.

The Proposed Alternative would preserve the emergency use of the BMVC for police, fire, and shelters, so no adverse impacts would be expected. In addition, developing a higher safety barrier on the pier (MU 4) would improve safety on sit.

4.14. Effects on Cultural Resources.

Any adverse effects on cultural resources that are listed or eligible for listing in the NRHP are considered to be significant. Cultural resources listed or eligible for listing in the NRHP are considered "historic properties" and must undergo particular evaluation of effects in order to determine if an undertaking, pursuant to 36 CFR 800.16 (y), is adverse. An undertaking would be considered to have an adverse effect on historic properties if it diminishes the integrity of the resource's location, design, setting, materials, workmanship, feeling, or association. Types of effects include:

- Physical destruction, damage, or alteration of all or part of the historic property;
- Isolation of the historic property from or alteration of the character of the historic property's setting when that character contributes to the historic property's qualifications for the NRHP;
- Introduction of visual, audible, or atmospheric elements that are out of the character with the historic property or alter setting;
- Neglect of a historic property, resulting in its deterioration or destruction; and Transfer, lease, or sale of the historic property.

Section 106 requires federal agencies to identify and evaluate cultural resources for significance; to consult with the State Historic Preservation Officer (SHPO), Native Americans, and the public; and to provide mitigation for any adverse effects their projects might have on significant resources. Any adverse effects on cultural resources that are listed or eligible for listing in the NRHP (i.e., historic properties) are considered to be significant.

The NAGPRA requires federal agencies and institutions that receive federal funding to return Native American "cultural items" to lineal descendants and culturally affiliated Indian tribes and Native Hawaiian organizations. Cultural items include human remains, funerary objects, sacred objects, and objects of cultural patrimony. The act also establishes procedures for the inadvertent discovery or planned excavation of Native American cultural items on federal or tribal lands. Moreover, the act makes it a criminal offense to traffic in Native American human remains without right of possession or in Native American cultural items obtained in violation of the Act.

In accordance with Section 106, as amended, USACE performed a records search and has

determined that no historic properties are located in the area of potential effects for the proposed action. Irrespective of official designation, implementation of the no-action alternative should not adversely affect potential historic properties or cultural resources. Nor should adoption of the BMVC Master Plan adversely affect historic properties or cultural resources. It is anticipated that adoption of the proposed project would benefit cultural resources as the USACE would seek designation from the NRHP Registry (and associated protections) for the Bay Model (the hydraulic model), and the rotating exhibit in the museum would expose more BMVC visitors to the range of historical and cultural values in the area.

A copy of the EA for this project has been sent to the SHPO and Advisory Council on Historic Preservation to afford them the opportunity to comment on this determination.

4.15. Probable Adverse Effects Which Cannot Be Avoided.

Implementation of the Preferred Alternative should not result in unavoidable adverse impacts to any of the resources analyzed in this EA. The Master Plan objectives and direction on agency coordination would help the San Francisco District USACE avoid, offset, and mitigate for any unforeseen impacts. Any anticipated impact is considered minor and localized and would not have significant long-term adverse impacts to project resources.

4.16. Relationship between Short-Term Use and Long-Term Productivity.

The Master Plan is a land use planning document which would benefit long-term continued and future use of the BMVC and Marinship lands and waters. While any future maintenance and construction activities may temporarily disrupt wildlife and human use in project areas, negative long-term impacts are expected to be minimal or non-existent on all ecosystems associated with this Master Plan.

4.17. Irreversible or Irretrievable Commitment of Resources if the Project Is Implemented.

Under both the No-Action Alternative and the Proposed Action, no irreversible changes would occur, and no changes would be made to the existing commitment of resources allocated or operations of the BMVC.

4.18. Relationship of the Proposed Project to Land-Use Plans.

The recommendations identified in the Preferred Alternative are consistent with Sausalito's Land Use and General Plan.

4.18 Indirect and Cumulative Impacts of the Preferred Alternative.

The indirect and cumulative impacts of the Preferred Alternative and compliance with Environmentally Quality statues is listed in Table EA-4 below:

Table EA-4. Compliance with Environmental Protection Statutes and Other Environmental Requirements

Federal Policies	Compliance[1]
Archaeological and Historic Preservation Act, 16 U.S.C. 469, et seq.	Full compliance

Clean Air Act, as amended, 42 U.S.C. 1857h-7, et seq.	Full compliance
Clean Water Act, 33 U.S.C. 1857h-7, et seq.	Full compliance
Endangered Species Act, 16 U.S.C. 1531, et seq.	Full compliance
Federal Water Project Recreation Act, 16 U.S.C. 460-1(12), et seq.	Full compliance
Land and Water Conservation Fund Act, 16 U.S.C. 460/-460/-11, et seq.	Not applicable
National Environmental Policy Act, 42 U.S.C. 4321, et seq.	Full compliance
National Historic Preservation Act, 16 U.S.C. 470a, et seq.	Full compliance
River and Harbors Act, 33 U.S.C. 403, et seq.	Full compliance
Watershed Protection and Flood Prevention Act, 16 U.S.C. 1001, et seq.	Not applicable
Wild and Scenic Rivers Act, 16 U.S.C. 1271, et seq.	Full compliance
Flood Plain Management (EO11988)	Full compliance
Protection of Wetlands (EO11990)	Full compliance
Farmland Protection Act	Full compliance
Corps of Engineers Planning Guidance Handbook (ER 1105-2-100)	Full compliance
EO13112 Invasive Species	Full compliance

[1]Full compliance - H a v i n g met all requirements of the statute for the current stage of planning. Not applicable - No requirements for the statute apply.

5.0. COORDINATION AND PUBLIC INVOLVEMENT

Two Public Scoping Meetings were held in February 2019 at the Bay Model Visitor Center with the intent of introducing the Master Plan process to the public and to gather initial public input.

6.0. LIST OF PREPARERS

District Personnel	Area of Expertise
Brian Gerrity	Master Planning
Jessica Ludy	NEPA Documentation
Wyndell Merritt	Master Planning
Kathleen Ungvarsky	Cultural Resources
Justin Wentzel	Real Estate
Chris Gallagher	BMVC Management
Alexandra Voight	Environmental Assessment

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Appendix A.

Table EA-5: Migratory Bird Species and their Breeding Seasons

Species Name	Breeding Season
Allen's Hummingbird (*Selasphorus sasin*)	Feb 1st to Jul 15
Bald Eagle (*Haliaeetus leucocephalus*)	Jan 1st to Aug 31st
Black Oystercatcher (*Haematopus bachmani*)	Apr 15 to Oct 31
Black Turnstone (*Arenaria melanocephala*)	Breeds Elsewhere
Clark's Grebe (*Aechmophorus clarkii*)	Jan 1 to Dec 31
Common Yellowthroat (*Geothlypis trichas sinuosa*)	May 20 to Jul 31
Golden Eagle (*Aquila chrysaetos*)	Jan 1 to Aug 31
Nuttall's Woodpecker (*Picoides nuttallii*)	Apr 1 to Jul 20
Oak Titmouse (*Baeolophus inornatus*)	Mar 15 to Jul 15
Rufous Hummingbird (*selasphorus rufus*)	Breeds Elsewhere
Song Sparrow (*Melospiza melodia*)	Feb 20 to Sep 5
Spotted Towhee (*Pipilo maculatus clementae*)	Apr 15 to Jul 20
Willet (*Tringa semipalmata*)	Breeds Elsewhere
Wrentit (*Chamaea fasciata*)	Mar 15 to Aug 10

Type	Common Name	Scientific Name	Status
Mammal	Salt Marsh Harvest Mouse	*Reithrodontomys raviventris*	*endangered*
Mammal	Southern Sea otter	*Enhydra lutris nereis*	*threatened*
Avian Fauna	California Least Tern, Short-tailed Albatross	*obsoletus, Sterna antillarum browni, Phoebastria (Diomedea) albatrus*	*endangered*
Avian Fauna	Western Snowy Plover	*Charadrius nivosus nivosus*	*threatened*
Insect	Callippe Silverspot Butterfly, Mission Blue Butterfly, San Bruno Elfin Butterfly	*Speyeria callippe callippe, Icaricia icarioides missionensis, Callophrys mossii bayensis*	*endangered*
Insects	Bay Checkerspot Butterfly	*Euphydryas editha bayensis*	*threatened*
Insects	Calippe Silverspot butterfly Mission Blue butterfly San Bruno Elfin butterfly	*Callippe callippe* *Icaricia icarioides missionensis* *Callophrys mossii beyensis*	*endangered*
Reptile	Green Sea Turtle	*Chelonia mydas*	*threatened*
Amphibian	California Red-legged Frog	*Rana draytonii*	*threatened*
Fishes	Delta smelt Steelhead Tidewater goby Chinook Salmon	*Oncorhynchus salmomykiss* *Eucyclogabius newberryi* *Oncorhynchus tshawytscha*	*Endangered, with some populations threatened*
Flowering plants	Marin dwarf-flax	*Hesperolinon congestum*	*threatened*
Flowering plants	Marsh Sandwort Presidio Manzanita San Francisco manzanita San Francisco lessingia White-Rayed pentachaeta	*Arenaria paludicola* *Clarkia franciscana* *Arciostaphylos franciscana* *Lessingia germanorum* *Pentachaeta bellidiflora*	*Endangered*

Table EA-6- Federally listed and threatened species potentially found in the area