



SAN FRANCISCO BAY AREA  
WATER TRAIL

# Design Guidelines



January 2019





San Francisco Bay Area  
Water Trail  
Design Guidelines

January 2019

Prepared by:



Funded by:



## INTRODUCTION

# Acknowledgements

This document draws from the collective wisdom and experience of boaters, designers, and engineers as well as supporting documents that detail best practices in water access design and construction. When designing and building a project, planners, designers and engineers should reference a variety of resources to insure the best possible design, appropriate selection of materials, and a finished product that is safe, functional, attractive, and durable.

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### Water Trail Advisory Committee

Representatives of trail-related interests including boaters, accessible design, wildlife, and safety provide regular guidance on the trailhead design and Water Trail implementation.

### Water Trail Project Management Team

The Water Trail is implemented under the leadership of:



### Additional Design Documents

- *Prepare to Launch: Guidelines for Assessing, Designing, and Building Access Sites for Carry-In Watercraft* – National Park Service / River Management Society (2018)
- *Layout, Design, and Construction Handbook for Small Craft Boat Launching Facilities* – California State Parks, Division of Boating and Waterways (1991)
- *Water Trails in Iowa: Design Development* – Iowa Department of Natural Resources (2010)
- *San Francisco Bay Area Water Trail Accessibility Plan* (2015)
- *San Francisco Bay Trail Design Guidelines and Toolkit* (2016)



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Available online at [sfbaywatertrail.org](http://sfbaywatertrail.org)

## INTRODUCTION

# Welcome

This document is intended for facility and trail planners, designers and landscape architects, and park and recreation project leaders when planning, building, or updating access sites that are tailored to the needs of non-motorized small boats, including kayaks, stand-up paddleboards, rowing shells, dragon boats, and kiteboards. The types of amenities and site design are detailed with specific examples from the Bay Area, which are intended to assist during the planning and design phase of a water access project. Specific engineering, construction details, and ADA design requirements are largely beyond the scope of this document.

### Purpose of Document

These Design Guidelines will help with:

- **Understanding the Bay Area Water Trail program**, including facility eligibility and accessibility criteria
- **Understanding Site Selection Consideration** by addressing shoreline characteristics along rivers, sloughs, and the Bay
- **Addressing Users' Launch Needs** by looking at the various types of users and watercraft, amount of traffic, and accessibility needs
- **Understanding Launch Design Criteria** that can be shared with a contractor, designer, or manager depending on the complexity of the site
- **Promoting Your Bay Area Water Trail Project** by offering tips to help make decisions about appropriate launch design and construction and by helping to gain community support.



*Alviso Marina County Park, Santa Clara County*



# 1.0 Bay Area Water Trail



*Kayakers in the Petaluma Marsh, Sonoma County*



# Purpose and Implementation

The San Francisco Bay Area Water Trail is a growing network of non-motorized small boat launching and landing sites around the San Francisco Bay and its major tributaries – the Sacramento/San Joaquin River, the Napa River, and the Petaluma River. The Bay Area Water Trail is not a linear trail, but a network of launching and landing sites linking iconic destinations over 500-square miles of navigable waters, making the San Francisco Bay and its tributaries the **Bay Area's largest open space**. To create a usable linkages across this open space, the Water Trail program seeks to have high quality launch facilities every ~3 miles and overnight accommodations every ~8 miles.

The Water Trail program encourages and funds improvements of facilities that cater to non-motorized small boats, and provides information to help boaters have a safe and enjoyable experience. With the help of our partners, the Water Trail program is building a world-class recreational resource for the benefit of local residents and visitors to the Bay Area for decades to come.

### Implementation Principles

The Water Trail Program is implemented under four guiding principles:

- Non-motorized small boating **access** onto the Bay
- Personal and navigational **safety** and security
- Wildlife and habitat **resource protection**
- **Education**, outreach, and stewardship



Water Trail Vision Map



# Benefits of Participation

The Bay Area Water Trail Program provides a wealth of resources to assist site owners and managers with facility management, planning, program support, and funding. The Water Trail also works closely with the boating public and encourages awareness of nearby boating opportunities, and safety and stewardship best practices.

### Benefits

The Bay Area Water Trail Program benefits include:

- Access to project construction and planning **funding** through the Water Trail Grant Program
- **Distribution of high-quality information** regarding the site and nearby destinations via signs, a website, and maps
- **Promotion of safe boating practices** for non-motorized small boat users through signs and outreach materials
- **Reducing impacts** to sensitive wildlife habitat and other resources through boater education programs and materials
- Assisting with **paddling programs** and logistics coordination
- Fostering the **economic growth** of site-related businesses (e.g., boat storage facilities, rental concessions, and nearby restaurants and hotels)
- **Encouraging stewardship** of the Bay and boating facilities



*Water Trail Website*



*Waterproof Interpretive Maps*



# Eligibility Criteria

The Bay Area Water Trail focusses on sites that currently provide safe and responsible public access to the waters of San Francisco Bay and those that are prepared to do so. Eligible sites tend to be locations that have existing access infrastructure and management in place, ranging from full-service marinas to shoreline ramps in public parks. The Water Trail Program does not manage facilities, and participation in the program is voluntary.

### Required Criteria

- Site owner/manager wants to join the Water Trail
- Water Trail-related facilities are open to the public, or will be made so
- Site has launch facilities or launch areas that can be used by non-motorized small boats
- Site owner/manager is willing to have a Water Trail sign installed and maintained at the site
- Launch site itself does not clearly impact wildlife or sensitive habitats, or interfere with private property rights or agricultural operations
- Launch site does not present inherently dangerous conditions that pose a public health or safety risk

### Preferred Criteria

- Site has adequate parking and allows site users to park for at least 4 hours
- Site has restrooms
- If site is not currently accessible to a broad range of boaters, it can be made accessible
- Boat storage is available on site or could be added to site
- Kayaking/paddling/group sports rentals, classes and/or clubs are available at site
- Provides boat washing facilities
- Site is reachable by public transportation
- Provides overnight accommodations that may be used by boaters (i.e., secure overnight boat storage)



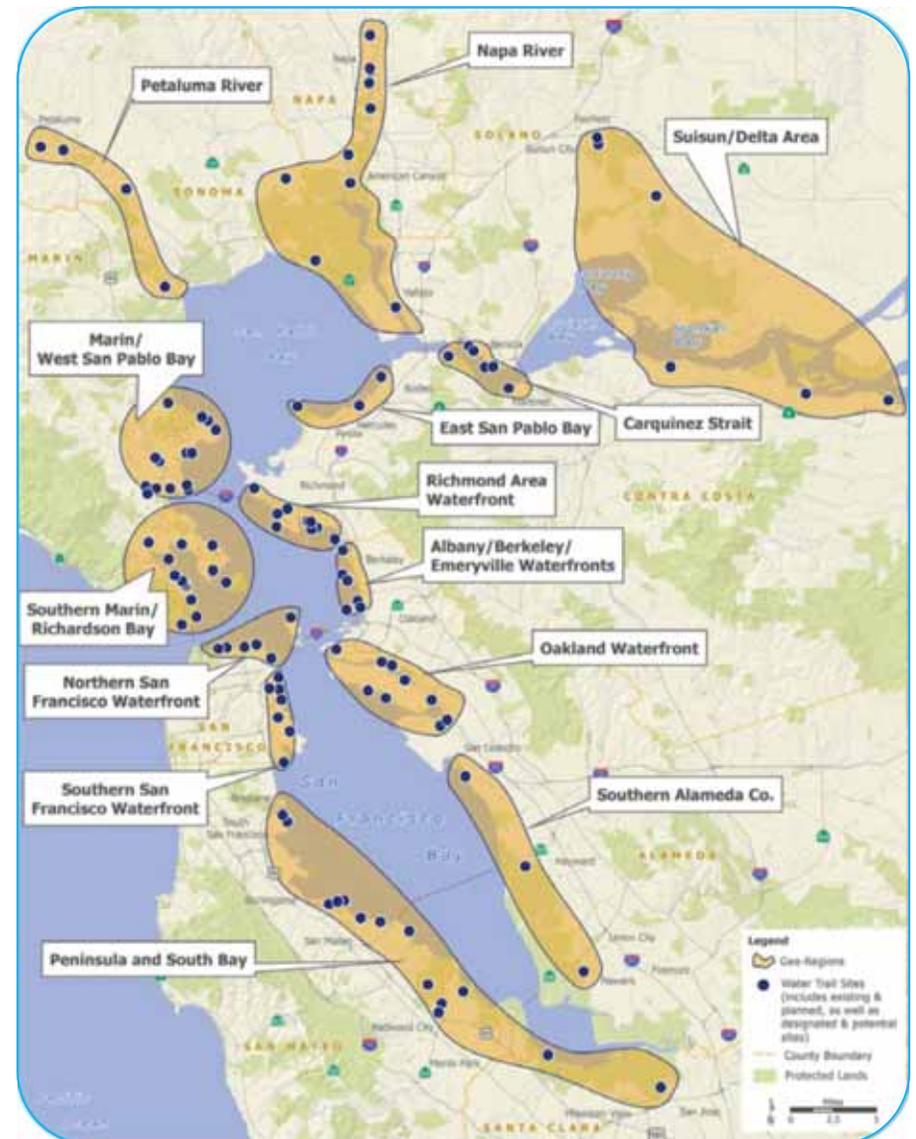
# Accessibility Plan

A primary goal of the Bay Area Water Trail Program is to help meet the needs of persons with disabilities who wish to participate in non-motorized small boat recreation. The Program works collaboratively with site owners/managers to improve non-motorized small boat launch accessibility\* through design guidance and grant funding.

The large number of possible combinations of boat types and launch facilities around San Francisco Bay requires a wide-range of access options. The Bay Area Water Trail Program recognizes that even fully ADA-accessible sites are unlikely to be accessible to all persons with disabilities, but the Program is committed to a minimum of one broadly accessible site per “geo-region”. Geo-regions were developed to roughly correspond to the “home range” of many boaters, with the concept that people should not have to travel too far from home to reach an accessible site.

The **Water Trail Accessibility Plan** contains a comprehensive set of resources on facility design, costs, applicable laws, and other information that can assist project planners in creating an accessible and useful launch.

\*The term “accessible” used in this document should be understood to mean “usable by many persons with disabilities” and not necessarily everything required for compliance with Americans with Disabilities Act and other laws.

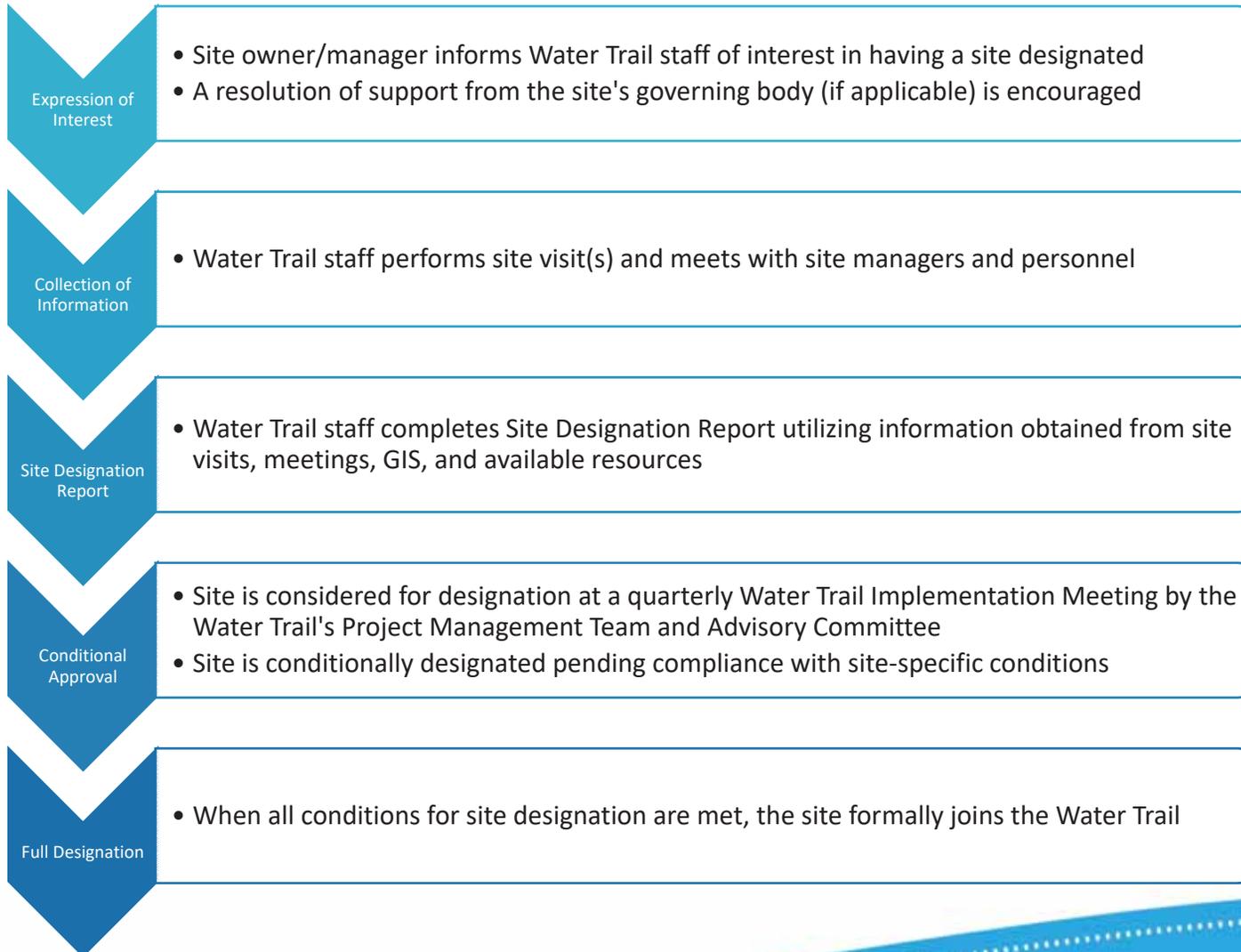


“Geo-Regions” from Water Trail Accessibility Plan



# Site Designation Process

If a site meets all of the required criteria, it can move forward with the site designation process. Bay Area Water Trail staff will complete the bulk of work required for designation of a site in order to minimize the obligations of site owners/managers. The process for site designation is outlined below.



*Paddleboard on Suisun Slough, Solano County*



## 2.0 Bay Area Water Trail Use



*Corte Madera Creek, Marin County*



# Introduction

This section provides an overview of the types of non-motorized small boats that currently use the Water Trail and identifies the basic facilities needed to provide a high-quality launching experience for each type. It's important to keep in mind that these types of crafts are consistently evolving and facilities may need to accommodate types of crafts that are not in use today. For example, when the Water Trail started, stand-up paddleboarding and kiteboarding were relatively new and today they constitute the fastest growing user groups.



*Kayaker at The Embarcadero, San Francisco*



# Launch Design Preferences

Non-motorized small boat users each have preferred launch types that vary based on the craft size, number of participants, and method of launch. Kayaks, canoes, and sailboards tend to be the most versatile. Preferences for each craft are detailed in the following pages.

Launch Type	Kayak	Canoe	Standup Paddleboard	Windsurfing	Kiteboard	Outrigger Canoe	Dragon Boat	Whale Boat	Rowing Shell	Rowboat
Beaches	●	●	●	●	●	●				●
Water Entry Path	○	○	○	●	○					●
Ramps	○	○	○	●	○	●				
Low-Freeboard Dock	●	●	●	○		●	○	○	●	
High-Freeboard Dock	○	●	●	○		●	●	●		
Low-Freeboard Dock Attachment	●	●	○							

 Typical Entry Method    
  Possible Entry Method



## WATER TRAIL USE

# Individual / Small Group Craft



**Kayaks** are the most prevalent type of non-motorized small boat on the San Francisco Bay. The low-profile and length of kayaks make them less susceptible to the effects of wind and provide stability in waves and currents.



Image: 101 Surf Sports

**Stand Up Paddleboards** are highly versatile and can be launched from most types of shorelines. They are best suited for calm, low-wind conditions, but open water designs are available.



**Canoes** are well suited to protected waters such as sloughs and creeks. Paddlers tend to sit higher above the water in a canoe, which can make them less stable in choppy water and prone to the effects of wind.



**Rowboats** for recreational use are not particularly common on the Bay due to their size, weight, and lack of transportability.



## WATER TRAIL USE

# Team Paddle Craft



Image: Sam Soneja

**Dragon Boat** paddlers typically board from high-freeboard docks. Dragon boat racing is an increasingly popular team sport, with several teams training in the Bay Area.



**Outrigger Canoe** paddlers typically board from high-freeboard docks, but can also launch from beaches and ramps. There are many variations of outrigger canoes, including canoes that are paddled by one to twelve person crews.



Image: Embarcadero Rowing Club

**Whale Boat** paddlers primarily board from high-freeboard docks. Ramps are sometimes necessary to launch boats from trailers into the water.



Image: Daniel Mannisto

**Rowing shell / scull** rowers board from low-freeboard docks primarily. Due to their fragile design, boats are rarely launched from ramps or beaches.



# Boardsailing



**Kiteboarding / kitesurfing** requires an area for rigging, launching, landing, and access to the water that is free from obstacles that could rip a kite or tangle a line. A minimum of 100-feet of clear space around kite lines is typically required for safety. Unobstructed beach entry is the most desirable launch.



**Sailboarding / windsurfing** requires a rigging area that is free from obstacles that could rip a sail. A minimum of 30-feet of clear space for rigging is typically required. Beach or water entry path is the most desirable launch.



# 3.0 Design Approach



*Kayakers at Bayfront Park, City of Mill Valley*



# Introduction

From rural sloughs to urban industrial, the Bay Area has a diverse shoreline that requires a variety of design approaches to meet the needs of the boating public. Boaters choose particular launching and landing sites for a variety of reasons that include their preferred type of boat, the site facilities, and the conditions that will be encountered once they launch. The site facilities are of particular importance to a person with a disability, or anyone with specific needs (e.g., older people, families with small children, etc.). A well-designed launch will minimize stress for users of all abilities when moving gear from vehicles or onsite storage to the water.

This section provides an overview of design considerations based on shoreline characteristics and identifies the basic facilities needed to provide a high-quality boat launching experience.

### Design Considerations

**Universal Design:** Paddlers of all abilities want to launch and land smoothly without capsizing or damaging their watercraft. They need firm and stable surfaces that support their movements and sufficient space to accommodate the length of their watercraft during launching and landing.

**Physical Launch Accessibility:** Paddlers must be able to stabilize their watercraft during transition to and from the water. Climbing in and out can be especially challenging when there is significant height difference between seat levels and shoreline or when current or waves create chop.

Source: National Park Service 2014.



*Kayakers at Berkeley Small Craft Launch, City of Berkeley*



## DESIGN APPROACH

# Design Objectives

The diversity of the San Francisco Bay shoreline demands a flexible approach to launch development. Understanding site conditions during the design phase will help a project to maximize the user experience, encourage safety, and protect natural resources.

### Design Objectives

1. **Site Selection**— Ensure site selection and facility design is visually and functionally compatible with the character of the launch setting
2. **User Experience**— Understand how the site and nearby waterways are currently used and ensure compatibility among user groups.
3. **Accessible**— Design for users of all ages and abilities.
4. **Safety**— Understand how recreational use, prevalent hydrodynamic conditions, and nearby maritime industries can affect the safety and quality of boaters' experiences
5. **Wildlife and Habitat** — Identify nearby sensitive wildlife and habitat that could be affected by facility construction or increased presence of boaters
6. **Sea Level Rise** — Identify potential effects of sea level rise on the durability of facilities for the life of the design



*Windsurfer on the Richmond Shoreline, Contra Costa County*



## DESIGN APPROACH

# Design Objectives

### Site Selection

Ensure design is consistent with the character of the launch setting

### Sea Level Rise

Consider changes over the lifetime of the project and how they may impact access

### User Experience

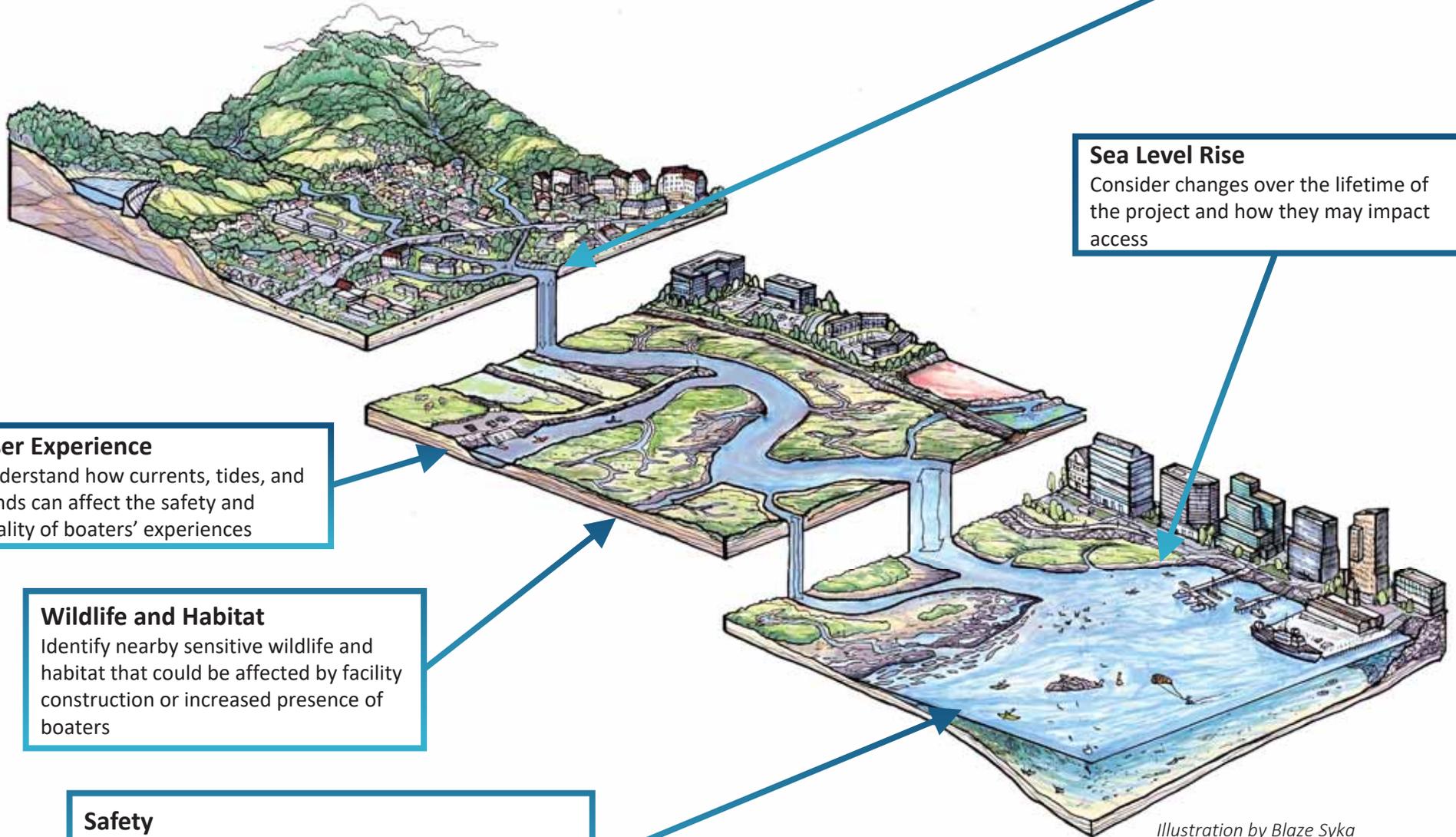
Understand how currents, tides, and winds can affect the safety and quality of boaters' experiences

### Wildlife and Habitat

Identify nearby sensitive wildlife and habitat that could be affected by facility construction or increased presence of boaters

### Safety

Understand how the site and nearby waterways are currently used to ensure access is designed for safe use by a broad spectrum of users.



*Illustration by Blaze Syka*



## DESIGN APPROACH

# Site Selection

Consideration of how shoreline conditions and nearby uses could affect user experience is critical to a well-designed project. While all launches require maintenance, when facility design and construction are tailored to the site conditions facilities will last longer with less maintenance.



*Kayakers at Bayfront Park, City of Mill Valley*

### Site Selection Considerations

Identify sheltered areas where facilities will not be easily damaged in rough weather

Protect boaters from wind and wave action while getting in and out of boats

Minimize impacts to existing wetland ecosystems or sensitive habitat

Minimize the distance between the boat launch and parking / boat storage

Site with preference towards shoreline launches that can support users with a variety of skill levels and types of craft

Consider larger vessel traffic and locate facilities away from motorized boat launches and shipping lanes

Plan for low tide and high tide use

Provide adequate room for nearby launch support facilities, including restrooms, storage, boat wash, concessions, and other amenities.

Locate away from stormwater outfalls



## DESIGN APPROACH

# User Experience

Generally, boaters seek a launch that will provide a predictable, stable surface from which to launch regardless of the conditions (i.e., tides, currents, etc.). The availability of basic amenities, such as restrooms and parking, located in proximity to the launch creates a more desirable experience. Public boat storage, concessions, and clubs can also encourage and expand access and reduce the need for people to drive their boats from site to site.



*Kayaker in the Antioch Marina, City of Antioch*

## User Experience Considerations

Provide stable, predictable launch for users of all abilities

Capacity to accommodate multiple users at once

Provide onsite boat and equipment storage

Make transition from vehicle to launch short and hassle-free

Avoid requiring launch fees for non-motorized small boats

Provide a clear path of travel and gear staging area



## DESIGN APPROACH

# Accessible Launch Design

There are several key design considerations to enhance the accessibility of a launch, but the path of travel is particularly important\*. Without an accessible path of travel to the point of launching, persons with disabilities may be unable to use the launch facilities regardless of the design of the launch.

The path of travel should also provide access to basic accessible amenities such as restrooms and parking, as well as a loading/unloading area located in close proximity to the launch site. Additionally, public boat storage, boating concessions, and onsite boating clubs can all enhance boating access.

ADA design recommendations for various types of launches are discussed in the next section. The **Water Trail Accessibility Plan (January 2015)** provides detailed guidance and resources for designing an accessible launch.



Bay Area Outreach and Recreation Program, City of Berkeley

### Path of Travel Considerations

Running slope and cross slope

Firm, stable and slip-resistance surfacing

Elimination of overhanging and protruding hazards

Connection to all accessible features, including restrooms and parking

Maintenance of an accessible condition

Ramp handrails, guardrails, and landings

Stair handrails, riser and tread sizes and visual striping

Gangway slope not to exceed 8.33%



## DESIGN APPROACH

# Safety

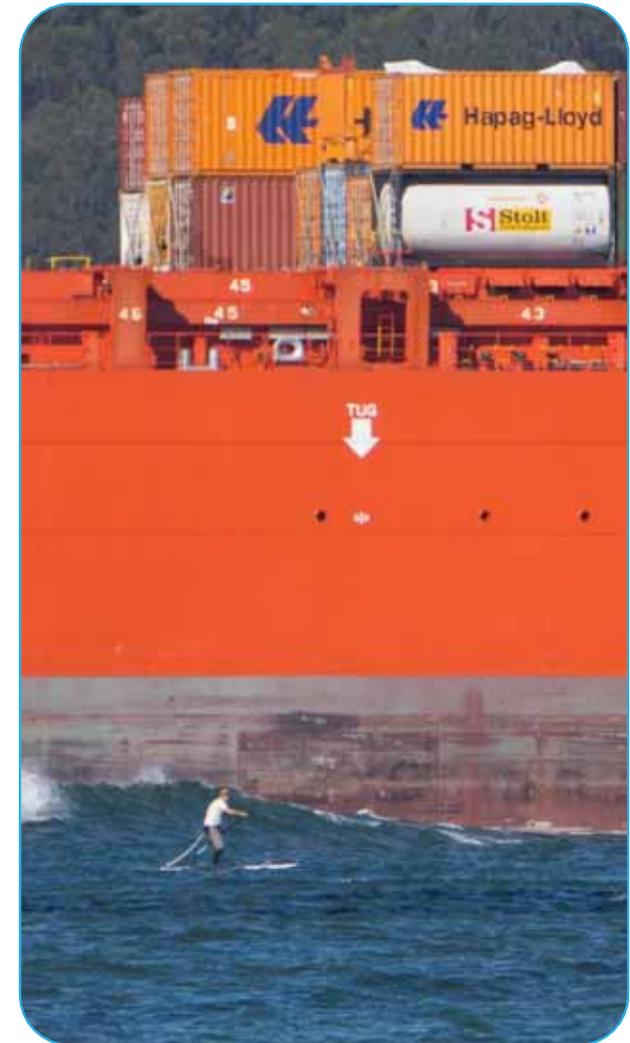
The San Francisco Bay and its tributaries are characterized by cold waters, strong tidal currents and winds, as well as high volumes of vessel traffic that can create personal and navigational safety concerns. While it is the responsibility of each boater to be prepared for Bay conditions prior to each trip, safety can also be promoted through site selection and design that takes these shoreline factors into account.

### Safety Considerations

**Mudflats:** Much of the Bay is less than 15-feet deep with a bottom comprised of an excessively soft (sucking) Bay mud. Some launch sites provide safe entry during higher tides, but as the tides recede, vast mudflats become exposed. These mudflats can cause a launch to be inaccessible at lower tides - in some cases for hours – reducing the usability of the launch and creating hazardous conditions for boaters stuck offshore.

**Vessel Traffic and Maritime Uses:** With the high volume and diversity of vessel traffic on the Bay – motorized and non-motorized recreational boats, ferries, commercial shipping vessels, tugs, chemical and petroleum tankers and others – vessel-to-vessel interactions for Water Trail users are inevitable. Although accidents involving non-motorized small boats and other vessels are rare, understanding nearby vessel traffic can be important in site selection and design particularly when considering a site within a marina or near ferry terminals and maritime industrial uses.

**Water Quality:** Paddlecraft and boardsailing activities can involve prolonged contact with the water and thus boaters are vulnerable to sicknesses caused by poor water quality. Urban runoff that enters the Bay through stormdrains – particularly after rainstorms – and occasional overflows at wastewater treatment plants are major causes of water pollution. Water quality should be monitored and occasional site closures or notifications may be warranted in some areas.



Golden Gate shipping channel, San Francisco



## DESIGN APPROACH

# Wildlife and Habitat

Boat launch enhancement or construction can occur on or near sensitive habitats used by migratory waterfowl and resident wildlife species, some of which are threatened or endangered. The launch and adjacent habitat conditions should complement each other through thoughtful design and interpretive education. Stewardship can be encouraged with interpretive signs and outreach programs. In some cases, a new or enhanced launch may benefit habitat by directing use away from informal access locations that are more disruptive.



*Kayaker and harbor seals on Richardson Bay, Marin County*

## Wildlife Considerations

Locate launch and related use areas to avoid habitat fragmentation, vegetation trampling, and erosion

Provide facilities in desirable areas to deter users from creating informal access in more sensitive locations

Use durable materials that are sustainable over time

Incorporate educational and interpretive elements about the value of habitat and appropriate wildlife interaction

Encourage stewardship events and programs that educate the public



## DESIGN APPROACH

# Sea Level Rise

Water Trail facilities, shoreline parks and recreation areas are particularly vulnerable to sea level rise and storm events because of their location, physical characteristics, and the functions they serve. Beaches, such as Baywinds Park in Foster City, are already eroding and will increasingly need active management. Even minor damage or temporary flooding of facilities can prevent persons with limited mobility from using damaged portions of the shoreline.

Sea level rise risk assessments are required when planning shoreline areas or designing larger shoreline projects. If sea level rise and storms would result in public safety risks, the project must be designed to cope with flood levels expected by mid-century. If it is likely that the project will remain in place longer than mid-century, then BCDC requires the applicant have a plan to address the flood risks expected at the end of the century. Additionally, any public access provided as a condition of development must either remain viable in the event of future sea level rise or flooding, or equivalent access consistent with the project must be provided nearby.



*Erosion of Baywinds Park Upper Launch from 2002 (left), 2008 (middle), and 2016 (right).*



# 4.0 Facility Design



*Kayakers at Tidewater Boating Center, East Bay Regional Park District*



## DESIGN APPROACH

# Basic Facilities

The Bay Area requires a variety of boat launch designs to meet the diverse needs of the boating community. Finding the right design for each location requires an understanding of the specific and often unique needs of the local and regional boating community. When siting a new launch or rehabilitating an older one, there are essential facilities that should be provided to minimize stress and optimize the user experience.

### Facility Considerations

#### Design by launch type:

- **Communal:** Launch surface should be >24-feet in length to allow multiple boats to load, launch, and disembark simultaneously and safely
- **Large craft:** Launch surface should be >40-feet in length to accommodate large craft such as sea kayaks, outrigger canoes, and dragon boats
- **Remote launch:** Launch surface should be > 8-feet wide to accommodate two boats side-by-side with room to stand and maneuver around them
- **Boardsailing:** Rigging area (>100-foot radius of clear space for kiteboarders; 30-foot radius for windsurfers) and unobstructed path of travel

#### Support facilities:

- Restroom
- Nearby parking, with minimum 4-hour time limit
- Drop-off / staging area
- Wash-down
- Boat and equipment storage facilities
- Concessions / clubs



*Kayaker at Pier 40, Port of San Francisco*



# Support Facilities

In addition to the boat launch, there are several support facilities that are required for most users. Well designed support facilities can help optimize the user experience and protect the environment.

### Restrooms

- Providing restrooms is important to avoid degradation of water quality and to protect visitors and wildlife from exposure to human waste.
- Preferably restrooms will have running water, but portable restrooms are sufficient in some locations.
- Designs that allow facilities to be secured at night are desirable at some locations.

### Parking

- Sufficient, long-term parking is an essential component of trail access because most boaters must bring their equipment to a launch site.
- As close as possible to launch points.
- Time limits a minimum of 4-hours.
- Overnight parking where possible.
- Analyze need for changes to parking capacity.

### Drop-Off / Staging

- Drop-off zones and staging areas near to the launch are desirable as they reduce the distance that boaters need to carry their gear.
- Designated staging areas can provide a clear location for gear set-up that is out of the way of other site users.
- Staging areas can be woodchip, gravel, turf or just stenciled on pavement.

### Wash-Down

- Patterns of non-native plant invasions suggest that boats may act as a vector for spreading invasive plants. Providing facilities for boat washing is a simple way to limit the spread of invasive species.
- Wash downs can also be used to rinse off paddlers or swimmers.



## DESIGN APPROACH

# Support Facilities

Boat storage, concessions, and boating clubs are important to expanding access for people without space, desire, or means to own their own boat. Onsite facilities help reduce the need for access to the site via car and demand for scarce parking if the trailhead is accessible by public transportation or trails. Clubs and concessions are also important partners in educating the public about safe boating and stewardship.

### Storage

- Provide secure areas and facilities for equipment storage.
- Storage facilities can be formal, like a boat house, or less formal like a modified shipping container, fenced area, or inside the dockside storage at marinas.
- Short-term storage can allow visitors to securely leave equipment to enjoy nearby amenities.
- Long-term storage can reduce the need for access to a site via car and facilitate trail usage among urban residents.
- Storage facilities can generate revenue for the site owner.

### Concessions

- Concessionaires require a storefront and space for storage of rental equipment.
- Rental equipment should be stored as close to the water as possible.
- Staff and guides can provide important safety instructions and encourage environmental stewardship.
- Operations may be seasonal.

### Clubs

- Club requirements vary depending on the type of craft, but generally include a place to store boats and equipment close to the launch.
- Clubs allow people to get on the water without needing to own, store, and transport a boat.
- Clubs offer the public use of equipment and encourage a sense of community.
- Clubs can act as site stewards.



# DESIGN APPROACH

## Signage

Signage is critical to identify a Water Trail trailhead, provide key information for users about nearby facilities and attractions, inform users about area hazards and unique boating conditions, and set the stage for appropriate use of the site. Signs are also key sources of information to alert users and encourage ethical behavior towards other boaters and sensitive species.

**Be aware of...**

- Tides, winds and currents — avoid getting stuck in the mud or being too tired to get back to shore
- Ferry routes and shipping channels — use caution and stay clear of larger boats
- Cold water temperatures — wear insulating gear and a personal flotation device, and be prepared for emergencies
- Seasonal hunting in specific locations around the Bay, generally October-January. For information, visit [www.wildlife.ca.gov](http://www.wildlife.ca.gov)

**Enjoy viewing wildlife and help protect it**

- Prevent the spread of invasive species by rinsing off equipment
- Do not land in marshes, on levees, or at seal haul-out sites
- Keep your distance from birds and harbor seals
- Avoid paddling directly at wildlife

**Wildlife Buffer Distances**

Species	Distance (feet)
California Brown Pelican (Nests on docks)	100
Pacific Harbor Seal (Napping February)	200
Pacific Harbor Seal (Paddling between March-July)	300
Herring & Egrets (Nest on water)	400
Rolling Waterfowl (Nest in open water)	500
Western Gull (Nest on rocks)	100
Western Gull (Nest on grass)	200
Western Gull (Nest on tall grass)	300

**Local Wildlife Information**

Along with the rocks that protect this shore, marine plants and algae provide habitat and form the base of the food chain for numerous fish, birds, invertebrates, and marine mammals. This is also an area of respite for birds and marine mammals, and an equally popular spot for anglers. Please respect an appropriate distance.

Water Trail Education Sign (22"x18"). Text at bottom is specific to each site.



Water Trail Identification Sign (12"x12")

### Signage Considerations

Appropriate location, near boat launch facilities

Co-located with other signage

Site specific information to encourage stewardship and safety

BCDC signage plan review and permit may be required



Signs at Ferry Point Beach, Miller-Knox Regional Shoreline



# Overnight Accommodations

Boat-in overnight accommodations are an important way of expanding the recreation possibilities of the Water Trail by facilitating multi-day experiences. Accommodations can include campgrounds, hostels, hotels, houseboats, bed and breakfasts, and even historic ships. To allow boaters to take multi-day trips, an appropriate distance between sites with overnight accommodations is ~8 miles.



*Kayak-in Campground at Point Pinole Regional Shoreline, East Bay Regional Park District*

### Overnight Accommodations Considerations

- Secure storage for boats and equipment
- Ideally, located in close proximity to boat launch facilities
- Ability to host a group of boaters (~12)
- A range of affordability to meet the needs of diverse incomes
- Onsite manager that can provide guidance on location of storage and other amenities



# 5.0 Launch Design Principles



*Kayak programs at Mission Creek, Port of San Francisco*



# Introduction

This section provides an overview of design considerations for the various types of non-motorized small boat launches and associated facilities needed to provide a high-quality boat launching experience.

The most common types of launches currently in the Bay Area are high-freeboard docks and boat ramps, which were typically designed for motorized boats. Beaches and low-freeboard docks are the preferred type of launch for most types of non-motorized boats, except for the larger team crafts (i.e., whaleboats, dragon boats) that prefer high-freeboard docks and/or ramps.



*Kayakers at the Berkeley Small Craft Launch, City of Berkeley*



## LAUNCH DESIGN

# Beach

Beaches typically have an unstable, soft surface that can be sandy, pebbly, gravelly, muddy, or rocky. A low sloping beach provides the ideal access point for various water levels and is a preferred launch for many types of non-motorized small boats. Beaches are a desirable launch for boardsailors, kayaks, canoes, and stand up paddleboards.

**On the Bay:** Beaches are relatively rare in the Bay Area and most are no more than a few acres. Notable exceptions are Crown Beach, McNears Beach, Crissy Field, and Baywinds Park.

**Accessibility:** Accessibility can be enhanced by providing a permanent (paved) or temporary (beach mat) access path across the sand to the high tide line. Many locations also provide rentable beach wheelchairs.

**Challenges:** Tides, wave action, and sea level rise all take a toll on sand content needed to build and maintain beaches. Shoreline protection or renourishment is often necessary to maintain these important recreation and habitat areas.

### Design Considerations

Slopes less than 1:2

Protected to minimize the effects of erosion and/or debris deposition

Provide access to the water at all tidal ranges

Incorporate firm surface path across beach to at least the high tide line for accessibility



Kiteboarder at Baywinds Park, Foster City



SUP at Crown Beach, Alameda



## LAUNCH DESIGN

# Beach

**Ferry Point Beach** is a sandy beach that features an ADA beach access path from the parking/staging area to the high tide line. The site also features a kayak drying rack, shower tower, drinking fountain, fish cleaning station and ADA restrooms.

### Site Info

**Primary Users:** Kayaks and SUPs

**Management:** East Bay Regional Park District

#### Pros

Wide, sandy beach; proximity to parking areas; firm surface ADA path; numerous supporting amenities.

#### Potential Improvements

None necessary for this popular site.



**Launch Highlights:** ADA path of travel and proximity from the parking area to the beach.



## LAUNCH DESIGN

# Beach

**McNears Beach** is a sandy beach that features a firm surface beach access mat from the parking/staging area to the high tide line. The site also features a shower tower, drinking fountain, picnic tables, and ADA restrooms.

### Site Info

Primary Users: Kayaks and SUPs  
Management: Marin County Parks

### Pros

Wide, sandy beach; proximity to parking areas; firm surface ADA path; numerous supporting amenities.

### Potential Improvements

Concessions; camping; moving main launch away from heavy use area



**Launch Highlights:** Several beaches to launch from and proximity from the parking area to the beach.



## LAUNCH DESIGN

# Water Entry Path

There are both planned and opportunistic water entry paths around the Bay Area. The most common types include stairs, narrow paved paths, and informal earthen trails that lead directly to the water. Entry paths can be challenging to use and should be provided primarily as emergency egress areas along long stretches of riprap, and not as a primary launch/landing area. Entry paths are primarily used by lighter non-motorized craft users, such as kayakers, SUPs, and boardsailors.

**On the Bay:** Many informal paths have been used for decades to access the water. Formalized locations tend to be for boardsailors, such as Shimada Park.

**Accessibility:** Paths can be constructed to meet ADA slopes and with resting platforms.

**Challenges:** If paved, portions of the path subject to submersion may become slippery with algae growth and hazardous for non-motorized small boat users.

### Design Considerations

Width minimum of 8-feet

Texture paved surfaces to increase traction

Slopes less than 1:12

Located or designed to reduce wave impact and/or sediment deposition

Water access at all tides



*Emeryville Marina, City of Emeryville*



*Shimada Park, City of Richmond*



# Water Entry Path

**Emeryville Marina** has a cobblestone cement water entry path just north of the marina breakwater. This path offers access for boardsailors in a location where most of the surrounding shoreline is hardened with riprap or other inaccessible surfaces.

## Site Info

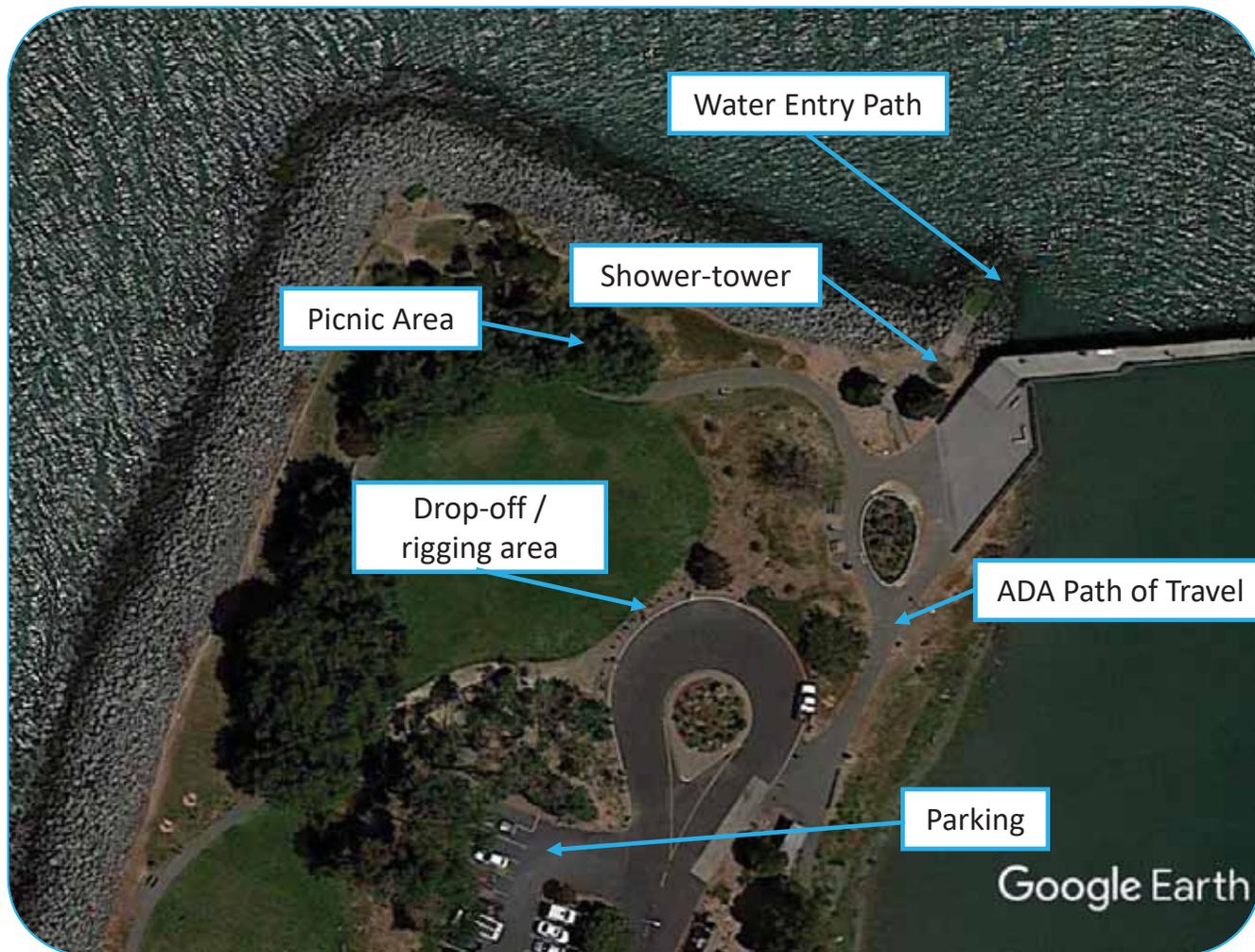
Primary Users: Boardsailors (windsurfers)  
Management: City of Emeryville

## Pros

Access to unobstructed wind; durable path; numerous supporting amenities.

## Potential Improvements

Steep and bottom portions can be covered in algae.



**Launch Highlights:** Site is an important emergency egress location for users if the wind dies or equipment fails. It can also be used for launching at higher tides.



## LAUNCH DESIGN

# Ramp

Boat ramps provide a stable, sturdy surface for launching and are durable against the elements. Ramps are preferred by larger boats that require trailers, but when gently sloped can provide a convenient launch for people who prefer not to use docks.

**On the Bay:** Most ramps are associated with marinas and are designed to launch motorized boats but smaller profile ramps can also provide access over various shoreline types.

**Accessibility:** Ramps can be constructed to meet ADA slopes and with resting platforms.

**Challenges:** Submerged portions of the ramp may become slippery with algae growth and hazardous for non-motorized small boat users.

### Design Considerations

Width minimum of 8-feet

Texture paved surfaces to increase traction

Slopes less than 1:12

Located or designed to reduce wave impact and/or sediment deposition

Water access at all tides



West 9<sup>th</sup> Street Boat Launch, City of Benicia



Emeryville Marina, City of Emeryville



## LAUNCH DESIGN

# Ramp

**Alviso Marina** has two V-grooved concrete ramps, adjacent to a low-freeboard dock and a high-freeboard dock located on a sheltered slough that maintains water access at all tides. This award-winning facility also has a boat rigging area and ample parking.

### Site Info

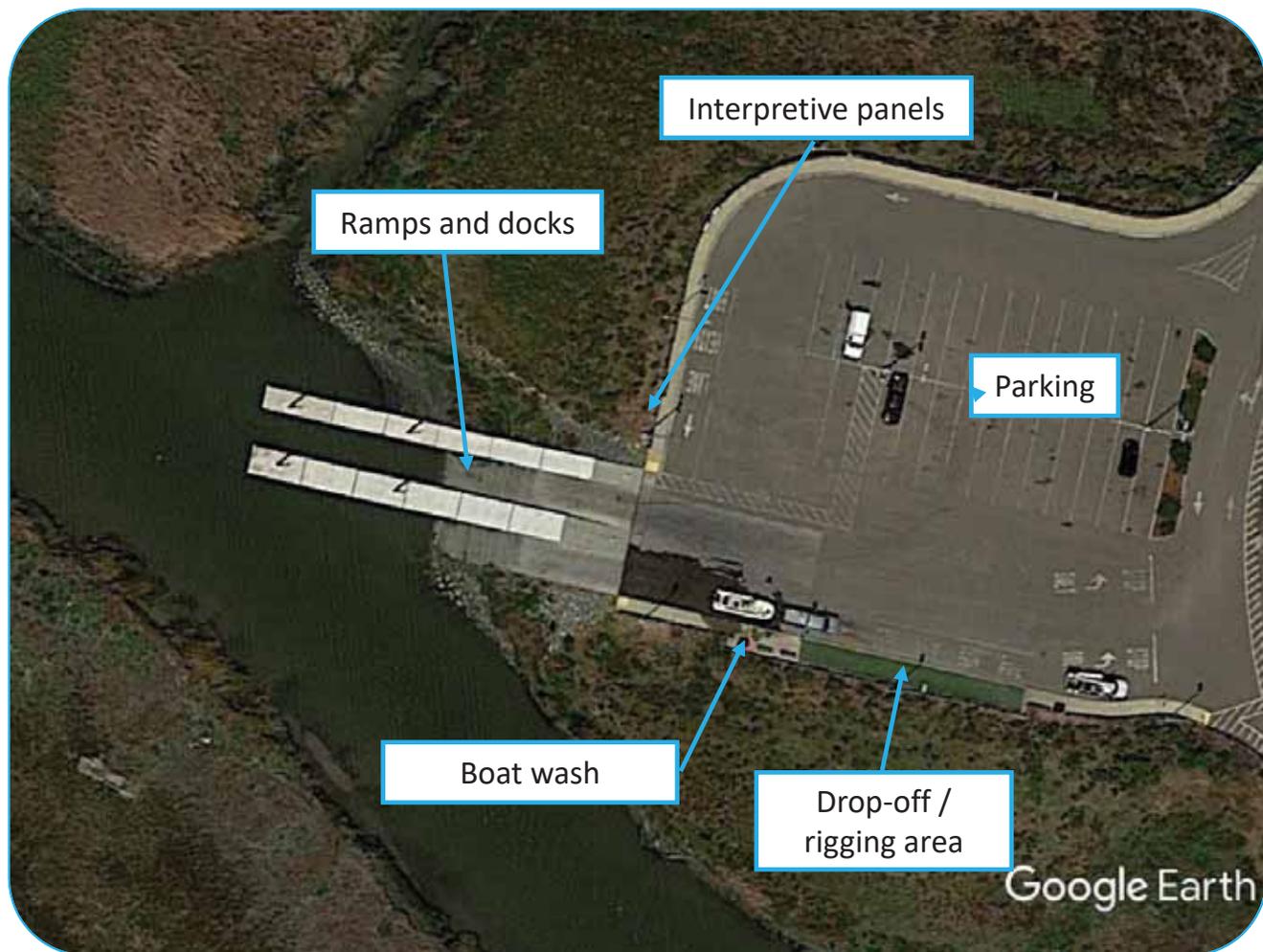
Primary Users: Kayaks, SUP, Canoes  
Management: Santa Clara County

### Pros

Various launch options; proximity to parking areas; ADA design; rigging area; numerous supporting amenities.

### Potential Improvements

None. This high quality site is considered one of the top facilities in the Bay Area and should be used as a model design.



**Launch Highlights:** V-grooved concrete ramps provides an alternative launch to users that prefer not to use docks.



## LAUNCH DESIGN

# Low-Freeboard Dock

Low-freeboard docks rise less than 9-inches above the surface of the water and are typically connected to pilings, which provide stability but allow the dock to rise and fall with the tides. These docks are usually connected to the shoreline by a gangway or a boarding pier. Low-freeboard docks are typically intended for non-motorized small boats and are the preferred launch for sculls/rowing shells, kayaks, SUPs, and canoes.

**On the Bay:** Low-freeboard docks are relatively uncommon on the Bay, but are becoming more prevalent as site managers better design for the needs of non-motorized small boats.

**Challenges:** The low profile of the docks can require larger surface area to provide sufficient buoyancy and stability. They can also be more easily damaged by motorized boats.

**Accessibility:** Gangways can be constructed to meet ADA slopes and with resting platforms. Minimizing turns in the gangway is important for access to remain usable by people carrying or rolling their boat.



Westpoint Harbor, San Mateo County



Kayakers at Tidewater Boating Center, Oakland

## Design Considerations

Firm and stable platform to prevent listing

Provide adequate surface traction without damaging water craft or causing foot discomfort

Design with a minimum width of 6-feet, with 8-feet preferred

Provide at least two open sides for launch and landing

Limit use of handrails to only gangways and ramps, unless intended for SUPs

Consider gangway slopes during low tides

Ensure access to water at all tides

Maintain at least 60-inches of clear opening for every 10 feet of linear dock

Add hand rails for SUP balance

Attach marine ladder for purposeful or accidental swimmers



## LAUNCH DESIGN

# Low-Freeboard Dock

**Tidewater Boating Center** has a large low-freeboard dock that is adjacent to boat storage and close to public parking. This facility also has a boat rigging area, restrooms, and ample parking.

### Site Info

**Primary Users:** Rowers, Kayaks, SUP  
**Management:** East Bay Regional Park District

### Pros

Boat storage; proximity to parking areas; ADA design; programs and clubs; rigging area; numerous supporting amenities.

### Potential Improvements

None. This high quality site is considered one of the top facilities in the Bay Area and should be used as a model design.



**Launch Highlights:** Two gangways and a large dock with space to accommodate many users at one time.



# High-Freeboard Dock

High-freeboard docks rise 9-inches or more above the surface of the water and are typically connected to pilings, which provide stability but allow them to rise and fall with the tides. These docks are usually connected to the shoreline by a gangway or a boarding pier. High-freeboard docks are typically intended for larger motorized or sailboats, but can be preferred by larger non-motorized boats like rowboats, dragonboats, and whaleboats.



Harbor Plaza, City of Suisun

**On the Bay:** High-freeboard docks are the most common type of dock on the Bay, associated with marinas and motorized boat launches.

**Challenges:** The height of high-freeboard docks can make it challenging to get in and out of low-profile crafts, particularly kayaks and canoes.

**Accessibility:** Gangways can be constructed to meet ADA slopes and with resting platforms. Minimizing turns in the gangway is important for access to remain usable by people carrying or rolling their kayak or carrying a long SUP.

## Design Considerations

Firm and stable platform to prevent listing

Provide adequate surface traction without damaging water craft or causing foot discomfort

Use materials that can withstand exposure to water, salt, and UV light

Provide at least two open sides for launch and landing

Limit use of handrails to only gangways and ramps

Consider gangway slopes during low tides

Ensure access to water at all tides

Maintain at least 60-inches of clear opening for every 10 feet of linear dock

Add hand rails for SUP balance

Attach marine ladder for purposeful or accidental swimmers



## LAUNCH DESIGN

# High-Freeboard Dock

**Cuttings Wharf** has a two high-freeboard docks with right angle turns that provide extra spaces for boats to launch and land away from boat ramp trailers. This facility also has ramp, restrooms, and ample parking.

### Site Info

**Primary Users:** Kayaks, SUPs  
**Management:** County of Napa

### Pros

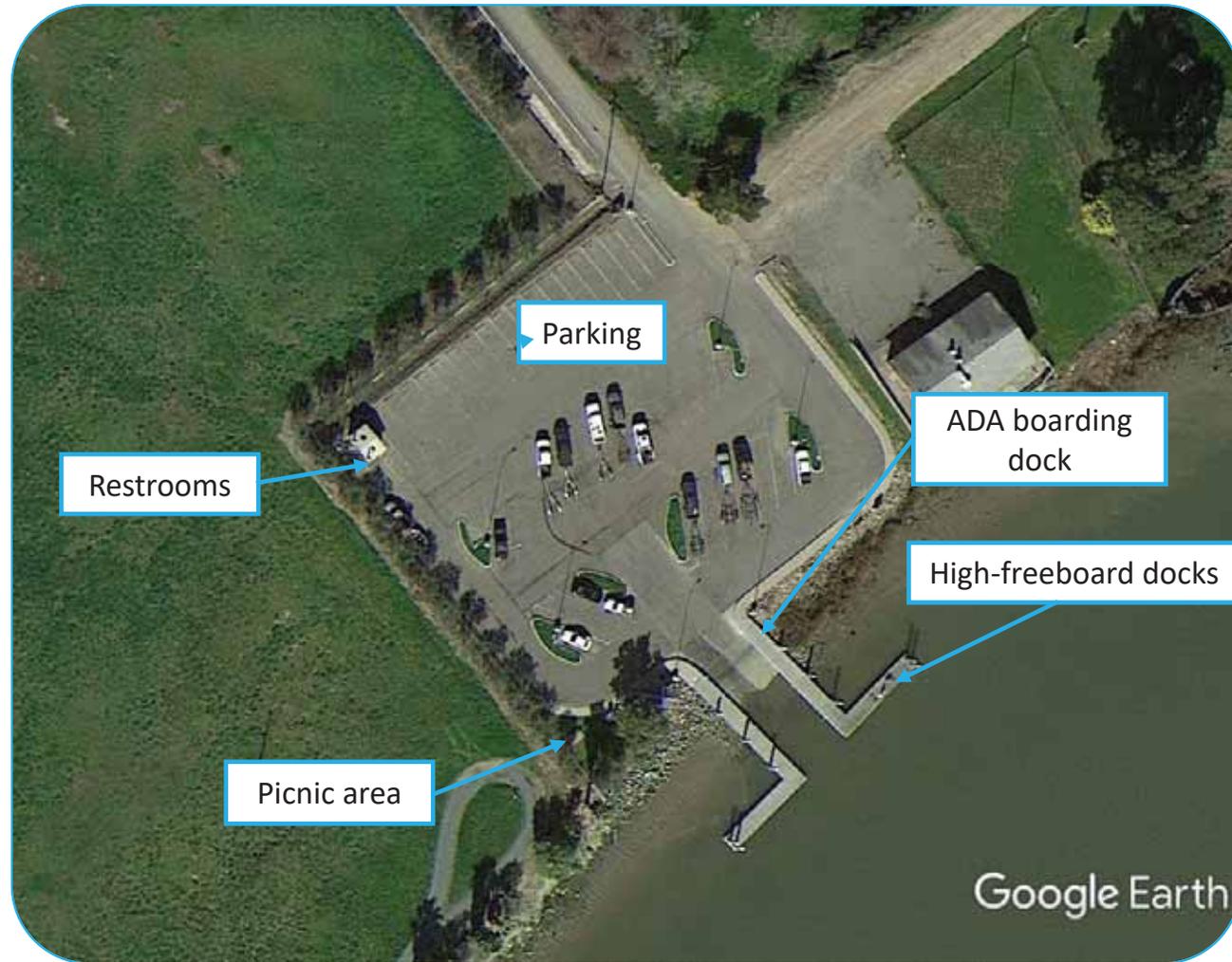
Dock design with right-angle attachments; proximity to parking area; ADA design; restrooms.

### Potential Improvements

This facility is designed primarily for motorized boat launching. High-freeboard may be difficult for some users to get in and out of kayaks. A low-freeboard attachment could further enhance utility of this site.



**Launch Highlights:** The right-angle design provides ample dock space and a sheltered area between the dock and the shore for non-motorized launching.



## LAUNCH DESIGN

# Low-Freeboard Dock Attachment

Low-freeboard dock attachments can be added to existing or new docks. These relatively low-cost systems can substantially improve the ease of getting in and out of non-motorized small boats, keeping the boater stable and dry. Attachments are typically designed for kayaks or canoes.

**On the Bay:** Low-freeboard dock attachments are becoming more common on the Bay, as an efficient way to improve access for non-motorized boats with minimal modification to existing dock facilities. Due to their popularity, new facilities are often being designed to incorporate these attachments.

**Challenges:** The low profile of the docks can make it challenging to provide sufficient buoyancy and stability. Most have to be located in relatively sheltered waterways.

**Accessibility:** Most attachments have a variety of features that can improve stability including rollers, grab bars, and transfer seats, but can also add barriers to access.

## Design Considerations

Numerous designs intended specifically for non-motorized small boats

Incorporate “universal design” components

Accessible transition from high-freeboard dock to the attachment

Designs to fit typical boat slips or “inside ties”



Kayaker at Antioch Marina, City of Antioch



Kayaker at Pier 39, San Francisco



## LAUNCH DESIGN

# Low-Freeboard Dock Attachment

**Antioch Marina** has a low-freeboard attachment that is nestled within a marina berth that is dedicated to non-motorized use. The marina also has ramps, high-freeboard docks, restrooms, ample parking, storage, and a concessionaire.

### Site Info

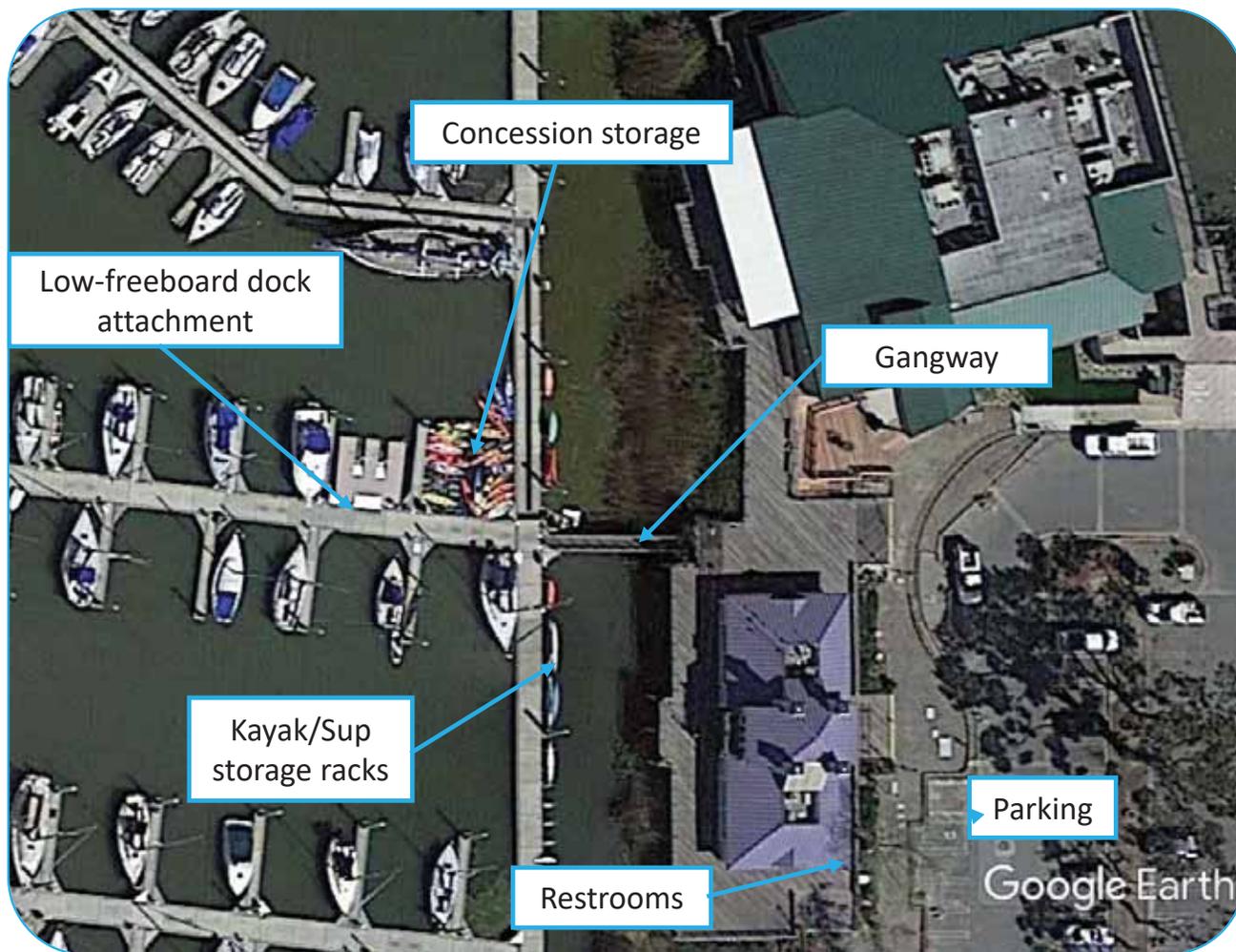
Primary Users: Kayaks, SUPs, Canoes  
Management: City of Antioch

### Pros

Stable platform that is easy to launch for all users; proximity to parking area; ADA design; storage near launch facility; concessions.

### Potential Improvements

None. This facility is a great example of modifying existing marina infrastructure to provide an excellent launch experience for kayakers.



**Launch Highlights:** The two launches with grab-bars provides a stable launch and ample dock space that allows multiple users to launch or land at once.





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# 6.0 Site Design Case Studies



*Stand-up Paddleboard class at Encinal Beach, East Bay Regional Park District*



## CASE STUDIES

# Introduction

When planning a new or improved boat launch, it's not necessary to reinvent the wheel - many of the challenges identified earlier in this document have been successfully mitigated through thoughtful design and construction. This section provides an overview of some additional high-quality boat launches that are currently operating in the Bay Area and identifies the design elements that contribute to making them popular facilities, including how they have addressed key concerns for each shoreline type.



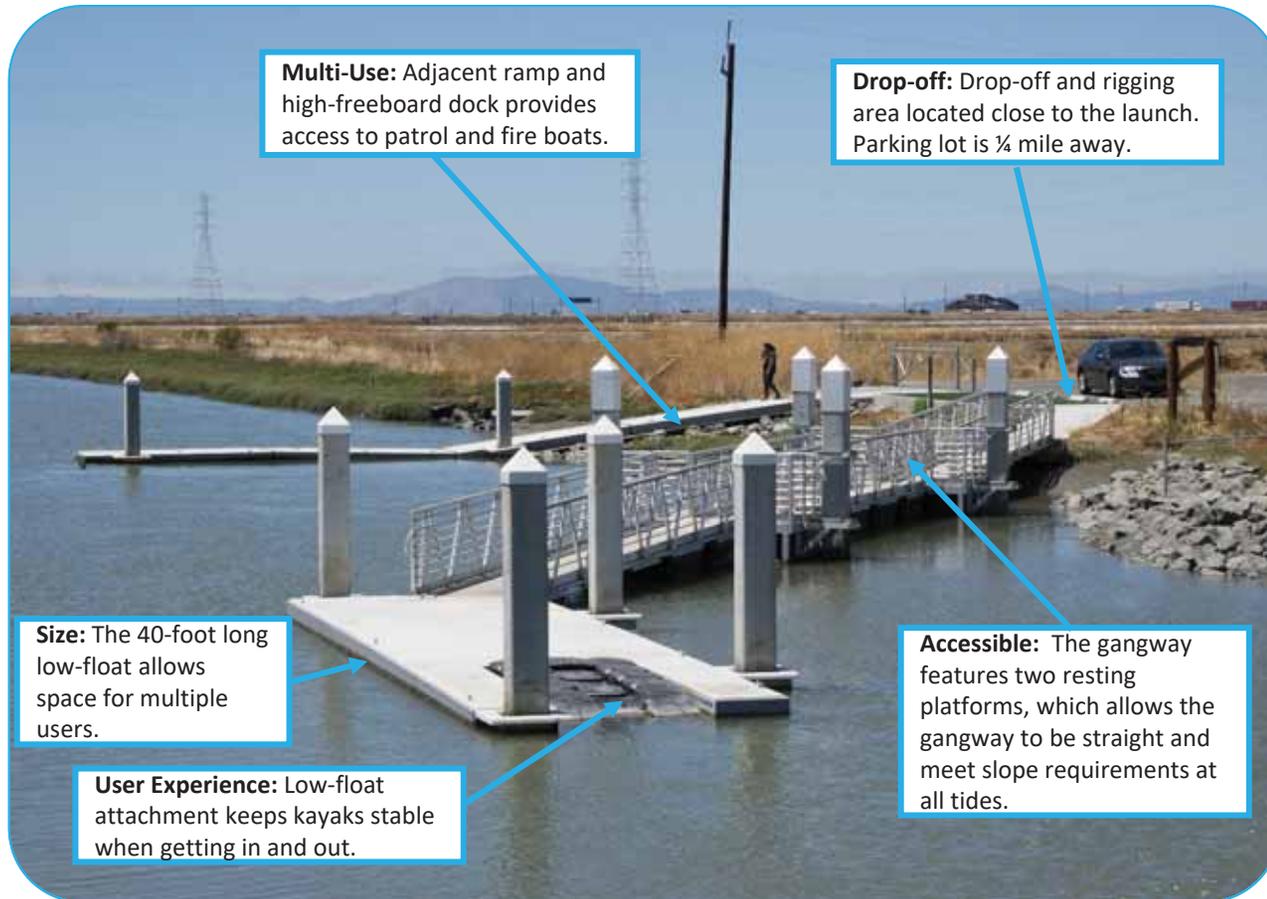
*Stand-up Paddleboarder at Crown Memorial State Beach, East Bay Regional Park District*



## CASE STUDIES

# Sensitive Habitat

**Eden Landing Ecological Reserve** has a low-freeboard dock with a stability attachment that was constructed as part of a habitat restoration project. The launch provides access to Mount Eden Creek, a tidal slough that winds two-miles through sensitive marsh habitats to the Bay.



**Site Selection:** The dock was sited at the northern edge of the reserve in an area previously disturbed to limit fragmentation and development of sensitive habitat. The slough is hydrologically connected to a limited area, limiting potential disturbance across much of the reserve.

## Key Concerns

Launch constructed in environmentally sensitive habitats

Potential conflicts between trail users and protection of sensitive species



**Interpretation:** Panels at the top of the dock provide safety, stewardship, and wayfinding information.



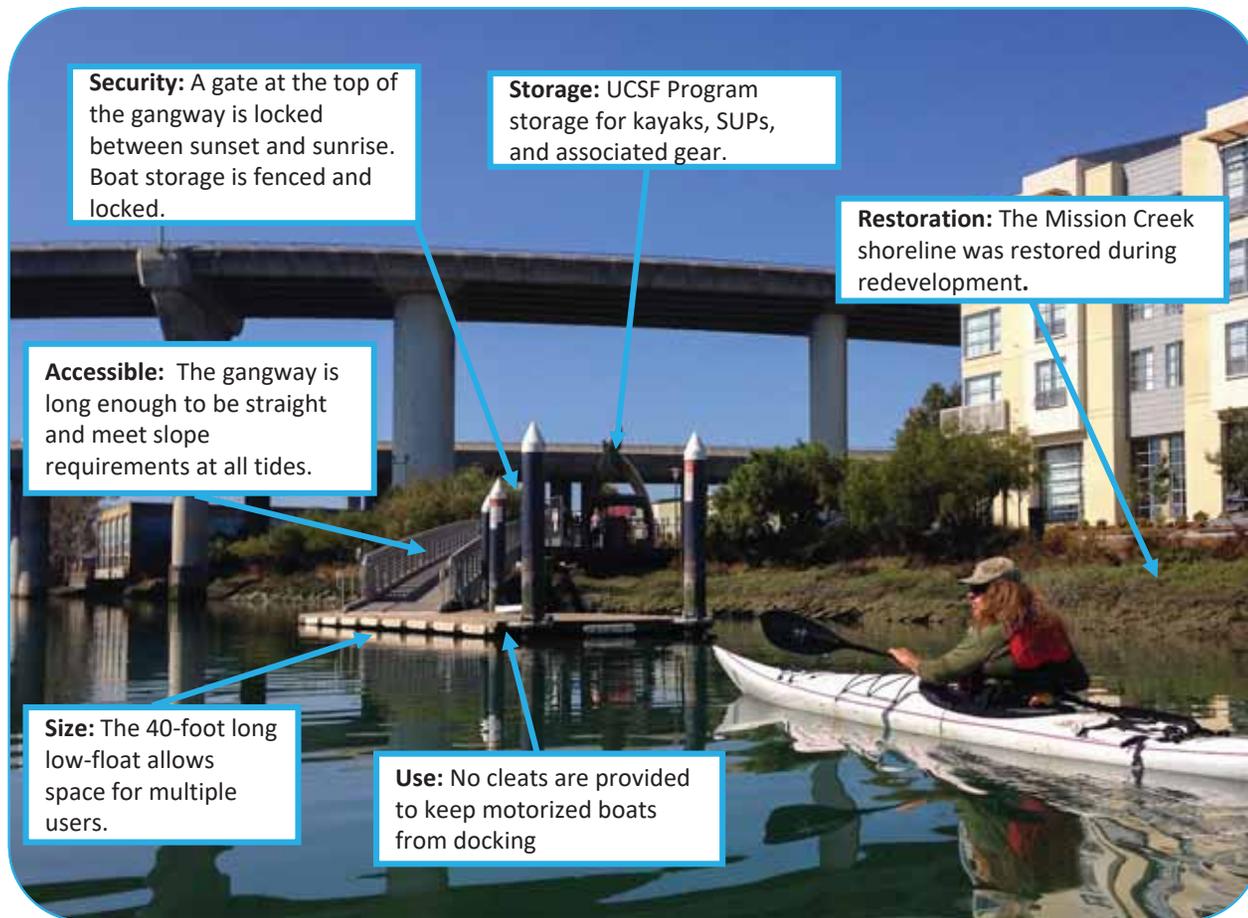
**Amenities:** A turf rigging area at the top of the gangway provides an ideal area to drop gear and prepare for a paddle.



## CASE STUDIES

# Urban

**Mission Creek Boat Launch** was constructed as part of a park and housing development project in a formerly light-industrial area of San Francisco. The high quality facilities, including a low-freeboard dock, boat storage, and access to sheltered water makes it a popular launch for beginners and a destination for paddlers across the Bay.



**Site Design:** The dock was sited to have access at all tides, with an ADA gangway into Mission Creek Park. The Park offers benches, water fountains, restrooms, boating program storage, and sufficient space at the top of the dock for classes and gear staging.

## Key Concerns

Lack of nearby parking

Security of facilities and boat storage



**Destination:** Due to the lack of nearby parking, this site is primarily used for programs and as a destination. Having program boat storage is critical to activating the site.



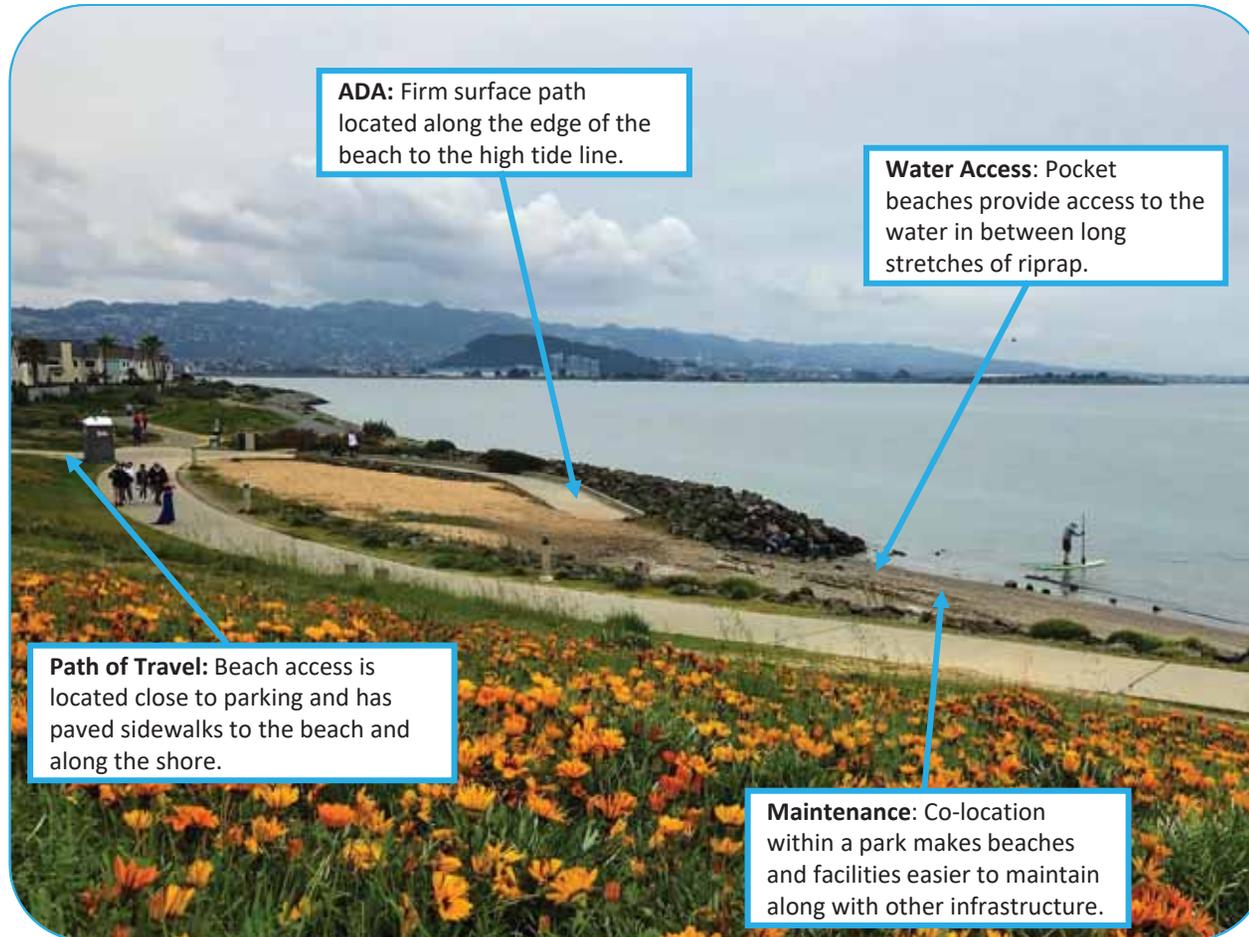
**Programs:** UCSF runs numerous kayak and SUP classes open to the public. The sheltered waters make Mission Creek a low-risk place to learn.



## CASE STUDIES

# Shoreline Park

**Vincent Park** offers two pocket beaches with firm-surface access paths to the high tide line. These beaches and the adjacent park are popular launches and as a destination to use the parks picnic, restroom, and lawn facilities.



**Site Design:** The park features two pocket beaches – one that faces south onto the Bay and one that faces west and is behind a jetty the protects Marina Bay. The south beach is close to parking, making it the preferred launch for kayakers and SUP. The west beach is farther from parking, so used primarily as a destination for people launching from nearby Marina Bay and by kiteboarders and windsurfers.

### Key Concerns

Compatible with other park use

Secure space for storage, boat maintenance, showers, and instruction



**Facilities:** Picnic tables, drinking fountains, and restrooms all contribute to an ideal destination site. Amenities should be close to the launch so users can see their gear while enjoying lunch or a paddle break.



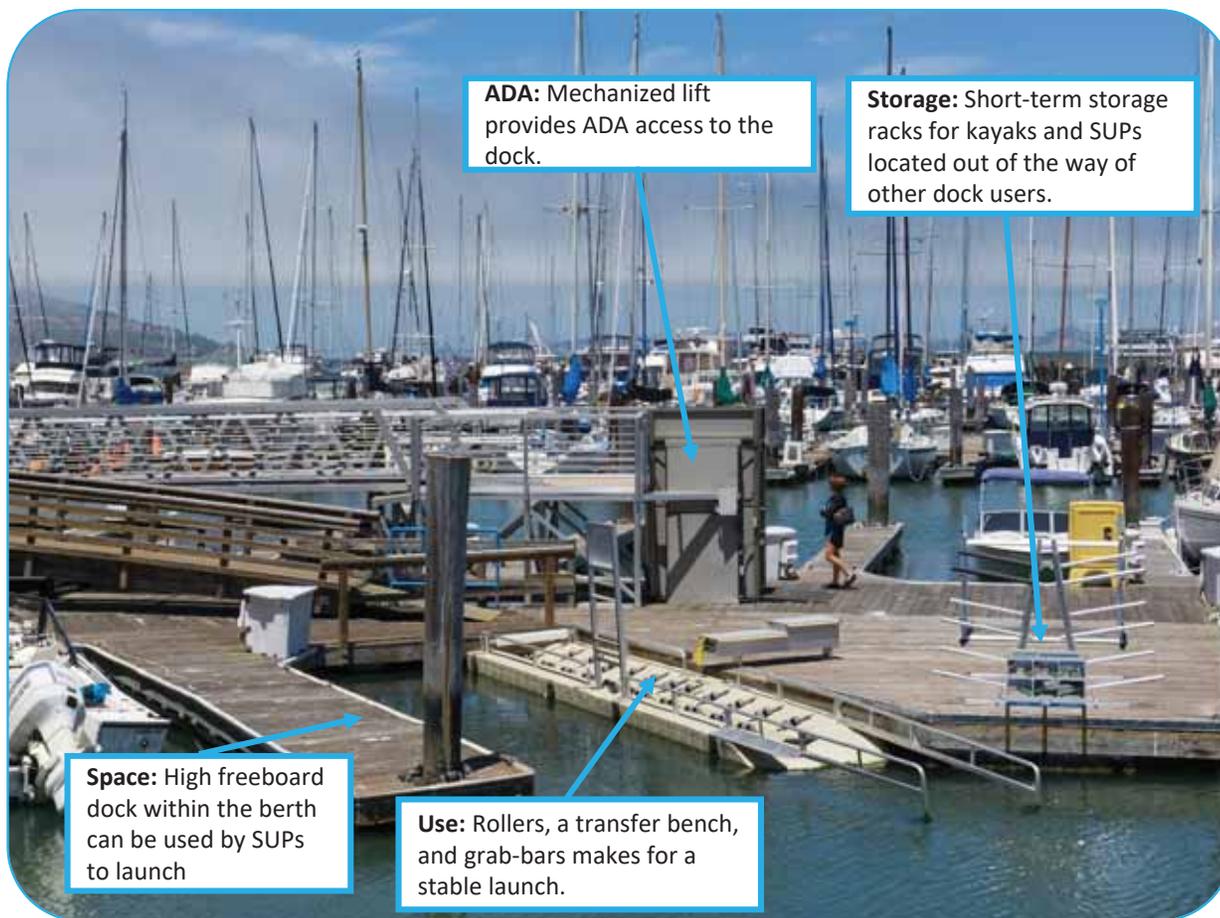
**Multi-Use:** A wide sandy beach also provides space for kiteboarders and windsurfers. Because beach-goers tend to avoid beaches on windy days, conflicts between users is rare.



## CASE STUDIES

# Marina

**Pier 39 Marina** installed a low-freeboard dock attachment with secure boat storage that allows paddlers to enjoy the restaurants and shops of world-famous Pier 39. The high quality facilities and secure storage make Pier 39 a popular destination for paddlers across the Bay.



**Site Design:** The launch is sited at the back of the Marina, close to the facilities of Pier 39 and away from motorized vessel fairways. This location is sheltered from wave and storm surges and reduces potential conflicts between motorized and non-motorized users.

## Key Concerns

Motorized vessel traffic

Security of facilities and boat storage



**Security:** Gates to the launch are locked and are monitored by security cameras. Paddlers can press a button and security will authorize access when returning to boats after enjoying Pier 39's restaurants and shops.



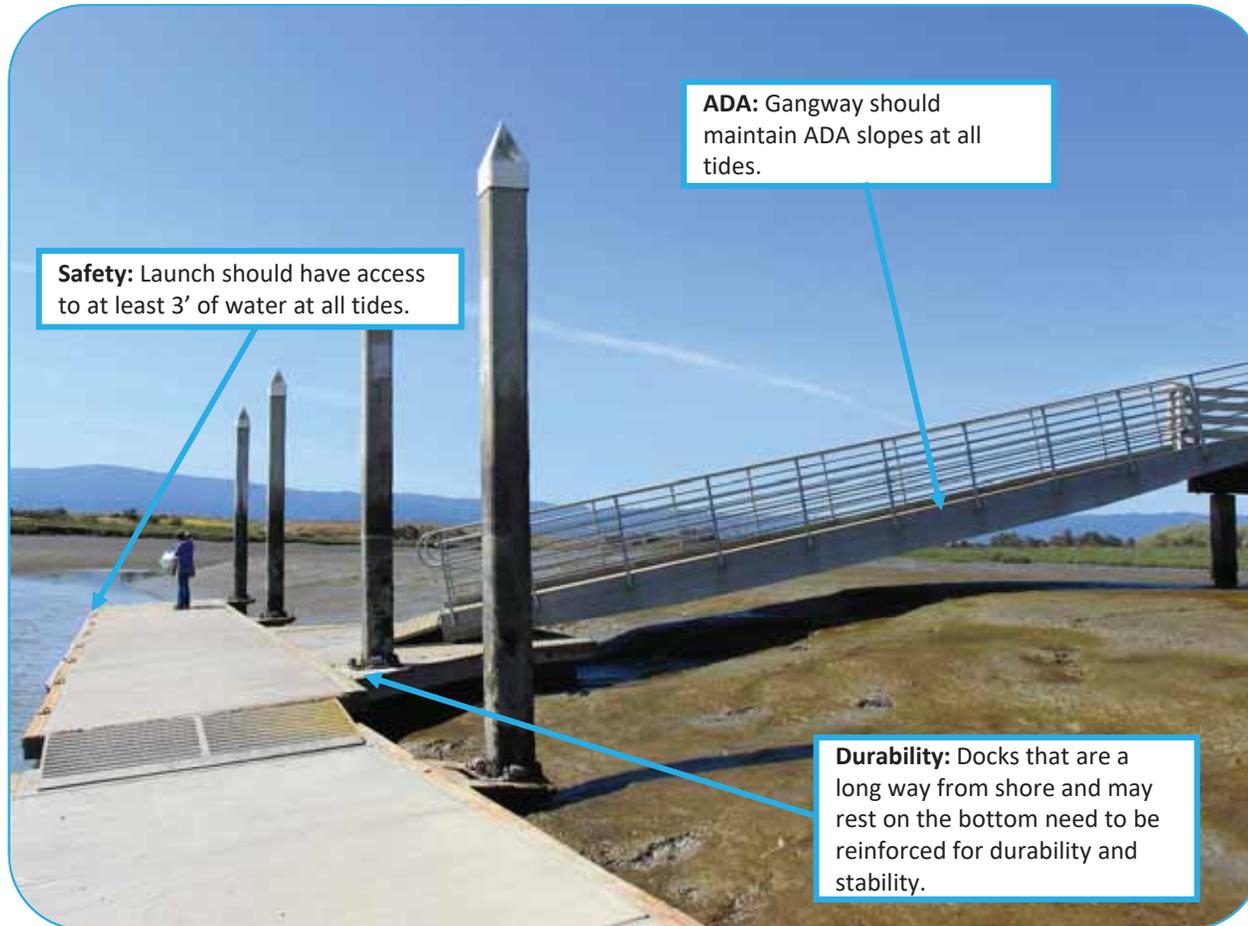
**Experience:** The roller system provides a stable platform to get on and off the water safe and dry for beginner to experienced kayakers.



## CASE STUDIES

# Mudflats

**Palo Alto Baylands** offers a pier connected to a gangway that leads to a high-freeboard dock. The long pier and gangway are needed to provide access to a segment of the slough that maintains water at all tides.



**Site Design:** Water access in the South Bay is challenging due to the extensive mudflats that occur along much of the shoreline. In mudflat areas where access to the water is appropriate, such as the Palo Alto Baylands, a 240'-boarding pier and gangway to a high-freeboard dock provide access to the deepest segments of the slough channel. The pier also serves as an ideal perch for birdwatching.

## Key Concerns

User safety

Sensitive habitat impacts



**Sensitive habitat:** Mudflats are important habitats for a variety of species. Structures over mudflats should be sited carefully and elevated on piers or floats to minimize changes in hydrology.



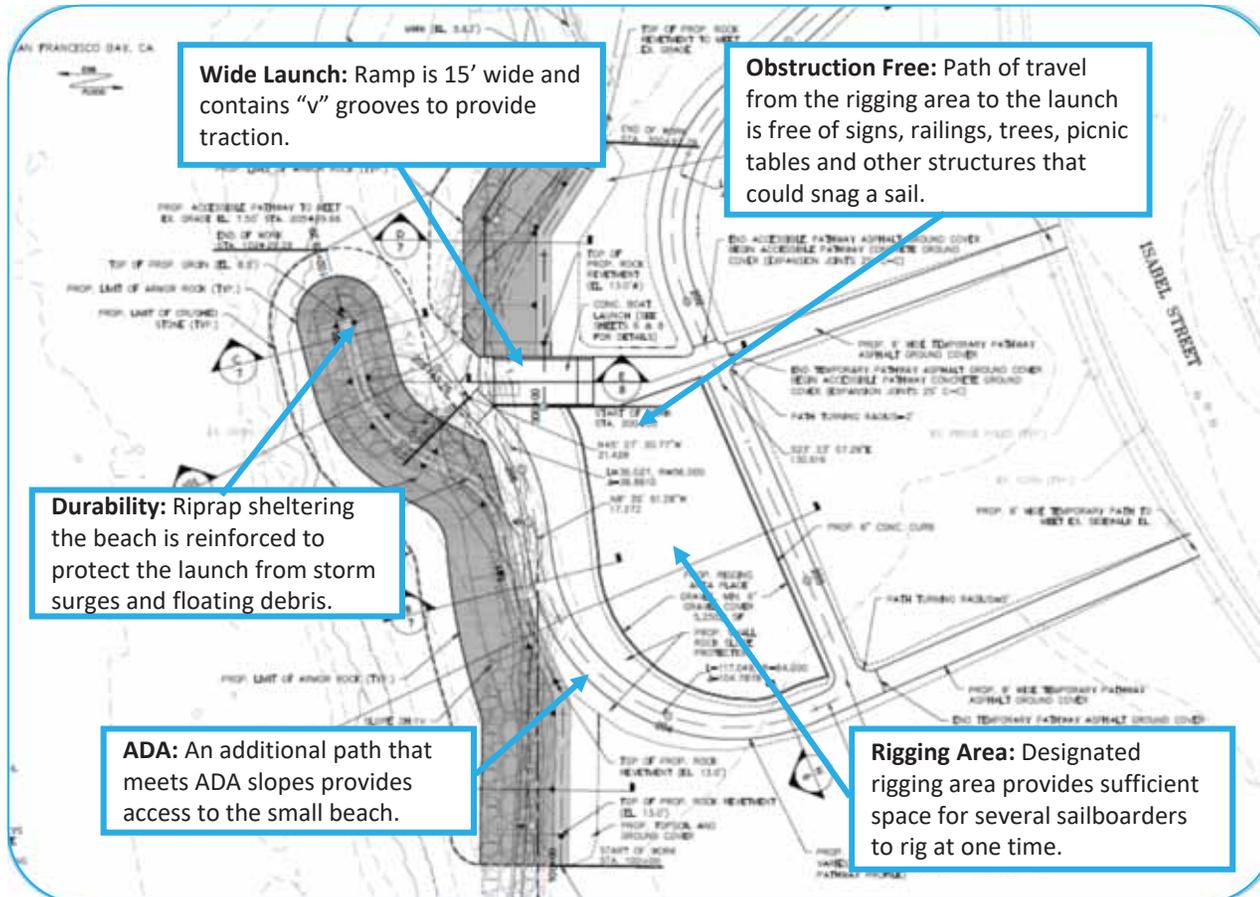
**Signs:** Before every launch, people should know what the tides are doing and how they might affect their ability to return to shore. Signs should be placed at the top of the launch and for mudflats should encourage people to stay in their boats until the tides return.



## CASE STUDIES

# Sailboard / Windsurf

**Point Isabel Regional Shoreline** offers a wide ramp that leads to a sheltered gravel beach. An adjacent rigging area that is free from obstructions and new ADA paths all contribute to make this a well-redesigned site.



**Site Design:** Point Isabel has long been a popular launch for sailboarders due to ideal wind direction and rigging space close to parking. Due to deteriorating access to the gravel beach, East Bay Regional Park District has redesigned the site in close consultation with the sailboarding community to improve user safety and experience.

## Key Concerns

User safety

Space for rigging and launching free from obstructions



**Safety:** Users relied on unstable concrete steps to access the gravel beach for many years. While functional, these could be slippery and difficult to navigate, particularly after a user is on the water for an extended time period.



**Rigging Area:** A minimum of 30'-feet is necessary to allow a safe buffer between users. Rigging areas of pea gravel, grass, or turf are preferred.



## CASE STUDIES

# Kiteboard

**Crown Memorial State Beach** offers a wide beach and onshore winds that make it ideal for kiteboarding (and windsurfing). Onsite concessions and sufficient space to allow multiple users to launch and land enhance user safety.



**Site Design:** Crown Beach is nearly 2.5 miles long, but within this area a small segment of beach has been designated for boardsport use on windy days. The beach and lawn area adjacent to the Boardsports California concessionaire is ideally situated near parking and restrooms. Clustering of activity limits potential for conflicts with other beach users and enhances safety.

## Key Concerns

User safety

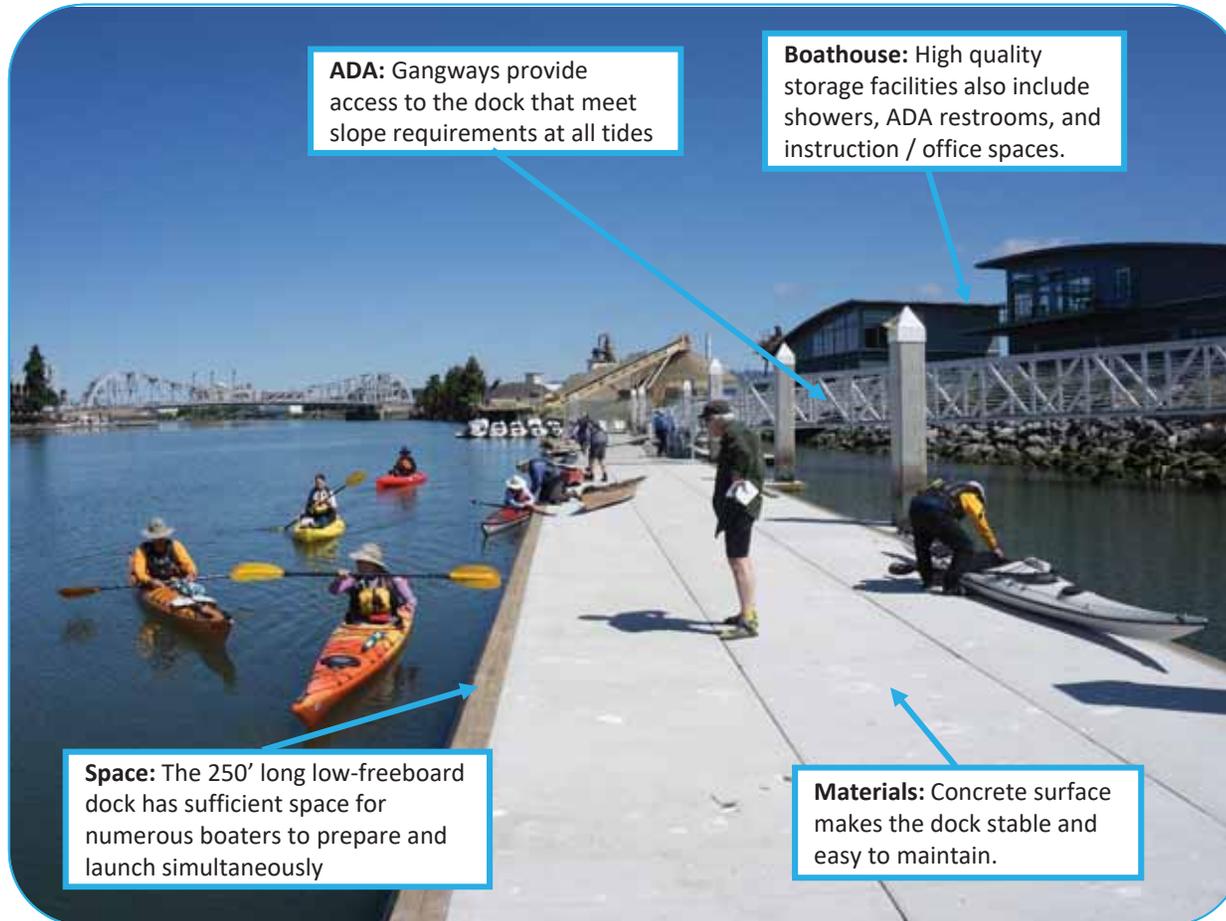
Space for rigging free from obstructions



## CASE STUDIES

# Programs and Clubs

**Tidewater Boating Center** offers a large low-freeboard dock and boat storage facilities for several rowing clubs and East Bay Regional Park District kayak programs. The high-quality storage facilities and nearby parking make Tidewater one of the most heavily used launches in the East Bay.



**ADA:** Gangways provide access to the dock that meet slope requirements at all tides

**Boathouse:** High quality storage facilities also include showers, ADA restrooms, and instruction / office spaces.

**Space:** The 250' long low-freeboard dock has sufficient space for numerous boaters to prepare and launch simultaneously

**Materials:** Concrete surface makes the dock stable and easy to maintain.

**Site Design:** The launch is sited on the Oakland Estuary, which is sheltered from wave and storm surges by Alameda Island. The adjacent shoreline is active industrial, making the site's amenities an oasis of recreation in an otherwise inaccessible area. Programs and clubs activate the site, encouraging use and site stewardship.

## Key Concerns

Space for several boats to rig and launch

Facility capacity for boat storage, maintenance, showers, and instruction



**Facilities:** Storage is secure and provides sufficient space to accommodate several rowing clubs. Facilities are used nearly every day, so racks are designed for efficiency. Boat maintenance and instruction are also accommodated.



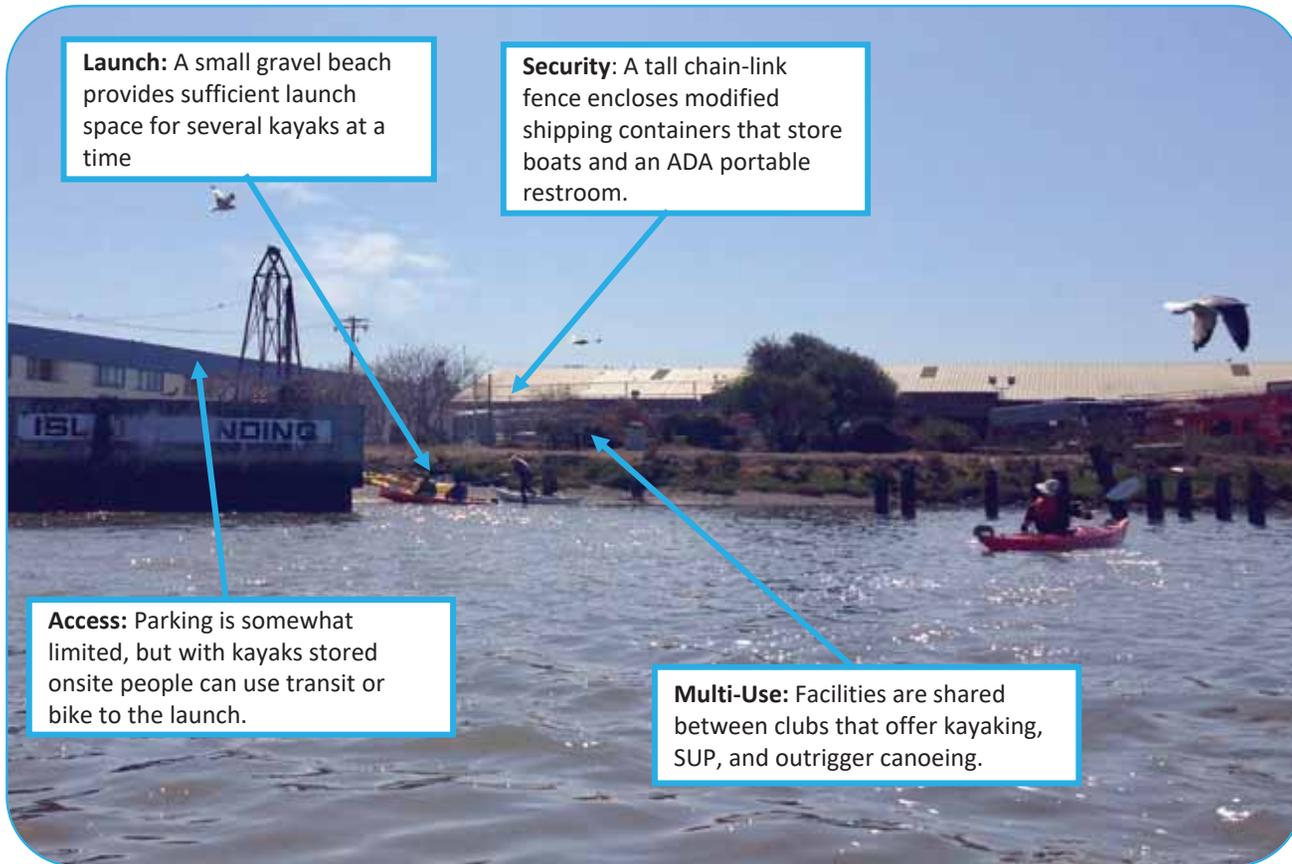
**Efficiency:** A wide gangway is located immediately adjacent to the boathouse, which allows several rowing shells to be put on and off the water simultaneously.



## CASE STUDIES

# Non-Profit Programs

**Islais Creek** is home to Kayaks Unlimited, a non-profit boating co-op that provides boating programs and stewardship of site facilities. Working with the Port of San Francisco, Kayaks Unlimited has two converted shipping containers for boat storage and an ADA portable restroom to support program and member use. The launch facilities include a beach and a high-freeboard dock.



**Launch:** A small gravel beach provides sufficient launch space for several kayakers at a time

**Security:** A tall chain-link fence encloses modified shipping containers that store boats and an ADA portable restroom.

**Access:** Parking is somewhat limited, but with kayakers stored onsite people can use transit or bike to the launch.

**Multi-Use:** Facilities are shared between clubs that offer kayaking, SUP, and outrigger canoeing.

**Site Design:** The launch is sited within a small park on Islais Creek in southern San Francisco. Programs and clubs activate the site, encouraging use and site stewardship. In exchange for storage space, the clubs perform site cleanups and helps to get hundreds of community members on the water each year.

## Key Concerns

Volunteers to run programs

Secure space for storage, boat maintenance, and instruction



**Facilities:** Storage is secure and provides sufficient space to accommodate several dozen kayakers and associated gear. Facilities are used nearly every day, so racks are designed for efficiency.



**Stewardship:** Kayakers Unlimited has an agreement with the Port of San Francisco to act as site stewards, performing regular site cleanups and basic maintenance.





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# 7.0 Completing a Project



*Stand-up Paddleboard along the Berkeley Waterfront, Alameda County*



## COMPLETING A PROJECT

# Introduction

Completing a successful project often requires early and significant engagement with the boating public and regulatory agencies. To protect the unique resources of the San Francisco Bay Area there is a complex series of regulatory approvals required for most shoreline construction projects. The timelines for project permitting and approval can be lengthy and costs for permitting and design can, in some cases, be close to the overall cost of facilities construction. For this reason, it is often beneficial to plan for launch improvements in concert with another shoreline development or restoration projects. This can help to streamline permitting and ensure land-side facilities are designed to be compatible with non-motorized small boat use.

This section provides an overview of how to engage stakeholders as well as funding sources and the key regulatory requirements that may be applicable to construction of a non-motorized small boat launch.



*Kiteboarding the San Francisco shoreline*



## COMPLETING A PROJECT

# Public Outreach

The Bay Area has a rich history of non-motorized small boat use. The best way to understand the conditions of a particular location is to talk with the boaters who have, in many cases, been enjoying the Bay for years. These local experts are uniquely prepared to speak to the conditions of the site as well as provide input on the appropriate design for the location. It is critical to seek out and encourage substantive and meaningful community input regarding the project from key stakeholders, both individuals and groups, who will be affected by the future design/use. Community feedback should inform future programming and overall design of public access amenities and interaction with the water's edge.



*Rigging at windsurf board at Point Isabel Regional Shoreline, East Bay Regional Park District*

## Water Trail – Partner in Public Outreach

Two local community meetings focused on boating needs during project design is optimal. Meeting with the Water Trail Advisory Committee early in the project design is an effective way to get expert stakeholder feedback. Ideally, these meetings should occur at the beginning (10% design) and towards the end (75% design) of the design process, in order to foster community interaction and sustained engagement. An onsite meeting can also be an important way for planners and design teams to better understand site conditions and how they affect use.



## COMPLETING A PROJECT

# Potential Funding

Several public grant funding sources are available from state and regional government entities. Competition for funds is high, so projects that are multi-benefit often have the best chance at success (i.e., habitat restoration, SLR adaptation, and public access).

### **Coastal Conservancy / Metropolitan Transportation Commission; San Francisco Bay Area Water Trail Grant**

**Program:** Provides funds for planning and non-motorized small boat facility construction for officially designated Water Trail sites.

### **California State Parks, Division of Boating and Waterways; Non-Motorized Boat Launching Facility Grant Program:**

Grants are made to qualifying public agencies to fund facilities such as boat launching ramps, boarding floats, and associated parking areas, restrooms, and lighting for non-motorized boaters.

### **California State Parks, Division of Boating and Waterways; California Beach Restoration and Erosion Control Programs:**

The general objectives of these programs are to preserve and protect the California shoreline, minimize the economic losses caused by beach erosion and maintain urgently needed recreational beach areas, including within the Bay.

**San Francisco Bay Restoration Authority; Restoration Authority Grants:** Can fund shoreline access and boating facilities as part of a wetland restoration project.



*Water Access Project at Point Isabel Regional Shoreline, East Bay Regional Park District*



# Applicable Plans and Policies

The Bay Area shoreline is a highly complex regulatory environment. Due to costs and time involved, improvements to water access facilities are often best achieved as part of larger shoreline development or restoration projects. Although each project is unique, some of the regulatory agencies and policies that may shape project design are outlined below.

**National Environmental Policy Act (all federal agencies):** Requires federal agencies to assess the environmental impacts of their proposed actions and to avoid or mitigate those impacts.

**California Environmental Quality Act (all state agencies):** Requires state and local agencies to identify the significant environmental impacts of their actions and to avoid or mitigate those impacts.

**U.S. Rivers and Harbors Act (USACE):** Prohibits construction of obstacles to navigation of federal waters without federal congressional approval

**National Pollutant Discharge and Elimination System (SWRCB, RWQCB):** Protects federal and state waters from impacts of discharges of contaminants from point sources.

**US Clean Water Act Sections 404 and 401 (USEPA, RWQCB):** Protects federal waters from the impacts of dredging and discharges of contaminants.

**Waste Discharge Requirements (SWRCB, RWQCB):** Protects state waters from impacts of point source discharges of contaminants.

**US Endangered Species Act (USFWS, NMFS):** Protects federally protected species of plants and wildlife including anadromous and estuarine fishes.

**McAteer-Petris Act (BCDC):** Establishes BCDC as regulatory agency charged with regulating fill and use of the Bay and bayshore.

**San Francisco Bay Plan (BCDC):** Details the policies that guide BCDC's regulatory planning work (i.e., public access, bayfill, etc.) and maps that show these policy applications.

**California Endangered Species Act (CDFW):** Protects species of plants and wildlife including anadromous and estuarine fishes.

**California Building Code (all agencies):** Provides a minimum standard for building design and construction and provides specific requirements for seismic safety, excavation, foundations, and grading activities including drainage and erosion control.

**Governor's Executive Order B-30-15 (all agencies):** Calls for state agencies to take climate change into account in their planning and investment decisions.

**Local codes and ordinances (cities, counties, and special districts):** Numerous and variable across municipalities and counties.

**Acronyms:** Bay Conservation and Development Commission (BCDC); California Department of Fish and Wildlife (CDFW); National Marine Fisheries Service (NMFS); Regional Water Quality Control Board (RWQCB) State Water Resources Control Board (SWRCB); U.S. Army Corps of Engineers (USACE); U.S. Fish and Wildlife Service (USFWS).



# Permitting Considerations

Early and frequent outreach to regulators and stakeholders is essential to timely permitting and completion of a project. Although each project is unique, some of the regulatory agencies and permits that may be required are outlined below.

## Creek Channel

**US Army Corps of Engineers:**

***Flood Control***

*Section 404 of the Clean Water Act and  
Section 10 of the Rivers and Harbors Act*

**Regional Water Quality Control Board:**

***Water Quality***

*Section 401 of the Clean Water Act and  
Water Discharge Requirements*

**California Department of Fish and  
Wildlife:**

***Habitat Quality***

*Streambed Alteration Agreement*

**Bay Conservation and Development  
Commission:**

***Fill Restriction and Public Access***

*Maximum feasible public access and  
placement of fill in the Bay*

## Tidal Marsh

**California Department of Fish and  
Wildlife:**

***Fish and Wildlife Protection***

*California Endangered Species Act*

**US Fish and Wildlife Service:**

***Fish and Wildlife Protection***

*Federal Endangered Species Act  
consultation*

**National Marine Fisheries Service:**

***Fish and Wildlife Protection***

*Federal Endangered Species Act  
consultation*

**Regional Water Quality Control Board:  
*Tidal Marsh Protection***

*Section 401 of the Clean Water Act and  
Water Discharge Requirements*

**Bay Conservation and Development  
Commission:**

***Fill Restriction and Public Access***

*Maximum feasible public access and  
placement of fill in the Bay*

## Shoreline & Bay

**Bay Conservation and Development  
Commission:**

***Fill Restriction and Public Access***

*Maximum feasible public access and  
placement of fill in the Bay*

**Regional Water Quality Control Board:  
*Tidal Marsh Protection***

*Section 401 of the Clean Water Act,  
Water Discharge Requirements, and  
National Pollutant Discharge  
Elimination System permit*

**California Department of Fish and  
Wildlife:**

***Fish and Wildlife Protection***

*California Endangered Species Act*

**US Fish and Wildlife Service:**

***Fish and Wildlife Protection***

*Federal Endangered Species Act  
consultation*

Adapted from *Resilient by Design Briefing Book* (2017)



## COMPLETING A PROJECT

# Additional Standards and Guidelines

Though not exhaustive, the following references when used in combination with standards and guidelines of local jurisdictions and managing agencies, provide designers with more information about the many topics covered in the Water Trail Design Guidelines.

**U.S. Access Board. ADA Accessibility Guidelines (ADAAG); Architectural Barriers Act Accessibility Guidelines; 2010 Standards for Accessible Design:** This publication provides standards and guidelines for making routes of travel accessible under federal law.

**U.S. Access Board. Architectural Barriers Act Accessibility Guidelines; Outdoor Developed Areas. 2013:** Identifies technical requirements for camping facilities, picnic facilities, viewing areas, trails, and beach access routes.

**San Francisco Bay Conservation and Development Commission. Shoreline Signs- Public Access Signage Guidelines. August, 2005:** Provides detailed guidelines for signs used at public access areas that are part of the development projects along the shoreline of the Bay.

**San Francisco Bay Conservation and Development Commission. Shoreline Spaces Public Access Design Guidelines for the San Francisco Bay. April, 2005:** Provides general planning principles, objectives, and examples of site-specific improvements related to public access along the shoreline of the San Francisco Bay.



*Kayakers in the Petaluma Marsh, Sonoma County*



## COMPLETING A PROJECT

# Liability

The following information is an overview of liability issues and principles associated with owning and operating a recreational facility. This information is not intended to be comprehensive and should not substitute advice from a qualified legal professional.

**General Liability Principles:** In California, owners are liable for injuries suffered by others on their property according to ordinary principles of negligence law. However, this general rule does not apply in every context. The California legislature has designed specific exceptions to keep land— both public and private—open and available for recreational use.

**Recreational Use Statute:** The Recreational Use Statute (Civ. Code § 846) provides that an owner—or an individual holding any other property interest in the land (such as an easement)—will not be liable, in general, for any injury suffered by a person who enters the landowner’s property for a recreational purpose. This is defined very broadly, and includes “water sports”. Immunity is not absolute, and would not apply if the owner: Is willfully negligent; charges money to access the site; and/or, expressly invites (rather than simply permits) others to use their property recreationally.

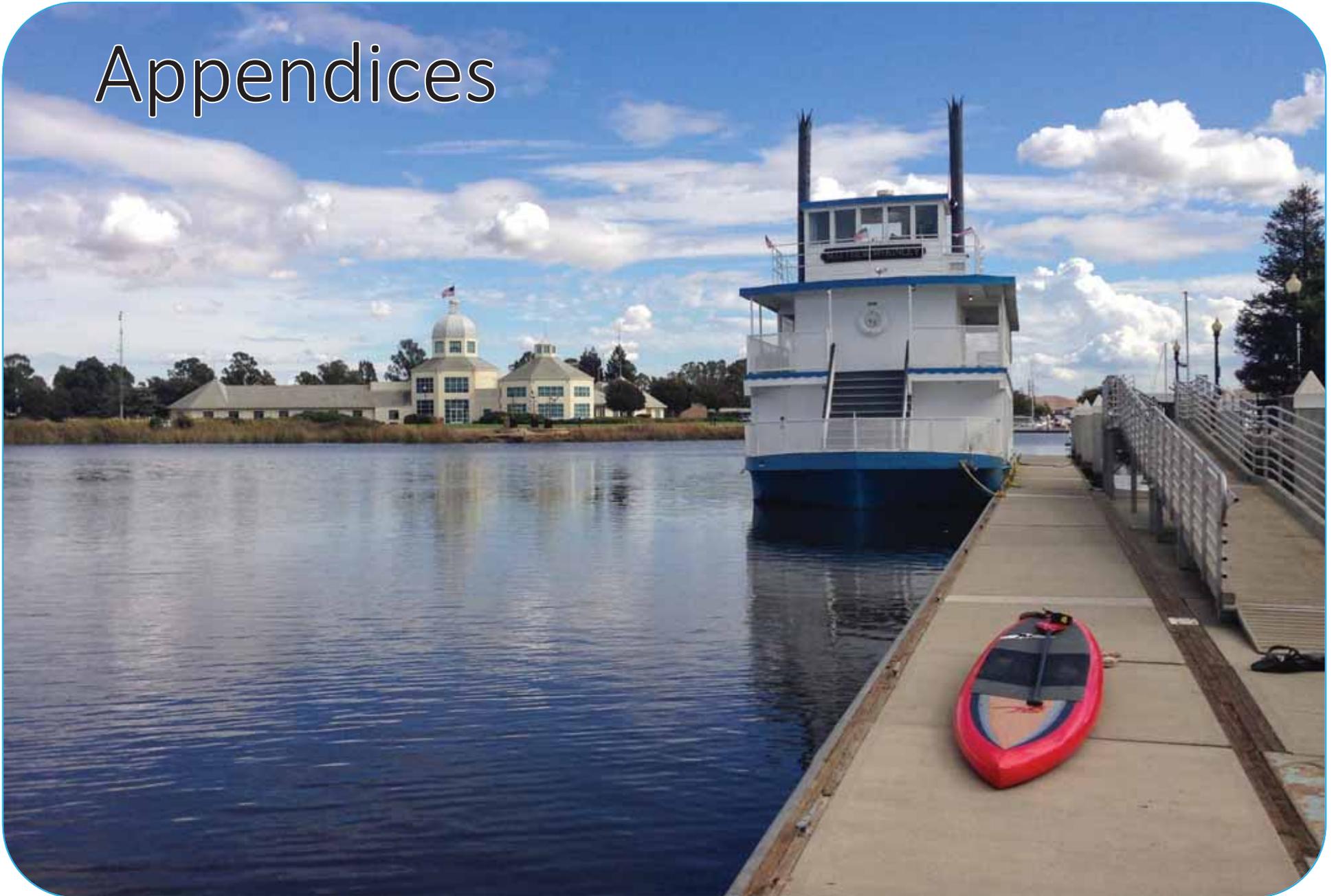
**Public Agency Immunity:** The Tort Claims Act (Gov’t Code § 810 et seq.) gives public entities and their employees broad immunity from lawsuits for injuries arising from actions taken by the public entity. Public entities can, however, be held liable for injuries arising from dangerous conditions on the property. A “dangerous condition” is defined as “a condition of property that creates a substantial (as distinguished from a minor, trivial or insignificant) risk of injury when such property or adjacent property is used with due care in a manner in which it is reasonably foreseeable it will be used.” Courts have consistently applied this immunity provision to protect cities and counties, as well as the state, from lawsuits in which plaintiffs alleged they were injured on recreational trails and facilities created and maintained by the government.



*Kayakers on Richardson Bay, Marin County*



# Appendices



*Suisun Downtown Dock, City of Suisun City*



# Appendices

1. Water Trail Project Stakeholders
2. Non-Motorized Small Boat Details

*Appendices available at [sfbaywatertrail.org](http://sfbaywatertrail.org)*



