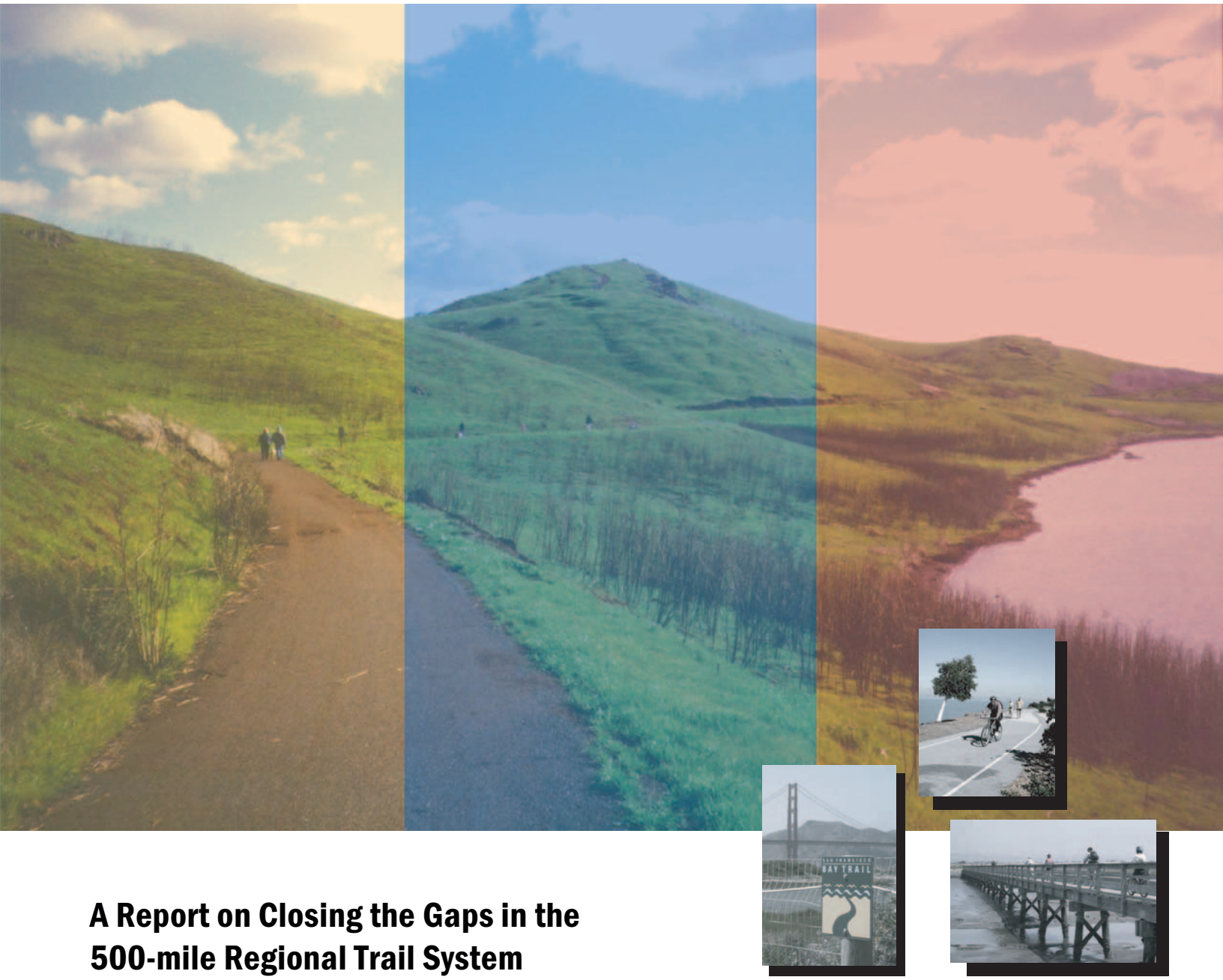
# The San Francisco Bay Trail Project

## Gap Analysis Study




**A Report on Closing the Gaps in the 500-mile Regional Trail System Encircling San Francisco Bay**

**September 2005**

ABAG

# THE SAN FRANCISCO BAY TRAIL PROJECT
# GAP ANALYSIS STUDY

## A REPORT ON CLOSING THE GAPS IN THE 500-MILE REGIONAL TRAIL SYSTEM ENCIRCLING SAN FRANCISCO BAY


**Association of Bay Area Governments**
**Bay Trail Project**

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**AUGUST 2005**

**Supporting agencies**

**The Bay Trail Project** plans, promotes and advocates for implementation of the Bay Trail network. To carry out this mission, staff coordinates with public and private partners, disseminates information about the Bay Trail, seeks funding and administers planning and construction grants. Construction and maintenance of the Bay Trail is the responsibility of cities, counties, park districts or other property owners. The Bay Trail Project is a nonprofit organization administered by the Association of Bay Area Governments. www.baytrail.org

**The Association of Bay Area Governments (ABAG)** is the comprehensive regional planning agency for the 9-county San Francisco Bay Area. ABAG's mission is to strengthen cooperation and coordination among local governments. ABAG administers the Bay Trail Project. www.abag.ca.gov

**The Coastal Conservancy** is a state agency guided by the vision of a beautiful, restored and accessible coastline. It acts with others to preserve, protect and restore the resources of the California coast and the San Francisco Bay. www.coastalconservancy.ca.gov

# The San Francisco Bay Trail

# Current View

Contributing Funders and Consultants:

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June, 2005

***INSERT EXISTING BAY TRAIL MAP.***

# ACKNOWLEDGEMENTS


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# 1. EXECUTIVE SUMMARY

The Bay Trail Project is a nonprofit organization administered by the Association of Bay Area Governments (ABAG) that plans, promotes and advocates for the implementation of a continuous 500-mile bicycling and hiking path around San Francisco Bay. When complete, the trail will pass through 47 cities, all nine Bay Area counties, and cross seven toll bridges. To date, slightly more than half the length of the Bay Trail alignment has been developed. In reaching this significant milestone, there is increased interest in overcoming the remaining gaps in the trail system. This report was commissioned by the Association of Bay Area Governments (ABAG) Bay Trail Project and the California Coastal Conservancy to answer two of the most commonly asked questions regarding the Bay Trail: "When will it be done?" and "How much will it cost?" To this end, the Gap Analysis Study aims to:

- Identify the remaining gaps,
- Classify the gaps by phase, county and benefit ranking,
- Develop cost estimates for individual gap completion using a consistent methodology,
- Identify strategies and actions to overcome gaps,
- Identify long term funding needs, and
- Present an overall cost and timeframe for completion.

In addition to this Gap Analysis Study, another important aspect of this project has been the meticulous cataloguing of each unfinished segment of Bay Trail into a geographic information system (GIS) and an integrated geodatabase. This invaluable tool will allow staff to continuously update important information relating to changes in the status of particular gaps—from incomplete to complete, from unfunded to funded, from proposed Class II to proposed Class I, etc. With the infrastructure set in place by the Gap Analysis team, Bay Trail staff will be able to quickly reference the report, the GIS maps or the geodatabase regarding commonly asked questions such as "How much Bay Trail is left to be constructed in Solano County? How much would that cost? Which projects are ready to construct at this time?" Having this information readily available will assist the Project as it contemplates new and different sources of funding for trail completion.

The majority of easily constructed trail segments within the adopted alignment have been completed and the current challenge is to address the institutional, funding, planning, design, and environmental issues related to the remaining segments. **The research done for this report indicates that the cost to complete the remaining gaps, excluding segments that will be built as part of transportation and private development projects, is $187,798,000. If adequate funding sources are found, the Bay Trail could be "complete" in 15 years. Bay Trail segments to be constructed as part of transportation and private development projects are excluded from this estimate because these projects will be funded by separate sources.**[1] The body of this report details how Bay Trail Project staff and Alta Planning + Design prepared these costs and timeline estimates. The information contained in this report is intended to aid in the setting of priorities and in defining the costs and timing associated with completing the Bay Trail, but is not intended to represent a feasibility study level of cost estimating.

[1] Please see Chapters 4 and 5 and Appendix A for detailed cost explanation and breakdown.

# 2. WHY COMPLETE THE SAN FRANCISCO BAY TRAIL?

The San Francisco Bay Trail has proven to be one of the most popular public facilities in the region. The motivation to complete the trail is based on the tangible benefits that people and local agencies see on their completed segments, including:

- recreational and shoreline access;
- transportation;
- environmental restoration and education;
- community health;
- access to and preservation of open space; and,
- economic vitality.

Perhaps most importantly, the Bay Trail binds together the communities of the San Francisco Bay Area. The Trail is accessible within five (5) miles of 54 cities with a combined population of 3.8 million people (57% of the Bay Area population).[2] Over 75% of the Bay Area population (5.8 million people) lives within 20 miles of the Bay Trail.

## 2.1. RECREATION AND SHORELINE ACCESS

One of the founding goals of the San Francisco Bay Trail is to enhance access to the Bay shoreline, which has historically been cut-off from many areas due to a variety of public and private actions. The connection between Bay Area communities and the San Francisco Bay had disappeared or was severely impacted by numerous industrial uses, and the perception of wetlands as undesirable 'swamp.' Things have changed dramatically in the past 20 years, due in part to the Bay Trail. For example, communities such as Hercules are developing new neighborhoods oriented towards San Pablo Bay for the first time. "Public access to and along the shoreline of the Bay is an integral component of development and usually consists of pedestrian, bicycle and other non-motorized forms of movement," according to *Shoreline Spaces: Public Access Design Guidelines for the San Francisco Bay* (San Francisco Bay Conservation Development Commission, April 2005).

The Bay Trail has helped many residents and visitors rediscover the Bay, and in some cases, entire communities have discovered the shoreline as a major resource. This has not only resulted in the enhancement of shoreline access, but the expansion of local recreational opportunities. With the growth in recreational activities such as bicycling and walking, coupled with renewed interest in healthy lifestyles, the Bay Trail increasingly serves as a major recreational facility in Bay Area communities.

## 2.2. TRANSPORTATION

While the Bay Trail is perceived as primarily a recreational facility, in many areas it also serves an important transportation function. For example, weekday Bay Trail users in Tiburon connect to the Ferry for a ride into San Francisco. Transportation trips on the Bay Trail are defined as any trip made by a bicyclist or pedestrian that would have otherwise been made in a private vehicle. This could include, for example, a person who decides to walk or bicycle on a nearby Bay Trail rather than driving to a park. It would also include anybody walking or bicycling to shop or dine, to connect to a bus or ferry, or traveling to school or work.

[2] 2000 U.S. Census

The Bay Trail is identified as part of the regional network by the Metropolitan Transportation Commission's Regional Bicycle Plan, a portion of the 2001 Regional Transportation Plan for the San Francisco Bay Area, which establishes the region's 25-year transportation investment plan. Table 1 shows that an estimated 37.9 million annual trips are made on the existing Bay Trail, making it one of the most heavily used recreation and non-motorized transportation corridors in the region. In this way, the Bay Trail is helping to provide alternatives to driving. An explanation of the methodology used to derive usage estimates for this report is in contained in **Appendix E**.

**Table 1:**
**Existing and Future Annual Usage of the San Francisco Bay Trail**

| | Existing | Future |
|---|---|---|
| Alameda | 11,977,267 | 19,962,112 |
| Contra Costa | 2,295,897 | 5,101,993 |
| Marin | 1,668,584 | 3,337,169 |
| Napa | 83,472 | 1,669,450 |
| San Francisco | 10,768,934 | 15,384,192 |
| San Mateo | 6,120,909 | 10,201,515 |
| Santa Clara | 3,801,137 | 10,860,392 |
| Solano | 1,109,135 | 2,772,837 |
| Sonoma | 67,563 | 1,351,251 |
| Total | 37,892,899 | 70,640,911 |

## 2.3. ENVIRONMENTAL RESTORATION AND EDUCATION

Ecological restoration of the San Francisco Bay shoreline and estuaries is a long-term undertaking that will require billions of dollars of public investment. An important part of this restoration effort is careful design of public access in order to provide people with the opportunity to see and appreciate the return of greater numbers of bird, animal and aquatic species to areas where they once teemed. The Bay Trail Project is working closely with many of the wildlife management and other agencies to create these opportunities now and in the future. As a result of these restoration projects, the alignment of the trail may change in order to accommodate the shifting shoreline. Current examples of joint ecological restoration and public access projects in planning stages or under construction include:

- Hamilton Wetlands Restoration will include 2.66 miles of new Bay Trail that will connect to an existing 5 miles of Bay Trail to the south at Las Gallinas Valley Sanitary District and McInnis Park in San Rafael
- The Bel Marin Keys Unit V restoration project will create approximately one mile of new Bay Trail

San Francisco Bay Trail, Ravenswood, San Mateo County
*Image Credit*: San Francisco Bay Trail Project

- The Sonoma Baylands restoration will result in approximately .75 miles of new Bay Trail, and is currently under construction
- The Sears Point restoration will include approximately 2.4 miles of new Bay Trail, including a visitor center and interpretive displays addressing the topic of wetland restoration. The Sears Point project will directly connect with Sonoma Baylands, together creating over 5 miles of new Bay Trail where the previous alignment had been inland and on-street
- The South Bay Salt Ponds encompasses planning and development of new public access to 15,100 acres of former salt ponds in South San Francisco Bay.

The Bay Trail also provides direct, experiential educational opportunities in the bay environment, focusing on ecological restoration, land use planning, Bay Area history and many other aspects of San Francisco Bay ecology, history and culture. The accessible nature of multi-use trail environments allows trail users to view restoration efforts first-hand. The ability to experience the restoration may engender further support for Bay Trail completion efforts as residents become personally invested in the well being of the Bay.

Because the Bay Trail is located near environmentally sensitive areas, the Bay Trail Project and partner agencies have undertaken a major study to begin to assess potential wildlife impacts associated with public access to these areas. *The San Francisco Bay Trail Wildlife & Public Access Study*, funded by The Bay Trail Project, BCDC and other sponsors, is a benchmark study in this field. After two years of research, preliminary findings of this study suggest there is no clear connection between the abundance and diversity of shore birds and waterfowl using mudflat foraging habitat adjacent to the Bay Trail and levels of trail use. Research on this issue will continue, and lessons learned relating to the design and operation of the Bay Trail will be incorporated into existing and future projects as appropriate.

## 2.4. COMMUNITY HEALTH

Studies by the National Institutes of Health (NIH) and other organizations increasingly point to the sedentary lifestyle of Americans as a primary reason for the epidemic of obesity. The Bay Trail provides an important resource for Bay Area residents to start and maintain an active lifestyle, especially in our dense central cities. The Bay Trail is unique in that it is close to residential neighborhoods, employment centers, schools and parks, is generally level, and provides an aesthetic experience for users. All of these elements make the Bay Trail an important tool to encourage Bay Area residents to exercise on a regular basis. While difficult to quantify, it is known that increased activity results in lower short and long term medical costs.

## 2.5. EQUAL ACCESS TO OPEN SPACE

As the Bay Area region continues to gain population, efforts are being made to acquire and preserve open space, with notable success in areas like Marin, Sonoma, Alameda, and other counties. This trend continues through efforts of well-established privately funded land trusts in San Mateo, Napa and other counties.

However, residents of many older Bay Area cities continue to have limited access to regional open spaces that are often located in the hills and more remote coastal areas. As an example, in his analysis of equity of access to open space, Daniel Press concludes that open space in Santa Clara County is primarily concentrated in the "hilly, wooded west side of the valley [with] many of the wealthiest and whitest communities." He observes that Santa Clara County's poorest residents are often far from any "parks or other open spaces larger than playing fields."[3]

Completion of the Bay Trail system holds tremendous opportunity to knit together underutilized Bay shore park facilities, improve access through connector trails, and provide access to communities residing close to the Bay, yet historically cut off from this resource by private land ownership, industrial activity, and transportation infrastructure.

## 2.6. ECONOMIC VITALITY

Trails and bikeways are not normally considered an economic factor in the San Francisco Bay Area. However, several facts point to the Bay Trail playing a significant undocumented role in supporting the Bay Area economy. First, Bay Trail segments around the region are often some of the most heavily used

[3] Daniel Press, *Saving Open Space* (University of California Press, Berkeley, 2002) 133.

recreational facilities – on par with national and regional parks – and play an important role in the tourism economy.

Second, the Bay Trail links numerous major regional destinations. For example, the Embarcadero in San Francisco links Fisherman's Wharf, Pier 39, the Ferry Building, the San Francisco Giant's Ball Park, and many other waterfront activity areas. Third, even assuming a very low expenditure per Bay Trail trip, the Bay Trail generates an estimated $190 million per year (see Table 2) for businesses near the trail.[4] Finally, the Bay Area's economic vitality is directly linked to its ability to attract and retain high quality workers. The Bay Trail is one of the key components that make the Bay Area 'livable' with one of the highest concentrations of outdoor recreational opportunities in the country.

**Table 2: Projected Expenditures by San Francisco Bay Trail Users July 2005**

| | Annual Expenditures |
|---|---|
| Alameda | $59,886,335 |
| Contra Costa | $11,479,484 |
| Marin | $8,342,922 |
| Napa | $417,362 |
| San Francisco | $53,844,672 |
| San Mateo | $30,604,545 |
| Santa Clara | $19,005,685 |
| Solano | $5,545,674 |
| Sonoma | $337,813 |
| **Total** | **$189,464,493** |

[4] It is estimated that Bay Trail users spend an average of $5 per visit on supplies, food, fuel, lodging, and other items. Estimates of expenditures are based on several studies of average expenditures by trail users. The single most important source for the expenditure data is the Appalachian Trail in 2000 (Use and Users of the Appalachian Trail: A Source Book). Other sources include the International Mountain Bicycling Association (IMBA), Association of Bicycle and Pedestrian Professionals (Bicycle and Pedestrian National Clearinghouse), and the Office of Business, Economic Development, and Tourism (DBED&T). Expenditure data from these sources has been customized to reflect conditions in the San Francisco Bay Area and on the Bay Trail. Nationally, average daily expenditures for day hikers is $10, mountain bicyclists $20, and bird watchers is $10. Given the proximity of the Bay Trail to neighborhoods and the number of shorter trips, we have estimated $5/visit rather than the higher $10+ amounts. While many shorter trips on the Bay Trail by nearby residents may not generate significant expenditures, other sections of the Bay Trail heavily used by regional, national, and international visitors would generate substantially more than $5/day.

# 3. THE FIRST 15 YEARS

## 3.1. ESTABLISHMENT OF THE BAY TRAIL PLAN AND PROJECT

San Francisco Bay Trail, Coyote Hills Regional Park, Alameda County
*Image Credit*: Ron Horii

In 1987, then-State Senator Bill Lockyer created a vision for a "Ring Around the Bay," a hiking and bicycling trail that would encircle the shoreline of San Francisco and San Pablo Bays. To fulfill his vision, Senator Lockyer authored Senate Bill 100 (SB 100) that was passed into California law in 1987 with the endorsement of the entire Bay Area legislative delegation. SB 100 authorized the Association of Bay Area Governments (ABAG) to "develop and adopt a plan … for a continuous recreational corridor which will extend around the perimeter of San Francisco and San Pablo Bays." SB 100 outlined that the plan would include a specific bicycling and hiking trail alignment; connections to parks and other recreational facilities; links to existing and proposed public transportation facilities; an implementation and funding program for the trail; and provisions for implementing the trail without adversely affecting the natural environment of the Bay. This plan became known as the Bay Trail Plan.

The Bay Trail Plan was developed over a two-year period by an ABAG advisory committee that included representatives from a broad range of interests, including Federal, State, regional and local government agencies, environmental and recreational organizations and private landowners. In July 1989, the Bay Trail Plan along with its policies, proposed trail alignment, and implementation and financing strategies was adopted by the ABAG Executive Board. The policies in the Bay Trail Plan focus on trail alignment, trail design, environmental protection, transportation access and an implementation program to guide the selection and design of future trail routes.

Since its inception, the Bay Trail Plan has enjoyed widespread support in the Bay Area. The Plan continues to guide the development of the Bay Trail today.

### The Bay Trail Project

To implement the Bay Trail Plan and its provisions, the San Francisco Bay Trail Project (Bay Trail Project) was created in 1990 as a nonprofit organization administered by ABAG. The mission of the Bay Trail Project is to plan, promote, and advocate for the implementation of the Bay Trail. To carry out its mission, the Bay Trail Project administers grant funds for trail planning, design and construction; participates in local and regional planning efforts by encouraging consistency with the adopted Bay Trail Plan; educates the public and decision-makers about the merits and benefits of the Bay Trail; produces maps and other materials to publicize the Bay Trail; and disseminates information about the progress of its development.

Today, the Bay Trail Project is staffed by four full-time employees. It is governed by a 43-member volunteer board of directors representing a broad range of interests and a steering committee that meets regularly to guide project direction. The Bay Trail Project continues to strive towards the vision of a continuous "Ring Around the Bay" through its Bay Trail grants, government and community partnerships, public outreach and planning efforts such as the Bay Trail Gap Analysis Study.

## 3.2. COMPLETING THE REMAINING BAY TRAIL GAPS

When the concept of the Bay Trail was developed in the late 1980s, there were approximately 180 miles of shoreline trail in use by the public. Since then, close to 100 more miles have been completed. Along the way, the Bay Trail Project and its partners have achieved: (1) greater than fifty percent completion of the total planned system; (2) increased local adoption of the Bay Trail concept through General Plans and other planning documents; (3) state funding for the Project; (4) agency and organizational partnerships; and, (5) increased public awareness and use of the trail.

A combination of forces including increased funding, recent emphasis on bay restoration, and the need for increased access to the shoreline, is moving the Bay Trail forward with increasing momentum. Of the 500 planned Bay Trail miles, 270 miles are now open to the public. The map located at the end of the report provides an overview of the completed Bay Trail.

As can be seen on the overview map at the beginning of the report ("Current View"), much of the Bay Trail development in the past has been in San Francisco, San Mateo, Alameda, Contra Costa, and Marin Counties. Physical and environmental constraints in the North Bay have limited Bay Trail development in Sonoma and Napa Counties, however, upcoming projects such as the Sonoma Baylands, Sears Point Restoration, Napa Sonoma Marsh and Wetlands Edge Trail in American Canyon are representative of increasing progress toward Bay Trail implementation in the North Bay.

### Local Adoption

In 1990, the initial task of the Bay Trail Project was to conduct outreach and gather support from local agencies and the public for completion of the trail. Over time, this successful early project work resulted in official support from the majority of shoreline communities. The nine counties and 47 cities have officially recognized the Bay Trail by adopting the alignment in local plans or passing resolutions in support of the concept. This in turn has resulted in local agencies requiring easements for and construction of the Bay Trail when new developments occur, and has focused implementation efforts on closing Bay Trail gaps.

### State Funding and Support

The California State Legislature has also been very supportive of the project. In 1997, the Bay Trail Project received its first grant from the state general fund in the amount of $200,000. Since then, the project has received four more appropriations totaling $15 million ($1 million, $2.5 million, $7.5 million from Proposition 12 and $3.8 million from Proposition 40) in the form of general fund dollars or from statewide park bonds. Bay Trail staff serves as the administrative lead for allocation of grants to local jurisdictions and the grants are matched with other sources of funding. Bay Trail has worked closely with the State Coastal Conservancy to award grants under the two most recent appropriations. The Bay Trail grant program has awarded over 70 planning and construction grants to communities in all nine counties. These projects have resulted in over 35 miles of trail construction, new shoreline destination areas, interpretive signs, trail amenities as well detailed planning analysis for over 95 miles, a crucial first step

**Table 3: Bay Trail Funding 1997-2005**

| Source | Amount |
|---|---|
| State Legislature | $200,000 |
| State Legislature | $1,000,000 |
| State Legislature | $2,500,000 |
| Proposition 12 | $7,500,000 |
| Proposition 40 | $3,800,000 |
| Total | $15,000,000 |

for trail construction. Table 4 illustrates specific funding allocations to the Bay Trail Project since its inception.

### Partnership Building

The Bay Trail Project has built an extensive network of agency and organizational partnerships. The Bay Trail Project is a small organization with a small budget in the context of a major metropolitan region of large geographic scope. The broad working relationships maintained by Bay Trail staff expand the effectiveness of the organization, leveraging their existing administrative funding to create a much larger group of Bay Trail advocates within the public, private and nonprofit sectors. These partnerships have been instrumental in bringing about many of the ideas and strategies leading to trail development in areas of complex property ownership, land use, environmental regulatory jurisdiction and public interest. A exhaustive list of Bay Trail Project partner relationships is too long to include in this study, but the core group of federal, State, regional, local and advocacy organizations is presented here to provide evidence of the breadth of these associations:

#### Federal

- National Park Service, Golden Gate National Recreation Area
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service (USFWS)
  - San Francisco Bay National Wildlife Refuge, San Pablo Bay National Wildlife Refuge

#### State

- California Legislators
- State Coastal Conservancy
- San Francisco Bay Conservation and Development Commission (BCDC)
- California Department of Parks and Recreation (California State Parks)
  - The Bay Trail spine passes through three state parks: China Camp State Park, Benicia State Recreation Area, Candlestick Point State Recreation Area
- California Department of Transportation (CalTrans)
- California Department of Fish & Game

#### Regional

- Metropolitan Transportation Commission (MTC)
- San Francisco Bay Regional Water Quality Control Board
- Golden Gate Bridge, Highway and Transportation District
- East Bay Regional Park District
- Marin County Open Space District
- Mid-Peninsula Regional Open Space District
- Bay Area Open Space Council

#### Local

- Nine counties
- County Congestion Management Agencies and Transportation Authorities

- Forty-seven cities
- Parks and Recreation, Public Works, Planning Departments, Water Districts, Land Trusts, Ports
- Local Elected Officials
- Flood Control Districts

### Advocacy Organizations

- Trail Organizations
- Bicycle Coalitions
- Land Use Organizations
- Pedestrian Advocates
- Environmental Organizations
- Open Space Groups

### Private Land Ownership Development

### Increased Public Awareness

### Media Coverage

Since its inception in 1990, the Bay Trail Project has gained public awareness, in part through increased media coverage of the project. In 2003, both the San Francisco Chronicle and the Bay Area CBS affiliate, KPIX, produced features on the Bay Trail. The Chronicle series, entitled "Bay Trail Adventure" recounted the experience of Chronicle reporters and photographers on a month long trek around the Bay, on bike or foot along the existing Bay Trail segments and by boat, transit or car across the gaps. The series covered the origins of the Bay Trail, the construction process, and the remaining gaps in the Trail. The Chronicle coverage of the Bay Trail provided an overview of the scale of the project, noting that the trail:

San Francisco Chronicle Web-Based Bay Trail Guide
***Image Credit***: www.sfgate.com

- Connects all nine Bay Area counties;
- Links 10 ferry terminals;
- Links 47 cities or towns; and,
- Links 130 parks or wildlife preserves encompassing 57,000 acres of open space.

The series highlighted the educational opportunities along the Bay Trail, particularly for school children. Detailed profiles of existing trail segments also reviewed the specific issues associated with them,

including conflicts between dog walkers and bird watchers in the East Bay. This invaluable public information is now maintained on the San Francisco Chronicle website, www.sfgate.com.

## Recent Project Successes

Specific project examples illustrate best the significant accomplishment of the Bay Trail Project over its 15 year history. The projects presented below encapsulate the many challenges that present themselves when developing new public access to the San Francisco Bay shoreline. The myriad of land ownership negotiations, engineering, and coordination challenges make construction of each Bay Trail segment unique. The following projects illustrate recent accomplishments and successful responses to the challenges of urban trail development.

## Land Ownership Challenges

### Sunnyvale Baylands Park – Lockheed Reach

The Bay Trail in Sunnyvale illustrates the importance of partnerships in constructing trail on private land. In cooperation with Cargill Salt and Lockheed Martin, the City of Sunnyvale opened one mile of new Bay Trail along an existing levee in June 2001. Formal license agreements with the two property owners enabled the city to take down fences and open this segment of trail to the public. The project extends 2.7 miles of Bay Trail in Sunnyvale Baylands Park for recreation and provides new access to Lockheed property for employees.

The Bay Trail in Sunnyvale provides direct access to Sunnyvale Baylands Park and the Lockheed office complex near Moffett Field.
***Image Credit***: San Francisco Bay Trail Project

### Damon Slough Bridge, Oakland

After many years of negotiation for use of an abandoned railroad right-of-way, in October 2004 the East Bay Regional Park District completed a long-standing gap in the Bay Trail with the retrofit of the Damon Slough railroad bridge. This short but critical gap links existing Bay Trail to the north in Martin Luther King, Jr. Regional Shoreline with trail to the south along Arrowhead Marsh resulting in over 5 continuous miles of shoreline trail. This segment also provides access to a new job center in the Oakland Airport area. Acquisition of the property was made possible through collaboration and license agreements with the Port of Oakland and the City of Oakland.

The Damon Slough railroad bridge is a key link in the Martin Luther King, Jr. Regional Shoreline trail system.
***Image Credit***: San Francisco Bay Trail Project

## Engineering Challenges

### Bridgeway Bike Lanes, Sausalito

In September 2003, the City of Sausalito celebrated the completion of two miles of bike lanes on Bridgeway Avenue through downtown Sausalito. The bike lanes extend from Princess Street to the northern city limits along a popular segment of the Bay Trail. The striped bike lanes separate motor vehicles from bicycle traffic and improve safety along this busy corridor, which has been estimated by the Golden Gate Bridge District to accommodate as many as 5,000 bicyclists per day. In order to complete this project, the center median was narrowed to accommodate 5-foot striped bike lanes and improved sidewalks.

The Bridgeway bicycle lanes in Sausalito filled a critical gap in one of the most highly used on-street segments of the Bay Trail.

### Alfred Zampa Memorial Bridge

The recently completed 12-foot wide bicycle and pedestrian path on the west side of the new Alfred Zampa Memorial Bridge provides an important Bay Trail link for recreation and an option for alternative commuting between Solano and Contra Costa counties. Prior to construction, bicyclists and pedestrians were required to take a bus shuttle service across the Strait.

The Alfred Zampa Memorial Bridge pathway spans the Carquinez Strait.
***Image Credit***: San Francisco Bay Trail Project

### Benicia State Recreation Area

In September 2003, California State Parks constructed 2 new miles of trail in Benicia State Recreation Area along the edge of the park's western hills offering expansive views of the Strait. The path is ADA accessible and required careful placement on steep slopes to avoid erosion and destabilization. A wider alternative bicycle path was also constructed inland from the shoreline.

The Benicia State Recreation Area trail offers expansive views of the Carquinez Strait.
***Image Credit***: San Francisco Bay Trail Project

# 4. THE NEXT 15 YEARS

This chapter provides an overview of the methodology used to develop the required information for this report, such as identification of gaps, assignment of project categories, development of cost estimating tools, and development of a phasing chart. The objective is to provide regional and local agencies with guidance on those segments that can be completed in the short, mid, and long term, and the cost to complete those segments.

## 4.1. CLASSIFICATION AND EVALUATION PROCESS

The trail segments analyzed in this study are based on the alignment identified in the Bay Trail Plan. However, since the Plan was adopted, the alignment has changed and will continue to shift in response to new opportunities to meet the goals of placing the Bay Trail as close to the shoreline as possible. The data collected for this Gap Analysis Study will be used as a tool to implement the goals identified in the Bay Trail Plan.

As background for this report, The Bay Trail Project initiated a GIS-based mapping effort with Green Info Network (GIN) to identify and number Bay Trail gap segments. A series of maps (see sample map on following page) were produced showing each gap with a related segment number. Over 300 gaps were initially identified, and Bay Trail staff was able to provide detailed information for over half of those gaps. For those gaps that the Bay Trail staff had minimal information for, a questionnaire and high-quality map showing the relevant segment was sent to the appropriate jurisdiction. The response rate was high—approximately 80%. The questionnaires asked what type of obstacles to implementation existed for each gap—private land ownership, habitat concerns, funding, security, safety, liability, and other factors affecting project design, funding and implementation (A transcript of survey questions is included in this document as **Appendix D**).

The photographs depict some examples of the types of obstacles to implementation that this study refers to: physical and financial constraints, land use constraints, and security, safety and liability constraints.

The services of a trail planning and engineering team (Alta Planning + Design and Questa Engineering) were enlisted to review the survey responses, develop accurate and consistent cost estimates, and prioritize segments. The Bay Trail segments were numbered in the following series sequence, by county.

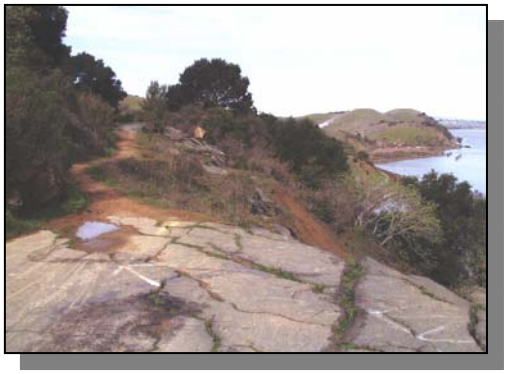
- San Francisco = 1000
- San Mateo = 2000
- Santa Clara = 3000
- Alameda = 4000
- Contra Costa = 5000
- Solano = 6000
- Napa = 7000
- Sonoma = 8000
- Marin = 9000

Segment 8014 in Sonoma County fell into the land use constraints category as a security or operational restriction.

***Image Credit:*** The San Francisco Bay Trail Project

The segments are numbered sequentially starting at the Golden Gate Bridge and moving southward around the south end of the San Francisco Bay, up the East Bay shoreline, around the North Bay (Carquinez Straights, San Pablo Bay), and south again through Marin to the Golden Gate Bridge. The definition of an individual segment was

based upon several factors, including jurisdictional boundaries. The objective was to ensure that each segment could be planned, designed, funded, and constructed as a stand-alone project. In some cases, segments could be combined as appropriate by a local agency. The division of gaps into shorter segments based on these and other factors has greatly contributed to the accuracy of the cost estimates and prioritization that forms the basis of the 5, 10 and 15 year implementation plans presented below.



Segment 5080 on Carquinez Scenic Drive in Contra Costa County is a good example of a physical and financial constraint. The slope failure shown here is a physical constraint, while the funds required to fix it represent a financial constraint.
***Image Credit*** :The San Francisco Bay Trail Project

Segment 3029 is another example of a land use constraint involving security and operational issues, as well as safety and liability concerns.
***Image Credit:*** The San Francisco Bay Trail Project

SAN FRANCISCO
BAY TRAIL

# San Francisco County

Completed Trail Segment
Proposed Trail Segment
Segment Break
County Lines

0 0.5 1 1.5 Miles

## 4.2. COST ESTIMATE METHODOLOGY

Developing accurate planning-level cost estimates for the remaining Bay Trail gaps is an important and challenging task. Cost estimates are typically developed as part of preliminary engineering and feasibility studies, and can involve numerous complex issues that can be difficult to ascertain. Estimates for the cost of implementation of trail sections were based on the Gap Analysis team's knowledge of trail and bikeway planning and engineering, knowledge of the specific gaps, limited site visits, and review of the corridors using high-resolution aerial photography to determine what type of trail construction would be needed (i.e., boardwalk, simple asphalt path, bridge, bike lanes, etc.). These estimates and their related per foot cost assumptions can be found in **Appendix A**. It is important to note that the costs in this report were not estimated to the level of detail as would be found in a feasibility study. They are meant to be used as a preliminary planning-level estimate only.

The cost estimating methodology can be broken down into two parts: (1) development and application of trail construction unit costs to each gap segment; and, (2) sorting of the gap segments into appropriate categories based on the likely source of funding and project sponsor.

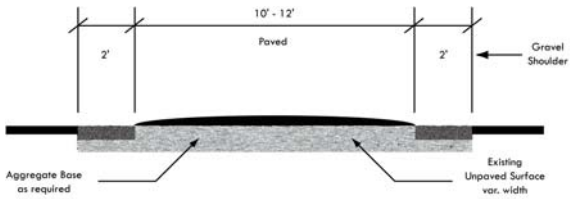
### Trail Construction Unit Costs

First, unit costs for all constituent elements of trail construction were developed and applied to the gap segments. These unit costs were developed using the current best available knowledge of costs for specific building materials, construction strategies, and design and permitting costs. Complete documentation and sourcing for these costs is provided in **Appendix B**.

### Trail Classification in the Cost Estimates

The San Francisco Bay Trail system is intended to be a multi-use pathway separate from vehicle traffic to the greatest extent feasible. As such, the cost estimates reflect this Bay Trail Plan goal. Wherever feasible, based on the analysis completed for this report, cost estimates reflect development of a multi-use pathway separate from streets, roadways and highways. Other gap segments that do not provide right-of-way or other environmental characteristics suitable to development of a multi-use path have cost estimates based on bicycle lanes, sidewalks, or signed bicycle routes. This detail is reflected in the cost estimating spreadsheets included in **Appendix C**. An example of cost estimate detail for a Class I Multi-Use Trail is shown in Figure 1. Gap segments were divided into appropriate project categories based on the likely source of funding.

**Figure 1: Example of Cost Detail for Class I Trail**

| Construction Type | General Requirements | Components | Cost/foot | Typical Section |
|---|---|---|---|---|
| Trail – Level Paved Surface | 1. Existing path, roadway or levee location requiring minor leveling/ grading<br>2. Aggregate Base and Paving for 12' trail width | a. Earthwork<br>b. Asphalt pavement with Aggregate Base 12 ft. wide<br>c. Pavement striping<br>d. Traffic Sign<br>e. Wayfinding Sign | $63.86 |  |

## Project Categories

Each of the Bay Trail gaps was assigned a project category, according to responsibility for implementation, and eligibility for public funding. Table 4 below shows the total cost associated with each project category. The Project Categories include:

### Planned Projects

Planned projects include those projects typically constructed with public funding. Lead agencies typically include cities, counties, park districts, and other agencies. Projects require the funding shown in this report, including design, regulatory review and construction. Cost estimates for projects with completed design or regulatory review are calculated appropriately.

This segment of the San Francisco Bay Trail in Marin County illustrates the separated multi-use trail standard given priority in all cost estimating for this analysis.
***Image Credit***: San Francisco Bay Trail Project

### Greenway, Promenade or Park Projects

Greenway, promenade or park projects incorporate a Bay Trail alignment as a portion of a large-scale project including greater landscape, park fixture or other urban amenities than a typical Bay Trail project. The Bay Trail component (trail facility) of larger estimated project budget is assumed to be 20% of total project cost.

### Private Land Ownership Development Project

This category includes projects assumed to be a condition of development, either by the local jurisdiction or by the San Francisco Bay Conservation and Development Commission's (BCDC) regulatory permitting process which requires shoreline public access. Such projects are not typically funded by the ABAG Bay Trail Project and are presented as a separate cost category. The timing of these projects is also dependent on the timing of the overall development project.

### Transportation Capital Project

These project costs are assumed to be incorporated in Caltrans or other transportation agency budgets as a non-motorized project share providing for bicycle and pedestrian access within a highway or other transportation corridor. Such projects are not typically funded by the ABAG Bay Trail Project and are presented as a separate cost category. The timing of these projects is also dependent on the timing of the overall transportation project.

**Table 4: Projected Cost of Bay Trail Completion, by Type of Project**

| PROJECT TYPE | COST |
|---|---|
| Planned | $175,000,000 |
| Greenway Promenade or Park | $13,000,000 |
| Private Land Ownership Development | $11,000,000 |
| Transportation Capital | $ 349,000,000 |
| TOTAL | $ 548,000,000 |

## 4.3. PROJECT PHASING

Understanding how remaining Bay Trail projects are likely to be sequenced over the next 15 years is crucial to the Bay Trail Project for staffing and funding needs. A phasing chart has been developed that breaks all of the remaining gaps into three (3) categories:

- Short-Term (1-5 years)
- Mid-Term (6-10 years) and,
- Long-Term (11-15 years).

Gaps were assigned to these three phasing categories based on assumptions about land ownership, engineering complexity, funding, sensitive habitats, and existing support for the Bay Trail at that location. These phasing criteria were identified because of their degree of influence on each potential project's timeline. The more obstacles, challenges, and higher cost, the more likely it was to fall into a later phase. The phasing chart identifies the *likely* sequencing of projects and funding needs over the next 15 years. In reality, many other factors influence how and when projects are moved through the planning, design, and construction process. Given this, the phasing chart represents an educated guess as to how projects will be developed in the region, and not a specific priority by which the Bay Trail project will score funding applications.

The purpose of evaluating and organizing Bay Trail gaps by phase is to identify future Bay Trail staffing and funding needs, and to help ensure that adequate resources are available over time to complete the Bay Trail. In order to understand how those needs will unfold over time, Bay Trail gaps were evaluated and sorted, and are presented here in short- (1-5 years), mid- (6-10 years), and long- (11-15 years) term groups of projects.

### Methodology

The evaluation process used a combination of factors to identify the likely timing of projects over the next 15 years, as described below in Table 5. Further phasing details are provided in **Appendix C.**

**Table 5: Description of Phasing Factors**

| Phasing Factors | DESCRIPTION OF PHASING FACTORS |
|---|---|
| | |
| Support in Local Plans (0-3 points) | Projects that have the support of local agencies are more likely to be implemented sooner than those that do not. Segments receive between 0 and 3 points, depending on level of support. |
| Degree of environmental impact/regulatory context (1-4 points) | Projects that have a potentially high impact on the local environment will take longer to implement due to the need to conduct CEQA/NEPA studies and obtain local permits and approvals. Segments receive between 1 and 4 points, with more points awarded to projects with a lesser degree of impact. |
| Status of property control/ownership (1-4 points) | Projects that require the purchase of easements or property are expected to take longer to implement than those that already have right-of-way secured. Segments receive between 1 and 4 points, with more points awarded to segments with property ownership amenable to trail alignment. |
| Preliminary design/needs identified (1-4 points) | Projects that have preliminary engineering and feasibility issues resolved will be completed sooner than projects that do not. Segments receive between 1 and 4 points, with more points awarded to segments further along in the preliminary design and engineering process. |
| Cost (0-13 points) | The higher the project cost, the more complex and time consuming the project will be to fund, plan, design, and construct. Segments receive between 0 and 13 points, with more points awarded to segments with a low average cost per foot and significant overall benefit. |

## Benefit Factors

Within each phasing category for each county, projects are listed according to their benefit score. The benefit score relates to factors that reflect a combination of Bay Trail goals (such as enhancing the shoreline experience) and projects that will benefit the most people possible (multi-use trails and creating longer, functional segments). Table 6 below presents the three benefit criteria.

**Table 6: Description of Benefit Factors**

| Benefit Factors | DESCRIPTION OF BENEFIT FACTORS |
|---|---|
| | |
| Distance of Continuity (1-6 points) | Gap closure that creates the greatest amount of continuous miles of Bay Trail receives highest points. New segments closing gaps between existing longer segments receive highest points, 5 to 6 points. New segments closing gaps between existing shorter segments, receives 3 to 4 points. New segment that adds distance at one end of existing segment without closing gap, receives 1 to 3 points. |
| Trail classification (I, II, III) (2-4 points) | Feasible Class I segment receives highest points (4), Class II receives up to (3) points if no feasible Class I exists, and Class III receives a maximum of (2) points if adequate lane width exists. |
| Shoreline experience/Proximity to Bay (1-3 points) | Segments providing trail users with the greatest opportunity for shoreline exposure and experience receive greatest points (3). |

# 5. BAY TRAIL PROJECTS BY PHASE

This chapter presents an implementation strategy to complete the San Francisco Bay Trail by 2020. Remaining gaps are identified and grouped according to expected phasing: Short-Term (1-5 years), Mid-Term (6-10 years) and Long-Term (11-15 years). Each phase identifies an estimated cost for projects that require funding exclusive of private development and major transportation projects. A review of typical implementation obstacles is provided, along with case studies of selected gap projects and recommended actions and strategies for local agencies to employ to complete gaps in their communities. The following maps present the existing and future San Francisco Bay Trail segments along with the segment numbers for all remaining gaps. Some gaps that are funded or currently under construction are shown on the maps but not included in the cost estimate sheets.

## 5.1. SHORT-TERM PROJECTS (YEARS 1-5)

The Short-Term (Years 1-5) projects consist of gaps that are expected to be funded and completed within the next five years due to a combination of project readiness, feasibility, cost and benefit. Since local project sponsors lead all projects, the actual timeline may differ from that being shown. In many cases these projects have completed feasibility studies prior to initiation of this report and the needs of the projects are well known. The implementation requirements for these projects range from the need for construction financing alone to a need for detailed feasibility analysis and design.

### Summary of Short-Term Projects

A summary of short-term project costs by county is shown in Table 7. As can be seen in the table, Alameda County has the greatest number of miles of short term projects to be completed. Although Contra Costa County has fewer miles of proposed trail to complete, the cost for these projects is significantly higher. A detailed breakdown by county, sorted by segment number, is presented in Table 8 on the following page.

**Table 7:**

**Summary of Short Term Bay Trail Project Costs by County[5]**

| County | Miles | Total Project Cost |
|---|---|---|
| San Francisco | 2.29 | $1,762,000 |
| San Mateo | 2.23 | $2,094,000 |
| Santa Clara | 3.90 | $1,374,000 |
| Alameda | 14.81 | $8,588,000 |
| Contra Costa | 12.57 | $21,788,000 |
| Solano | 9.14 | $1,485,000 |
| Napa | 6.90 | $1,772,000 |
| Sonoma | 9.88 | $2,624,000 |
| Marin | 9.19 | $2,527,000 |
| Total Short Term Project Costs | | $44,194,000 |

[5] Excludes private development and transportation projects.

## Table 8: Short-Term Projects by County and Benefit Rank

| SHORT-TERM PROJECTS | | | | | | | |
|---|---|---|---|---|---|---|---|
| Gap Segment Number | Jurisdiction | Location | Project Category | Gap Segment Length (Feet) | Project Type (Class) | Cost of Construction , Design, and Permitting | Benefit Rank |
| SAN FRANCISCO COUNTY | | | | | | | |
| 1001.0 | San Francisco | Marine Dr, between Golden Gate Bridge and Long Ave (Fort Point National Historic Site) | planned | 1900.5 | 2 | $24,065 | 8 |
| 1006.0 | San Francisco | Long Ave between the Bay and Lincoln Ave | planned | 1178.9 | 2 | $61,981 | 10 |
| 1008.0 | San Francisco | Lincoln Ave between Battery East parking lot and Long Ave | planned | 880.3 | 2 | $46,282 | 7 |
| 1020.0 | San Francisco | Cargo Way between Illinois Street Bridge and Heron's Head Park | planned | 3902.4 | 1 | $730,968 | 10 |
| 1026.0 | San Francisco | Candlestick Point State Recreation Area, Yosemite Slough | planned | 4206 | 1 | $898,633 | 8 |
| SAN MATEO COUNTY | | | | | | | |
| 2005.0 | South San Francisco | Southern boundary of Sierra Point | private development | 1833.2 | 1 | $179,608 | 11 |
| 2049.0 | Burlingame | Fisherman's Park | planned | 447 | 1 | $35,693 | 10 |
| 2056.0 | San Mateo | Coyote Point Park | planned | 1007.6 | 1 | $188,736 | 5 |
| 2057.0 | Burlingame | Beach Road between Airport Blvd and slough | planned | 1009.2 | 1 | $466,661 | 10 |
| 2058.0 | San Mateo | Coyote Point Park | planned | 670.2 | 1 | $53,515 | 7 |
| 2059.0 | San Mateo | Coyote Point Park | planned | 858.7 | 1 | $160,845 | 5 |
| 2060.0 | San Mateo | Coyote Point Park | planned | 748.7 | 1 | $59,784 | 9 |
| 2061.0 | San Mateo | Coyote Point Park | planned | 1064.7 | 1 | $199,432 | 5 |
| 2062.0 | San Mateo | Coyote Point Park | planned | 1655.6 | 1 | $132,200 | 5 |
| 2063.0 | San Mateo | Coyote Point Park | planned | 667.8 | 1 | $53,324 | 7 |
| 2091.0 | Menlo Park | University Ave between Bayfront Hwy and railroad tracks | planned | 1863.1 | 1 | $300,000 | 8 |
| 2096.0 | East Palo Alto | PG+E parcel | planned | 1804.3 | 1 | $443,504 | 9 |
| SANTA CLARA COUNTY | | | | | | | |
| 3014.0 | San Jose | Los Esteros Rd from Spreckles Ave to Zanker Rd | planned | 9431.1 | 1 | $453,697 | 4 |
| 3017.0 | San Jose | Spreckles between Los Esteros Rd and State St | planned | 1636.8 | 1 | $324,538 | 7 |
| 3021.0 | San Jose | Between Zanker Rd and Coyote Creek | planned | 3786.3 | 1 | $290,152 | 7 |
| 3025.0 | San Jose | Gold St between Alviso County Park and State St | planned | 2252.3 | 2 | $29,661 | 6 |
| 3028.0 | San Jose | West edge of Coyote Creek between Hwy 237 and Zanker Rd | planned | 3460.9 | 1 | $276,266 | 5 |

| SHORT-TERM PROJECTS | | | | | | | |
|---|---|---|---|---|---|---|---|
| Gap Segment Number | Jurisdiction | Location | Project Category | Gap Segment Length (Feet) | Project Type (Class) | Cost of Construction , Design, and Permitting | Benefit Rank |
| ALAMEDA COUNTY | | | | | | | |
| 4008.0 | Fremont | Boyce from Stevenson to Auto Mall | planned | 6118.4 | 1 | $20,573 | 7 |
| 4022.0 | Fremont | Paseo Padre between Jarvis and Ardenwood Blvd | planned | 11880 | 3 | $25,097 | 7 |
| 4028.0 | Union City | Union City Blvd from Smith St to Alameda Creek Trail | planned | 12988.8 | 3 | $27,439 | 7 |
| 4046.0 | San Leandro | Neptune Dr from Oyster Bay Regional Shoreline to Marina Blvd | planned | 3220.8 | 2 | $10,830 | 3 |
| 4049.0 | San Leandro | San Leandro Slough crossing | planned | 897.6 | 1 | $2,188,000 | 13 |
| 4063.0 | Alameda | Fernside between Encinal Ave and Washington St | greenway/promenade/park | 1108.8 | 1 | $88,510 | 9 |
| 4078.0 | Oakland | Oakland Waterfron Pathway-Alameda Ave. | greenway/promenade/park | 792 | 1 | $60,475 | 10 |
| 4080.0 | Alameda | Buena Vista between Grand and Fruitvale Bridge | greenway/promenade/park | 7708.8 | 1 | $16,249 | 8 |
| 4084.0 | Alameda | Paden School | greenway/promenade/park | 739.2 | 1 | $72,553 | 8 |
| 4085.0 | Alameda | 4th St between Ballena Blvd and Central | planned | 792 | 2 | $10,029 | 4 |
| 4090.0 | Alameda | Central Ave between Main St and Crown Dr | planned | 2956.8 | 2 | $37,440 | 8 |
| 4091.0 | Alameda | Main St access to Alameda Park | planned | 1584 | 1 | $126,482 | 7 |
| 4100.0 | Alameda | Alameda Beltline between Grand and Sherman | greenway/promenade/park | 2798.4 | 1 | $7,722 | 10 |
| 4104.0 | Oakland | Oakland Waterfront Pathway - Cryer Site | greenway/promenade/park | 528 | 1 | $265,638 | 9 |
| 4105.0 | Alameda | Alameda Beltline between California and Constitution Way | greenway/promenade/park | 4276.8 | 1 | $834,086 | 5 |
| 4106.0 | Alameda | Alameda Beltline between Webster St and Constitution Way | greenway/promenade/park | 475.2 | 1 | $38,313 | 5 |
| 4107.0 | Oakland | Oakland Waterfront Pathway - Skateboard Park | greenway/promenade/park | 844.8 | 1 | $182,053 | 11 |
| 4108.0 | Alameda | Atlantic Blvd between Main St and Webster St | greenway/promenade/park | 4329.6 | 1 | $468,345 | 9 |
| 4116.0 | Oakland | Oakland Waterfront Pathway - Brooklyn Basin | greenway/promenade/park | 1267.2 | 1 | $534,568 | 12 |
| 4120.0 | Alameda | Main St from linear park to Alameda Ferry Terminal | planned | 1108.8 | 1 | $88,538 | 9 |
| 4151.0 | Berkeley | Berkeley Marina South of Shorebird Park | planned | 897.6 | 1 | $314,083 | 9 |
| 4152.0 | Berkeley | Berkeley Marina along Seawall Dr between Southern tip to University Ave | planned | 844.8 | 1 | $295,608 | 8 |
| 4155.0 | Berkeley | Berkeley Marina along Seawall Dr from northern tip to University Ave | planned | 1636.8 | 1 | $572,740 | 8 |

| SHORT-TERM PROJECTS | | | | | | | |
|---|---|---|---|---|---|---|---|
| Gap Segment Number | Jurisdiction | Location | Project Category | Gap Segment Length (Feet) | Project Type (Class) | Cost of Construction , Design, and Permitting | Benefit Rank |
| 4156.0 | Berkeley | Berkeley Marina along University between Marina Dr and Horseshoe Park | planned | 1214.4 | 1 | $424,936 | 8 |
| 4157.0 | Berkeley | Berkley Marina inlet from Horseshoe Park to northern tip | planned | 950.4 | 1 | $332,559 | 8 |
| 4158.0 | Berkeley | Berkeley Marina to University Ave frontage Rd | planned | 1742.4 | 1 | $609,691 | 10 |
| 4159.0 | Berkeley | Berkeley Marina Eastern edge | planned | 2164.8 | 1 | $757,495 | 10 |
| 4166.0 | Albany | Buchanan St to Albany Bulb | planned | 2323.2 | 1 | $178,087 | 10 |
| CONTRA COSTA COUNTY | | | | | | | |
| 5006.0 | Richmond | Pt Richmond Shores | private development | 3275 | 1 | $251,048 | 13 |
| 5008.0 | Richmond | Ford Assembly Plant | greenway/promenade/park | 1108.8 | 1 | $552,220 | 10 |
| 5012.0 | Richmond | Shipyard 3 | planned | 7128 | 1 | $750,352 | 8 |
| 5012.1 | Richmond | Seacliff Marina Development | private development | 1378.3 | 1 | $132,415 | 10 |
| 5017.0 | Richmond | Hall Ave between Harbor Way and Marina Way | planned | 1108.8 | 1 | $221,705 | 9 |
| 5022.0 | Richmond | Harbor Way, from Wright Ave to Ford Assembly Plant | private development | 3907.2 | 1 | $817,994 | 7 |
| 5030.0 | Richmond | Tewksbury between Garrard and Marine | planned | 3854.4 | 2 | $412,382 | 7 |
| 5031.0 | Richmond | From Marine/Tewksbury to Long Wharf | planned | 2376 | 1 | $4,140,000 | 4 |
| 5032.0 | Richmond | Between Long Wharf to Toll Plaza | planned | 1267.2 | 1 | $4,140,000 | 8 |
| 5036.0 | Richmond | Pt San Pablo Peninsula between bridge toll plaza to Point Molate Beach | planned | 6652.8 | 1 | $925,417 | 8 |
| 5038.0 | Richmond | Pt San Pablo Peninsula between Point Molate Beach and Pt Molate | private development | 1425.6 | 1 | $148,886 | 8 |
| 5043.0 | Richmond | West County Wastewater Treatment Plant | planned | 1056 | 1 | $224,900 | 8 |
| 5045.0 | Richmond | West County Wastewater Treatment Plant - along ponds | planned | 1689.6 | 1 | $224,900 | 8 |
| 5048.0 | Richmond | West County Wastewater Treatment Plant - along southern edge of San Pablo Creek | planned | 1425.6 | 1 | $224,900 | 8 |
| 5049.0 | Richmond | West County Wastewater Treatment Plant | planned | 1478.4 | 1 | $224,900 | 8 |
| 5052.0 | Richmond | Goodrick Ave from Richmond Pkwy to Rheem Creek | planned | 1689.6 | 1 | $444,084 | 7 |
| 5053.0 | Richmond | Spur trail to EBRPD spit from Rheem Creek | planned | 3443.8 | 1 | $846,500 | 8 |
| 5053.1 | Richmond | Freethy Blvd along edge of gun club | private development | 2702.5 | 1 | $375,925 | 8 |
| 5054.0 | Richmond | Between Rheem Creek and Giant Marsh | planned | 5280 | 1 | $2,146,744 | 8 |
| 5058.0 | Richmond | Pt. Pinole to Atlas connection | planned | 2827.6 | 1 | $577,074 | 6 |

| SHORT-TERM PROJECTS | | | | | | | |
|---|---|---|---|---|---|---|---|
| Gap Segment Number | Jurisdiction | Location | Project Category | Gap Segment Length (Feet) | Project Type (Class) | Cost of Construction , Design, and Permitting | Benefit Rank |
| 5059.0 | Richmond | Bruener Marsh Segment | planned | 11675.9 | 1 | $1,980,161 | 8 |
| 5060.0 | Richmond | Pt. Pinole to Pt. Wilson along railroad corridor | planned | 3069.2 | 1 | $670,949 | 8 |
| 5078.2 | Martinez | Railroad corridor between Nejedly Staging area and Berrellssa St | planned | 1571.5 | 1 | $235,458 | 6 |
| 5076.0 | Martinez | Approach to Nejedly along Carquinez Scenic Dr, Talbart St and Escobar St | planned | 3612.4 | 3 | $7,541 | 4 |
| 5081.2 | Hercules | Biorad | planned | 2117.7 | 1 | $396,619 | 12 |
| 5086.0 | Rodeo | Lone Tree Point Regional Shoreline | planned | 2564.2 | 1 | $543,354 | 7 |
| 5098.0 | Richmond | Canal Boulevard Gap | planned | 465 | 1 | $171,347 | 8 |
| SOLANO COUNTY | | | | | | | |
| 6006.0 | Benicia | 5th St between H St to Military East | planned | 1692.5 | 1 | $36,144 | 5 |
| 6006.1 | Benicia | 5th St between Marina and H St | planned | 1130.4 | 1 | $32,034 | 6 |
| 6007.0 | Benicia | private self storage facility at 7th St/L St intersection | planned | 808.6 | 1 | $159,905 | 5 |
| 6008.0 | Benicia | Park Rd between bridge approach and Jefferson | planned | 1162.6 | 1 | $147,605 | 7 |
| 6008.1 | Benicia | Park Rd to Jefferson | planned | 413.3 | 1 | $41,793 | 5 |
| 6008.2 | Benicia | Jefferson St between Park Rd and Military East | planned | 543.8 | 1 | $8,864 | 5 |
| 6008.3 | Benicia | Military East between Jefferson and 7th St | planned | 765.9 | 1 | $5,673 | 5 |
| 6008.4 | Benicia | Military East between 5th St and 7th St | planned | 1563.9 | 1 | $32,471 | 5 |
| 6014.0 | Vallejo | Dirt road west of Glen Cove Waterfront Park | planned | 924.9 | 1 | $23,818 | 6 |
| 6015.1 | Vallejo | Eastern edge of Elliot Cove | planned | 1029.7 | 1 | $46,509 | 10 |
| 6015.2 | Vallejo | West of Marina Estates | planned | 300.5 | 1 | $32,738 | 7 |
| 6015.3 | Vallejo | Stairs at foot of Stinson St | planned | 78.8 | 1 | $30,030 | 7 |
| 6015.4 | Vallejo | Between Stinson St and Timber Cove | planned | 532.2 | 1 | $36,628 | 7 |
| 6015.5 | Vallejo | Between Timber Cove and Clearview | planned | 629.9 | 1 | $41,460 | 6 |
| 6015.6 | Vallejo | West of Clearview | planned | 238.4 | 1 | $17,171 | 6 |
| 6015.7 | Vallejo | West of Clearview | planned | 640.4 | 1 | $17,315 | 6 |
| 6015.8 | Vallejo | Approach to Bayside Terrace | planned | 373.9 | 1 | $26,448 | 6 |
| 6015.9 | Vallejo | Trail turn at Bayside Terrace | planned | 177.9 | 1 | $7,565 | 5 |
| 6016.2 | Vallejo | Regatta Dr and around Glen Cove Pkwy | planned | 4772.4 | 1 | $49,721 | 3 |
| 6023.0 | Vallejo | Sonoma Blvd between Sandy Beach Rd and Chestnut St | planned | 5432.2 | 1 | $69,136 | 5 |
| 6023.1 | Vallejo | Sonoma Blvd between Chestnut St and Curtola Pkwy | planned | 3589.3 | 1 | $4,793 | 5 |

| SHORT-TERM PROJECTS | | | | | | | |
|---|---|---|---|---|---|---|---|
| Gap Segment Number | Jurisdiction | Location | Project Category | Gap Segment Length (Feet) | Project Type (Class) | Cost of Construction , Design, and Permitting | Benefit Rank |
| 6023.2 | Vallejo | Curtola Pkwy between shoreline trail and Sonoma Blvd | planned | 1129.4 | 1 | $143,351 | 6 |
| 6031.0 | Vallejo | Sonoma Blvd from Marine World Pkwy to Meadows Dr | planned | 3431.8 | 1 | $121,587 | 5 |
| 6032.0 | Vallejo | Marine World Pky, along Broadway St to Ventana Dr | planned | 7037.4 | 1 | $286,511 | 5 |
| 6034.0 | Vallejo | Meadows between Hwy 29 and Broadway | planned | 746.7 | 1 | $52,718 | 5 |
| 6035.0 | Vallejo | Meadows Drive from Azalea Ct to Sonoma Blvd | planned | 3921.4 | 1 | $5,849 | 5 |
| 6036.0 | Vallejo | Meadows Drive from Catalina Way to Azalea Ct | planned | 3821.3 | 1 | $5,399 | 5 |
| 6037.0 | Vallejo | Catalina Way between Meadows Dr and county boundary | planned | 1364.9 | 1 | $2,158 | 8 |
| NAPA COUNTY | | | | | | | |
| 7004.0 | Vallejo | Along county boundary from Catalina to north of Dutch Flat Rd. | planned | 740.1 | 1 | $82,186 | 7 |
| 7005.0 | Vallejo | Along county boundary from Mini Dr to Jack London Dr | planned | 1642.8 | 1 | $118,978 | 5 |
| 7013.0 | American Canyon | Mezzetta Ct between Wetlands Edge Trail and Green Island Rd | planned | 2223.4 | 2 | $29,222 | 3 |
| 7014.0 | American Canyon | Green Island Road from Mezzetta Ct. to Hwy 29 | planned | 5515.2 | 1 | $350,990 | 6 |
| 7017.0 | Napa County | Las Amigas between Cuttings Wharf and Duhig | planned | 13328.6 | 2 | $575,426 | 4 |
| 7026.0 | Napa | Approach to Maxwell Bridge on Imola, along Napa-Vallejo Highway to Streblow | planned | 5790.9 | 2 | $73,182 | 6 |
| 7026.2 | Napa | Kaiser Rd bewteen Hwy 29 and Industrial | planned | 1658.5 | 2 | $2,799 | 4 |
| 7026.3 | Napa | Corporate Dr between Kaiser and Hwy 29 | planned | 5558.2 | 2 | $539,677 | 3 |
| SONOMA COUNTY | | | | | | | |
| 8002.0 | Sonoma County | 8th St RR right-of-way between Hwy 121 and Imperial Dr | planned | 1830.4 | 1 | $71,500 | 7 |
| 8005.0 | Sonoma County | Ramal Rd between Napa County boundary and existing trail | planned | 10250 | 2 | $34,209 | 4 |
| 8005.2 | Sonoma County | Dale Ave between Ramal and Burndale | planned | 2714 | 3 | $6,500 | 2 |
| 8005.3 | Sonoma County | Burndale between Dale and Hwy 121 | planned | 2100 | 3 | $6,500 | 2 |
| 8006.3 | Sonoma County | Sonoma Valley Water Agency between Ramal and Hudeman Slough | planned | 4796.7 | 1 | $39,000 | 6 |
| 8007.1 | Sonoma County | North Skaggs Island Rd Bridge | planned | 472.6 | 3 | $6,500 | 4 |

| SHORT-TERM PROJECTS | | | | | | | |
|---|---|---|---|---|---|---|---|
| Gap Segment Number | Jurisdiction | Location | Project Category | Gap Segment Length (Feet) | Project Type (Class) | Cost of Construction , Design, and Permitting | Benefit Rank |
| 8009.0 | Sonoma County | South Skaggs Island Rd Bridge | planned | 1356.2 | 3 | $6,500 | 3 |
| 8010.2 | Sonoma County | Skaggs Island Rd between bridge and Hwy 37 | planned | 2840.2 | 1 | $65,000 | 7 |
| 8012.3 | Sonoma County | Hwy 37 between Tolay Creek and Hwy 121 | planned | 3291.5 | 1 | $1,306,500 | 9 |
| 8011.2 | Sonoma County | Sonoma Creek Bridge (on Hwy 37) | planned | 1143.3 | 1 | $13,000 | 5 |
| 8012.4 | Sonoma County | Port Sonoma Trail connection to Hwy 37 | planned | 124.8 | 1 | $55,250 | 5 |
| 8012.5 | Sonoma County | Port Sonoma Trail | planned | 632.3 | 1 | $13,000 | 5 |
| 8013.0 | Sonoma County | Vallejo Sanitation District between Hwy 37 and Tolay Creek Trail | planned | 16702.3 | 1 | $734,500 | 9 |
| 8018.0 | Sonoma County | Port Sonoma Trail connection to Sonoma Baylands | planned | 3908.73 | 2 | $265,907 | 4 |
| MARIN COUNTY | | | | | | | |
| 9035.0 | San Rafael | Point San Pedro from Bayview Dr to Riviera | planned | 6324.2 | 3 | $12,885 | 6 |
| 9036.0 | San Rafael | Point San Pedro between Summit Ave and Bayview Dr | planned | 4074.7 | 3 | $8,317 | 2 |
| 9037.0 | San Rafael | Point San Pedro between east end of Marina Blvd and Summit Ave | planned | 2929 | 3 | $5,968 | 2 |
| 9038.1 | San Rafael | 4th Street downtown San Rafael | planned | 3483.4 | 3 | $19,041 | 1 |
| 9039.0 | San Rafael | 2nd Street downtown San Rafael | planned | 3202.8 | 3 | $6,773 | 1 |
| 9041.0 | San Rafael | Around Pickleweed Park | planned | 2690.6 | 1 | $329,714 | 10 |
| 9102.0 | Sausalito | Bridgeway between Richardson to Princess | planned | 1980.5 | 3 | $4,200 | 7 |
| 9069.0 | Corte Madera | Paradise Dr between Teaberry Ln and Paradise Beach Park | planned | 1182.6 | 2 | $260,000 | 2 |
| 9070.0 | Corte Madera | Paradise Dr between Paradise Beach Park and Westward Dr | planned | 2438.6 | 3 | $5,200 | 2 |
| 9071.0 | Corte Madera | Paradise Dr between Westward Dr and Prince Royal | planned | 1812.7 | 1 | $353,139 | 5 |
| 9072.0 | Corte Madera | Paradise Dr between Prince Royal and San Clemente | planned | 2241.5 | 1 | $792,916 | 7 |
| 9074.0 | Tiburon | Trestle Glen Boulevard | planned | 3558.68 | 2 | $427,042 | 7 |
| 9080.0 | Tiburon | Greenwood Beach Rd between city boundary and Blackies Pasture | planned | 2378.8 | 1 | $189,906 | 6 |
| 9083.0 | Mill Valley | Shelter Bay Ave west between Hamilton Dr and the bay | planned | 1085.8 | 3 | $2,864 | 8 |

| SHORT-TERM PROJECTS | | | | | | | |
|---|---|---|---|---|---|---|---|
| Gap Segment Number | Jurisdiction | Location | Project Category | Gap Segment Length (Feet) | Project Type (Class) | Cost of Construction , Design, and Permitting | Benefit Rank |
| 9086.0 | Strawberry | Strawberry Dr between Harbor Cove Way to Weatherly Dr | planned | 4699.6 | 3 | $9,838 | 4 |
| 9089.0 | Strawberry | East of Hwy 101 from Hwy 101 overpass to De Silva Dr | planned | 386.6 | 2 | $26,422 | 7 |
| 9090.0 | Mill Valley | Connection between Bothin Marsh trail and Hwy 101 overpass | planned | 528.5 | 1 | $64,761 | 9 |
| 9093.0 | Strawberry | Weatherly Dr to Strawberry Dr | planned | 1659.1 | 3 | $3,495 | 6 |
| 9103.0 | Sausalito | Second Street between Bridgeway and city boundary | planned | 2171.5 | 3 | $4,583 | 3 |

## Project Example: Short -Term

### Point Pinole to Point Wilson, Richmond: Segment 5060

This segment will connect the Point Pinole Regional Park to Point Wilson in Richmond along San Pablo Bay, helping to connect to existing and planned Bay Trail segments. This proposed trail corridor is located along a steeply sloped section of shoreline within the Union Pacific Railroad right-of-way and passes close to wetland areas.

This gap is a good example of a segment that has numerous obstacles, including environmental, railroad, easement, and other issues, but is moving steadily toward completion due to the resources and commitment of the project sponsor, the East Bay Regional Park District (EBRPD).

The EBRPD has already completed preliminary engineering and a biological assessment that identified a series of issues associated with constructing trail in a restricted area near an active railroad. It outlined the community need for closing this gap to provide a safe connection between a nearby residential area and school to the Point Pinole Regional Shoreline Park staging area. It provided specific design and management techniques to overcome concerns about wetland impacts, safety, security, and other issues, while providing a functional pathway.

Historically, communities in this area turned their back on the San Pablo Bay shoreline. With portions of the Bay Trail already constructed and in use further to the East in Pinole and Hercules, and new developments being oriented towards the Bay, the shoreline is coming alive. The Pt. Pinole-Pt. Wilson segment and others in the area are the tangible evidence of a change in how local communities in the area are finally recognizing the Bay as a resource and asset.

The importance of having an agency like the EBRPD committed to developing the Bay Trail with strong financial, political, legal, technical, and other resources goes beyond the obvious efforts such as sponsoring preliminary engineering studies. When the Southern Pacific Railroad was purchased by the Union Pacific Railroad in the mid-1990s, the EBRPD led an effort to secure public access to the shoreline that was almost entirely owned by the railroad. Without this agreement, the Bay Trail would have had little chance of being located near the water along this part of the San Pablo Bay shoreline.

### Lessons learned:

- An effective implementing agency with resources, motivation, and experience in developing trails is a key ingredient to overcoming gaps in the Bay Trail.

- Many communities in the Bay Area have not historically been oriented toward the water due to a variety of reasons (industry, pollution, and barriers such as active railroads). Having a strong vision of how the shoreline can become a major local resource is critical to building political and public support.
- Preliminary engineering and environmental studies are an important first step to resolving complex issues, and to initiating project momentum.
- Having specialized expertise in areas such as rails-with-trails, trail impacts on wetlands, trail design in constrained corridors, and related areas is key to overcoming major physical and operational issues.

## 5.2. MID-TERM PROJECTS (YEARS 6-10)

The Mid-Term (Years 6-10) projects consist of gap segments with more implementation constraints than short term projects, and that are expected to be funded and completed within the next 6-10 years. Since local project sponsors lead all projects, the actual timeline may differ from that being shown. In many cases these projects have not completed feasibility studies, and the needs of the projects are not well known.

San Francisco Bay Trail, Sierra Point, San Mateo County
***Image Credit***: San Francisco Bay Trail Project

### Summary of Mid-Term Projects

A summary of mid-term project costs by county is shown in Table 9. As can be seen in the table, Alameda County has the greatest number of mid-term project miles yet to complete, at the greatest cost. A detailed breakdown by county, sorted by segment number, is presented in Table 10 on the following page.

**Table 9:**

**Summary of Mid Term Bay Trail Project Costs by County[6]**

| County | Miles | Total Project Cost |
|---|---|---|
| San Francisco | 4.91 | $1,846,246 |
| San Mateo | 7.04 | $3,827,374 |
| Santa Clara | 8.89 | $11,216,503 |
| Alameda | 23.95 | $17,820,646 |
| Contra Costa | 19.88 | $6,800,251 |
| Solano | 2.56 | $2,337,000 |
| Napa | 22.38 | $9,584,000 |
| Sonoma | 24.62 | $14,039,000 |
| Marin | 20.45 | $13,165,000 |
| Total Mid Term Project Costs | | $80,636,020 |

[6] Excludes private development and transportation projects.

## Table 10: Mid-Term Projects by County and Benefit Rank

| MID-TERM PROJECTS | | | | | | | |
|---|---|---|---|---|---|---|---|
| Gap Segment Number | Jurisdiction | Location | Project Category | Gap Segment Length (Feet) | Project Type (Class) | Cost of Construction , Design, and Permitting | Benefit Rank |
| SAN FRANCISCO COUNTY | | | | | | | |
| 1002.0 | San Francisco | Embarcadero between Taylor and Powell | planned | 2795.3 | 2 | $182,957 | 5 |
| 1005.0 | San Francisco | Jefferson St, between Taylor St and west of Hyde St | planned | 1795.7 | 2 | $117,506 | 10 |
| 1024.0 | San Francisco | Third St between Cargo Way and Ingalls St | planned | 9668.1 | 3 | $64,776 | 4 |
| 1025.0 | San Francisco | Private boat launch | planned | 1093.1 | 1 | $223,244 | 8 |
| 1028.0 | San Francisco | Carroll Ave between Ingalls and Candlestick Point State Recreation Area | planned | 5382 | 2 | $68,150 | 2 |
| 1029.0 | San Francisco | Candlestick Point State Recreation Area | planned | 3934.3 | 1 | $833,678 | 9 |
| 1032.0 | San Francisco | Alana Way from Harney to County Line | planned | 1280.8 | 1 | $355,934 | 6 |
| SAN MATEO COUNTY | | | | | | | |
| 2000.0 | Brisbane | Alana Way between County border and Beatty St | planned | 450 | 1 | $35,964 | 11 |
| 2001.0 | Brisbane | Between Alana Way and Brisbane Lagoon | private development | 6584 | 1 | $645,067 | 9 |
| 2010.0 | South San Francisco | Genentech between San Bruno Pt and existing trail | private development | 2868.7 | 1 | $1,153,438 | 11 |
| 2012.0 | South San Francisco | Between Haskins and Michelle Ct | private development | 838.2 | 1 | $85,408 | 10 |
| 2019.0 | South San Francisco | Airport Blvd between Utah and North Access Rd | planned | 1486.7 | 2 | $97,286 | 4 |
| 2020.0 | South San Francisco | North Access Road | planned | 1478.6 | 1 | $77,737 | 5 |
| 2022.0 | South San Francisco | Airport Blvd between North Access Road and city border | planned | 1210.9 | 2 | $79,238 | 3 |
| 2025.0 | San Bruno | San Bruno Ave. between Hwy 101 and Huntington | planned | 1940.1 | 2 | $126,955 | 3 |
| 2027.0 | San Bruno | Huntington Ave between San Bruno Ave and city border | planned | 7469.7 | 2 | $94,585 | 3 |
| 2028.0 | San Bruno | Between Cupid Row and San Juan Ave | planned | 5477.7 | 2 | $69,361 | 3 |
| 2029.0 | Millbrae | San Antonio Ave between city border and Hermosa Ave | transportation | 3832.7 | 1 | $486,336 | 3 |
| 2030.0 | Millbrae | Between Santa Helena Ave and Hermosa Ave | planned | 2292.2 | 2 | $29,025 | 3 |

| MID-TERM PROJECTS | | | | | | | |
|---|---|---|---|---|---|---|---|
| Gap Segment Number | Jurisdiction | Location | Project Category | Gap Segment Length (Feet) | Project Type (Class) | Cost of Construction , Design, and Permitting | Benefit Rank |
| 2034.0 | Millbrae | East of Cuardo and North of Nadina to Hemlock Ave | planned | 653.4 | 1 | $43,749 | 4 |
| 2035.0 | Millbrae | Millbrae Avenue overcrossing of Hwy 101 | transportation | 2755.2 | 1 | $1,186,148 | 7 |
| 2036.0 | Millbrae | BART right-of-way between Hermosa and Millbrae Ave | transportation | 3738.6 | 1 | $486,336 | 3 |
| 2041.0 | Burlingame | Between Fisherman's Park and slough | private development | 963.9 | 1 | $180,551 | 8 |
| 2083.0 | Redwood City | Levee between Whipple and Bair Island Road | planned | 2466.7 | 1 | $189,087 | 9 |
| 2085.0 | Redwood City | Bair Island Road | planned | 1541.8 | 1 | $326,707 | 8 |
| 2089.0 | Redwood City | Cargill Levee between Seaport Blvd and Bayfront Park | planned | 10724.1 | 1 | $2,657,677 | 12 |
| SANTA CLARA COUNTY | | | | | | | |
| 3004.0 | San Jose | N. McCarthy Boulevard Bridge | planned | 1225.3 | 2 | $15,485 | 5 |
| 3011.0 | San Jose | Alviso/San Jose; Pond A-18 | planned | 16380.4 | 1 | $3,558,699 | 7 |
| 3020.0 | San Jose | Shoreline alignment north of State St from Catherine St to Spreckles Ave | planned | 4277 | 1 | $833,070 | 6 |
| 3021.1 | San Jose | Zanker Rd between Hwy 237 trail | planned | 2406.2 | 1 | $192,135 | 7 |
| 3023.0 | San Jose | State St between Gold and Spreckles | planned | 3578.3 | 2 | $234,155 | 3 |
| 3027.0 | Mountain View | Moffett Field, West Edge Maintenance Buildings, Site 25 | planned | 1930.4 | 1 | $781,305 | 7 |
| 3029.0 | Mountain View | Moffett Field, Perimeter Road | planned | 4464.7 | 1 | $998,139 | 10 |
| 3033.0 | San Jose | Between Hwy 237 to intersection of Gold and Taylor St. | planned | 8365.2 | 1 | $4,290,000 | 10 |
| 3034.0 | San Jose | Gold St between Hwy 237 pathway and State St | planned | 4287 | 1 | $313,515 | 7 |
| ALAMEDA COUNTY | | | | | | | |
| 4000.0 | Fremont | Connection to Newby loop | private development | 481.2 | 1 | $910,647 | 4 |
| 4001.0 | Fremont | Between Dixon Landing and Fremont Blvd | private development | 3631.9 | 1 | $290,007 | 7 |
| 4003.0 | Fremont | Cushing Pkwy and Fremont Blvd to Landing Rd | planned | 5967.7 | 2 | $75,417 | 5 |
| 4005.0 | Fremont | Pacific Common development | private development | 14166.6 | 1 | $1,131,203 | 5 |
| 4007.0 | Fremont | Newark PG+E substation | planned | 2632.1 | 1 | $210,173 | 5 |
| 4012.0 | Newark | Central Ave between railroad and Willow St | planned | 5808 | 2 | $76,486 | 3 |
| 4013.0 | Newark | Willow St between Thornton and Central | planned | 3590.4 | 2 | $47,282 | 3 |
| 4015.0 | Newark | Thornton between Marshlands and Willow | greenway/promenade/park | 3854.4 | 2 | $50,759 | 3 |

| MID-TERM PROJECTS | | | | | | | |
|---|---|---|---|---|---|---|---|
| Gap Segment Number | Jurisdiction | Location | Project Category | Gap Segment Length (Feet) | Project Type (Class) | Cost of Construction , Design, and Permitting | Benefit Rank |
| 4016.0 | Newark | Thornton between Willow and Cherry | planned | 6019.2 | 2 | $76,218 | 4 |
| 4029.0 | Hayward | Alameda Creek spur | planned | 23390.4 | 1 | $2,166,559 | 9 |
| 4034.0 | Hayward | On-street alignment around Eden Landing | planned | 14216.3 | 2 | $47,802 | 5 |
| 4044.0 | San Leandro | Neptune Dr between Marina Blvd and Fairway Dr | planned | 2217.6 | 2 | $28,080 | 6 |
| 4045.0 | San Leandro | San Leandro Marina | planned | 2640 | 1 | $210,804 | 8 |
| 4053.0 | Oakland | Doolittle Dr between Airport Dr and existing trail | planned | 6758.4 | 2 | $918,804 | 10 |
| 4062.0 | Alameda | Elsie Roemer Bird Sanctuary | planned | 2798.4 | 1 | $524,175 | 13 |
| 4069.0 | Oakland | Oakland Waterfront Pathway - Gallagar & Burke Aggregate | greenway/promenade/park | 739.2 | 1 | $500,000 | 12 |
| 4071.0 | Oakland | Oakland Waterfront Pathway - High Street Bridge float | greenway/promenade/park | 81.3 | 1 | $365,879 | 6 |
| 4072.0 | Alameda | Ballena Blvd south from Tideway Dr | planned | 3537.6 | 1 | $232,087 | 7 |
| 4075.0 | Oakland | Oakland Waterfront Pathway - Mini Storage Site | greenway/promenade/park | 897.6 | 1 | $330,732 | 8 |
| 4077.0 | Oakland | Oakland Waterfront Pathway - U.S. Audio | greenway/promenade/park | 475.2 | 1 | $465,510 | 8 |
| 4081.0 | Oakland | Oakland Waterfront Pathway - Fruitvale Bridge float | greenway/promenade/park | 95.4 | 1 | $284,506 | 7 |
| 4082.0 | Oakland | Oakland Waterfront Pathway - Lancaster to Fruitvale Bridge | greenway/promenade/park | 316.8 | 1 | $39,064 | 9 |
| 4083.0 | Oakland | Oakland Waterfront Pathway - Lancaster Street Park | greenway/promenade/park | 83.6 | 1 | $1,059,020 | 8 |
| 4086.0 | Oakland | Oakland Waterfront Pathway - Women's Museum Board | greenway/promenade/park | 413.7 | 1 | $156,834 | 8 |
| 4087.0 | Oakland | Oakland Waterfront Pathway - Derby Street Park | greenway/promenade/park | 78.4 | 1 | $202,035 | 8 |
| 4092.0 | Oakland | Oakland Waterfront Pathway - Pier 29 Restaurant | greenway/promenade/park | 114.2 | 1 | $141,677 | 8 |
| 4093.0 | Oakland | Oakland Waterfront Pathway - Park Street Bridge float | greenway/promenade/park | 99.3 | 1 | $377,800 | 8 |
| 4094.0 | Oakland | Oakland Waterfront Pathway - Lonestar Plant | greenway/promenade/park | 950.4 | 1 | $1,011,656 | 8 |
| 4096.0 | Oakland | Oakland Waterfront Pathway - ConAgra Site | greenway/promenade/park | 739.2 | 1 | $587,499 | 9 |
| 4117.0 | Alameda | Marina Village Parkway between Webster Tube and Shoreline Park | planned | 2217.6 | 2 | $145,114 | 7 |
| 4118.0 | Oakland | Oakland Waterfront Pathway - Oyster Reef Restaurant | greenway/promenade/park | 297.7 | 1 | $226,552 | 9 |

| MID-TERM PROJECTS | | | | | | | |
|---|---|---|---|---|---|---|---|
| Gap Segment Number | Jurisdiction | Location | Project Category | Gap Segment Length (Feet) | Project Type (Class) | Cost of Construction , Design, and Permitting | Benefit Rank |
| 4122.0 | Oakland | Oakland Waterfront Pathway - Oak to Ninth | greenway/promenade/park | 5596.8 | 1 | $2,400,000 | 8 |
| 4125.0 | Oakland | Oakland Waterfront Pathway - Estuary Park | greenway/promenade/park | 2798.4 | 1 | $1,803,981 | 10 |
| 4126.0 | Alameda/Oakland | Webster Tube | planned | 2323.2 | 1 | $7,499 | 9 |
| 4132.0 | Oakland | Middle Harbor Rd between shoreline park and 3rd St | planned | 11510.4 | 2 | $1,408,459 | 8 |
| 4142.0 | Oakland | Maritime St | planned | 12302.4 | 2 | $1,630,818 | 8 |
| 4143.0 | Oakland | Mandela Pkway under highway to Shellmound | planned | 897.6 | 2 | $11,366 | 8 |
| 4146.0 | Emeryville | Powell St between Frontage Rd and Shellmound St | transportation | 1214.4 | 2 | $79,467 | 8 |
| 4147.0 | Emeryville | Along Frontage between Powell and existing trail | transportation | 844.8 | 1 | $311,298 | 8 |
| 4163.0 | Berkeley | Shoreline between Gilman and Golden Gate Fields | private development | 2006.4 | 1 | $153,803 | 10 |
| 4164.0 | Albany | Golden Gate Fields between parking lot and Albany Bulb | private development | 3326.4 | 1 | $254,989 | 10 |
| CONTRA COSTA COUNTY | | | | | | | |
| 5055.0 | Martinez | Franklin Canyon between Dutra Rd and Alhambra Ave | planned | 5415.5 | 3 | $10,983 | 7 |
| 5057.0 | Contra Costa County | San Pablo Ave between Richmond Pky and Del Monte Dr | planned | 6523.3 | 3 | $13,780 | 2 |
| 5062.0 | Pinole | San Pablo Ave between Del Monte Dr and city boundary | planned | 9316.7 | 2 | $117,740 | 2 |
| 5072.0 | Crockett | McEwan and Franklin Canyon from Carquinez Scenic Dr to Dutra Rd | planned | 26391.3 | 3 | $55,752 | 2 |
| 5080.0 | Contra Costa County | Carquinez Scenic Dr from Nejedly Staging Area | planned | 8852.1 | 1 | $3,840,000 | 7 |
| 5085.0 | Rodeo | Parker Ave between San Pablo Ave and 7th St | planned | 4592.8 | 3 | $113,040 | 2 |
| 5088.0 | Contra Costa County | San Pablo Ave between Parker Ave and A St | planned | 7927.8 | 2 | $539,526 | 3 |
| 5089.0 | Port Costa | Canyon Lake Dr from Carquinez Scenic Dr to bay | planned | 2466.3 | 3 | $5,210 | 2 |
| 5090.0 | Crockett | Carquinez Scenic Dr from Winslow to McEwan | planned | 12298.6 | 3 | $25,981 | 2 |
| 5092.0 | Contra Costa County | Carquinez Strait Regional Shoreline Park along shoreline | planned | 5016.6 | 1 | $1,969,778 | 8 |
| 5093.0 | Crockett | San Pablo Ave from A St to Vista Del Rio | planned | 4043.3 | 3 | $27,090 | 2 |

| MID-TERM PROJECTS | | | | | | | |
|---|---|---|---|---|---|---|---|
| Gap Segment Number | Jurisdiction | Location | Project Category | Gap Segment Length (Feet) | Project Type (Class) | Cost of Construction , Design, and Permitting | Benefit Rank |
| 5095.0 | Crockett | Southern approach to Zampa Bridge along Dowrelio Dr | planned | 4418 | 3 | $29,601 | 4 |
| 5096.0 | Crockett | Downtown Crockett between bridge approach and Carquinez Scenic Dr | planned | 7726.9 | 3 | $51,770 | 3 |
| SOLANO COUNTY | | | | | | | |
| 6016.0 | Vallejo | Glen Cove Waterfront Park | planned | 1880 | 1 | $61,833 | 10 |
| 6016.1 | Vallejo | Glen Cove Waterfront Park | planned | 980 | 1 | $23,818 | 7 |
| 6019.0 | Vallejo | Maritime Academy Drive to Morrow Cove | planned | 3191.5 | 1 | $38,719 | 4 |
| 6020.0 | Vallejo | Vallejo Bluff Trail | planned | 4478.9 | 1 | $1,650,307 | 5 |
| 6033.0 | Vallejo | Sonoma Blvd from Meadows Dr to county boundary | planned | 3001.3 | 1 | $562,106 | 5 |
| NAPA COUNTY | | | | | | | |
| 7006.0 | American Canyon | Hwy 29 between American Canyon Rd and Mini Dr | planned | 3756.2 | 1 | $703,489 | 6 |
| 7007.0 | American Canyon | Broadway St between county boundary and American Canyon Rd | planned | 3802.8 | 2 | $48,058 | 3 |
| 7012.0 | American Canyon | Hwy 29 between American Canyon Rd and Green Island Rd | planned | 14312.5 | 1 | $2,680,552 | 5 |
| 7013.1 | American Canyon | Wetlands Edge Trail between Mezzetta Ct and Eucalyptus Dr | planned | 4529.5 | 1 | $533,275 | 6 |
| 7015.0 | Napa County | Devlin Rd bewteen Airport Blvd and Hwy 12 | planned | 10507.6 | 2 | $330,336 | 3 |
| 7015.1 | Napa County | Devlin Rd between Airport Blvd and Green Island Rd | planned | 11265.1 | 2 | $255,705 | 4 |
| 7019.0 | Napa | Connection between Cuttings Wharf Rd and Stanley Ln | planned | 5455.8 | 3 | $11,389 | 3 |
| 7021.0 | Napa County | Duhig between county boundary and Hwy 12 | planned | 15647.6 | 2 | $197,747 | 3 |
| 7021.1 | Napa County | Sonoma-Napa Hwy from Old Sonoma Rd to Cuttings Wharf Rd | planned | 5340.6 | 2 | $67,492 | 4 |
| 7022.0 | Napa | Stanley Ln between Hwy 12 and Napa River | planned | 10739.8 | 1 | $994,473 | 5 |
| 7025.0 | Napa | Golden Gate Dr between city boundary and Hwy 29 | planned | 6344 | 2 | $414,977 | 3 |
| 7027.0 | Napa County | Old Sonoma Rd between Duhig and Congress Valley | planned | 15010.1 | 1 | $2,811,204 | 5 |
| 7029.0 | Napa | Golden Gate Dr between city boundary and Imola | planned | 3114.4 | 2 | $203,721 | 3 |
| 7031.0 | Napa | West of Hwy 29 between Old Sonoma Rd and Imola | planned | 2310.3 | 2 | $29,196 | 3 |
| 7031.1 | Napa | Imola between Jefferson | planned | 1743.8 | 2 | $22,037 | 4 |

| MID-TERM PROJECTS | | | | | | | |
|---|---|---|---|---|---|---|---|
| Gap Segment Number | Jurisdiction | Location | Project Category | Gap Segment Length (Feet) | Project Type (Class) | Cost of Construction , Design, and Permitting | Benefit Rank |
| | | and Hwy 29 | | | | | |
| 7032.0 | Napa | Old Sonoma Rd between Congress Valley and Hwy 29 | planned | 4290.2 | 2 | $280,633 | 4 |
| SONOMA COUNTY | | | | | | | |
| 8001.0 | Sonoma County | Hwy 121 (Arnold Rd) between Leveroni and Hwy 12 | planned | 16115.2 | 2 | $1,096,300 | 4 |
| 8002.1 | Sonoma County | 8th St RR right-of-way between Napa Rd and Hwy 121 | planned | 8033.7 | 1 | $1,332,500 | 6 |
| 8003.1 | Sonoma County | Hwy 121 between Arnold Dr and 8th St | planned | 3253.7 | 1 | $3,250,000 | 5 |
| 8003.2 | Sonoma County | Hwy 121 from Burndale Rd to East of 8th St | planned | 1706.5 | 1 | $1,300,000 | 6 |
| 8004.0 | Sonoma County | Stage Gulch Rd between Lakeville Hwy and Arnold Dr | planned | 29340.4 | 2 | $1,996,001 | 4 |
| 8005.1 | Sonoma County | Ramal Rd north of Hudeman Slough | planned | 3898.2 | 3 | $13,000 | 3 |
| 8005.8 | Sonoma County | Ramal Rd south of Dale St | planned | 6968.5 | 3 | $1,040,000 | 3 |
| 8006.0 | Sonoma County | Skaggs Island Rd between bridge and Ramal | planned | 7454.6 | 2 | $94,208 | 5 |
| 8006.2 | Sonoma County | Levee trail north of Hudeman Slough boat launch | planned | 4230.1 | 1 | $240,500 | 7 |
| 8008.0 | Sonoma County | Lakeville Hwy between Hwy 37 and Stage Gulch Rd | planned | 36754.6 | 2 | $2,500,381 | 4 |
| 8010.1 | Sonoma County | West End Duck Club south levee | planned | 7515.9 | 1 | $331,500 | 7 |
| 8011.1 | Sonoma County | South of Hwy 37 along edge of residential area near Tolay Creek | planned | 707 | 1 | $845,000 | 6 |
| MARIN COUNTY | | | | | | | |
| 9002.0 | Novato | Hwy 37 between Hwy 101 and Petaluma River | planned | 16851.8 | 3 | $457,042 | 3 |
| 9003.0 | Novato | Railroad corridor between Hwy 101 and the Petaluma River | planned | 17141.7 | 1 | $3,338,864 | 6 |
| 9005.0 | Novato | Bel Marin Keys between Pacheco Pond and Hamilton Dr | planned | 3636 | 1 | $398,269 | 9 |
| 9009.0 | Novato | Railroad corridor between Bolling Dr and Bel Marin Keys Blvd | planned | 13038 | 1 | $3,473,889 | 5 |
| 9030.0 | San Rafael | Civic Center Dr between North San Pedro and McInnis Pkwy | planned | 3335.7 | 1 | $625,055 | 5 |
| 9032.0 | San Rafael | Cantera Way between Point San Pedro Rd and McNears Beach | planned | 5308.8 | 1 | $423,858 | 9 |
| 9038.0 | San Rafael | 3rd Street downtown San | planned | 6948.3 | 3 | $14,578 | 1 |

| MID-TERM PROJECTS | | | | | | | |
|---|---|---|---|---|---|---|---|
| Gap Segment Number | Jurisdiction | Location | Project Category | Gap Segment Length (Feet) | Project Type (Class) | Cost of Construction , Design, and Permitting | Benefit Rank |
| | | Rafael | | | | | |
| 9040.0 | San Rafael | Grand Ave between 2nd and 3rd St | planned | 581.3 | 2 | $7,426 | 3 |
| 9042.0 | San Rafael | Point San Pedro from west Marina Blvd to east end of Marina Blvd | planned | 1305.5 | 3 | $2,681 | 4 |
| 9043.2 | San Rafael | Canal St between Grand and Pickleweed Park | planned | 7598.6 | 2 | $516,977 | 1 |
| 9044.0 | San Rafael | Point San Pedro from Embarcadero Way to Marina Blvd | planned | 1341.5 | 3 | $2,871 | 2 |
| 9049.0 | San Rafael | Shoreline Park - Canalways | planned | 1621.4 | 1 | $198,716 | 13 |
| 9055.0 | San Rafael | Shoreline Park - gun club segment | planned | 1325.5 | 1 | $129,873 | 10 |
| 9062.0 | Marin County | Sir Francis Drake Blvd between Andersen Dr and Remillard Park | planned | 3182.1 | 1 | $825,103 | 11 |
| 9064.0 | Corte Madera | Along railroad right-of-way between Redwood Hwy and proposed Corte Madera Creek crossing | planned | 2272.1 | 2 | $756,000 | 10 |
| 9065.0 | Larkspur | Redwood Hwy between existing path and Rich St | planned | 1306.2 | 2 | $209,328 | 7 |
| 9075.0 | Tiburon | Greenwood Beach Rd from Blackfield to Barbaree | planned | 1648 | 2 | $20,908 | 6 |
| 9079.0 | Strawberry | Harbor Cove Way between Strawberry Dr and the bay | planned | 735.3 | 1 | $58,737 | 7 |
| 9092.0 | Marin County | Seminary Dr from Ricardo Rd to Strawberry Dr | planned | 7079.7 | 1 | $1,164,643 | 9 |
| 9095.0 | Tiburon | Paradise Dr from Mar West St to Agreste | planned | 2616.2 | 3 | $5,503 | 7 |
| 9104.0 | Marin County | Ft. Baker Rd between South Alexander and turn in road | planned | 3674.3 | 1 | $255,596 | 5 |
| 9105.0 | Marin County | Ft. Baker Rd between turn in road and Ft Baker | planned | 2430.1 | 1 | $75,348 | 5 |
| 9107.0 | Marin County | Fort Baker shoreline trail | planned | 1637.2 | 1 | $130,750 | 10 |
| 9108.0 | Marin County | Ft Baker between Golden Gate Bridge and shoreline path | planned | 1385.3 | 2 | $72,710 | 8 |

## Project Example: Mid-Term

### Wetlands Edge Bay Trail, American Canyon: Segment 7013.1

A significant portion of the proposed Bay Trail alignment in the North Bay follows major streets and highways. The Bay Trail Project is actively seeking options for safer alternative alignments for bicyclists and pedestrians on facilities located off street and separated from traffic.

An example of this effort is the Wetlands Edge Trail in American Canyon. Located west of Highway 29, the rapidly-growing city of American Canyon has required construction of a 12-foot wide paved trail along the edge of the Napa River wetlands as a condition of residential development. This opened up an opportunity to move the proposed Bay Trail alignment off Highway 29 and locate it west to provide a safer and more enjoyable trail experience.

Wetlands Edge Trail, American Canyon
***Image Credit***: San Francisco Bay Trail Project

One section of this trail, however, still remains incomplete. The proposed trail alignment along the edge of a grove of Eucalyptus trees requires the crossing of several channels. The engineering and environmental permitting requirements to cross and pass near potential wetland areas associated with the North Slough are significant. The trail alignment is also adjacent to a paintball game facility and screening or buffering will need to be considered to ensure safe trail passage. The northern section of the trail would need to come within close proximity to the city's sewage treatment plant, and buffer options in this area would also need to be explored. A conceptual plan for this new Bay Trail alignment has been completed by the City. The next step is completion of a wetlands delineation and analysis to provide solutions to these challenging questions.

The Wetlands Edge Trail will provide city residents with a direct connection between the residential areas of the city and its industrial area to the north. It will also provide a safe bicycle and pedestrian option located off Highway 29 in an area where people can enjoy the open space and marshlands at the edge of the Napa River.

**Lessons learned:**

- Obstacles such as the need for new bridges, combined with potential environmental impacts, location of the trail next to potentially incompatible uses such as a sewage treatment plant and a privately owned recreational facility, can slow or stop progress on completing a Bay Trail segment.
- Many of these obstacles are the result of unique situations where the impacts on trail users and the environment is unknown. Being able to provide examples of how issues were resolved in similar settings will be helpful in overcoming these concerns, and in finding the right technical solution for each situation.

## 5.3. LONG-TERM PROJECTS (YEARS 11-15)

The Long-Term (Years 11-15) project category consists of gaps with significant implementation issues, often major cost, and include most of the toll bridge projects in the Bay Area. Since local project sponsors lead all projects, the actual timeline may differ from that being shown. In many cases these projects have not completed feasibility studies, and the specific needs of the projects are not well known.

### Summary of Long-Term Projects

A summary of long-term project costs by county is shown in Table 11. As can be seen in the table, Marin County has the greatest number of long-term projects. A detailed breakdown by county, sorted by segment number, is presented in Table 12 below.

**Table 11:**

**Summary of Long Term Bay Trail Project Costs by County[7]**

| County | Miles | Total Project Cost |
|---|---|---|
| San Francisco | .06 | $ 703,136 |
| San Mateo | 4.88 | $8,014,900 |
| Santa Clara | 2.69 | $6,872,928 |
| Alameda | 6.44 | $13,030,944 |
| Contra Costa | 5.69 | $6,022,768 |
| Solano | 0 | 0 |
| Napa | 3.86 | $1,554,356 |
| Sonoma | 10.28 | $6,286,445 |
| Marin | 20.78 | $21,687,869 |
| Total Long Term Project Costs | | $63,470,210 |

**Table 12: Long-Term Projects by County and Benefit Rank**

| LONG-TERM PROJECTS | | | | | | | |
|---|---|---|---|---|---|---|---|
| Gap Segment Number | Jurisdiction | Location | Project Category | Gap Segment Length (Feet) | Project Type (Class) | Cost of Construction , Design, and Permitting | Benefit Rank |
| SAN FRANCISCO COUNTY | | | | | | | |
| 1009.0 | San Francisco | Bay Bridge west span | transportation | 15327.2 | 1 | $192,000,000 | 7 |
| 1013.0 | San Francisco | Third Street Bridge over Mission Creek | planned | 320.3 | 2 | $703,136 | 3 |
| 1027.0 | San Francisco | Hunter's Point Naval Shipyard | private development | 23272.8 | 1 | $1,858,333 | 8 |

[7] Excludes private development and transportation projects.

| LONG-TERM PROJECTS | | | | | | | |
|---|---|---|---|---|---|---|---|
| Gap Segment Number | Jurisdiction | Location | Project Category | Gap Segment Length (Feet) | Project Type (Class) | Cost of Construction , Design, and Permitting | Benefit Rank |
| SAN MATEO COUNTY | | | | | | | |
| 2018.0 | South San Francisco | Edge of San Bruno sewage treatment plant | planned | 1928.6 | 1 | $412,055 | 12 |
| 2023.0 | South San Francisco | Alignment under highway overcrossing between Airport Blvd and San Bruno Ave | planned | 2675.5 | 1 | $313,803 | 5 |
| 2024.0 | San Bruno | Airport Blvd and San Bruno Blvd | planned | 3127.2 | 1 | $249,639 | 5 |
| 2026.0 | San Bruno | East side of residential between San Bruno Ave and Huntington | planned | 3770.6 | 1 | $421,171 | 5 |
| 2031.0 | Millbrae | Along Hemlock Ave from Nadina to Spruce | planned | 2406.6 | 1 | $235,787 | 5 |
| 2038.0 | San Mateo | San Mateo-Hayward Bridge | transportation | 22620.4 | 3 | $49,657,252 | 9 |
| 2039.0 | Burlingame | Behind hotel complex | private development | 519.9 | 1 | $165,858 | 10 |
| 2040.0 | Burlingame | Behind hotel complex | private development | 499 | 1 | $97,208 | 8 |
| 2042.0 | Burlingame | Between Anza Lagoon and slough | private development | 875.6 | 1 | $67,120 | 7 |
| 2047.0 | Burlingame | Behind hotel between Airport Blvd and Anza Lagoon | private development | 625.3 | 1 | $53,925 | 9 |
| 2048.0 | Burlingame | Behind hotel complex north of slough | private development | 326.2 | 1 | $119,060 | 9 |
| 2051.0 | Burlingame | Along channel north of Fisherman's Park | private development | 426 | 1 | $79,795 | 10 |
| 2079.0 | San Carlos | San Carlos Airport | planned | 4465.1 | 1 | $2,544,444 | 13 |
| 2087.0 | Redwood City | Redwood Creek crossing between Bair Island Road and Blomquist | planned | 2455 | 1 | $1,049,379 | 7 |
| 2088.0 | Redwood City | Blomquist between Maple and Seaport Blvd | planned | 1929.7 | 2 | $24,435 | 4 |
| 2092.0 | Menlo Park | Railroad alignment between University Ave and Ravenswood Open Space Preserve | planned | 3024.7 | 1 | $2,764,188 | 8 |
| SANTA CLARA COUNTY | | | | | | | |
| 3000.1 | San Jose | Newby Island Loop | private development | 19237.4 | 1 | $1,946,945 | 8 |
| 3024.0 | Mountain View | Moffett Field, Runway | planned | 3727.9 | 1 | $1,508,821 | 5 |
| 3026.0 | Mountain View | Moffett Field, Jaegel Slough | planned | 2095.5 | 1 | $848,127 | 7 |
| 3031.0 | Mountain View | Moffett Field, Magnetic Bldgs. | planned | 1835.4 | 1 | $742,855 | 5 |
| 3035.0 | San Jose | Between Sunnyvale trail and Gold Street Bridge | planned | 6558.9 | 1 | $3,335,000 | 8 |
| ALAMEDA COUNTY | | | | | | | |
| 4006.0 | Fremont | Railroad alignment between Cushing and Auto Mall Pkwy | planned | 18532.8 | 1 | $7,102,269 | 5 |

| LONG-TERM PROJECTS | | | | | | | |
|---|---|---|---|---|---|---|---|
| Gap Segment Number | Jurisdiction | Location | Project Category | Gap Segment Length (Feet) | Project Type (Class) | Cost of Construction , Design, and Permitting | Benefit Rank |
| 4011.0 | Newark | Railroad alignment between Thornton Ave and Stevenson Blvd | planned | 15470.4 | 1 | $5,928,675 | 6 |
| 4032.0 | Hayward | San Mateo-Hayward Bridge | transportation | 19008 | 1 | $41,727,160 | 7 |
| 4057.0 | Oakland | Doolittle between Harbor Bay Pkwy and existing trail | transportation | 3273.6 | 1 | $1,206,281 | 11 |
| 4089.0 | Oakland | Oakland Waterfront Pathway - Waterfront Lofts Project | private development | 950.4 | 1 | $350,211 | 8 |
| CONTRA COSTA COUNTY | | | | | | | |
| 5034.0 | Richmond | Richmond-San Rafael Bridge | transportation | 8870.4 | 1 | $19,472,675 | 5 |
| 5040.0 | Richmond | Pt San Pablo Peninsula between Pt Molate and Terminal 4 | planned | 8078.4 | 1 | $843,688 | 8 |
| 5046.0 | Richmond | Pt San Pablo Peninsula through Terminal 4 to Yacht Club | planned | 5280 | 1 | $718,362 | 8 |
| 5067.0 | Pinole | San Pablo Bay Regional Shoreline between existing Pt Wilson trail and Bayfront Park Treatment Plant | planned | 2655.5 | 1 | $610,237 | 12 |
| 5083.0 | Contra Costa County | Carquinez Scenic Dr. to Northern Regional Shoreline Park | planned | 8985.2 | 1 | $3,840,000 | 7 |
| 5087.0 | Port Costa | Carquinez Scenic Dr from Northern Regional Shoreline Park to Reservoir St | planned | 5020.7 | 3 | $10,481 | 2 |
| SOLANO COUNTY | | | | | | | |
| NO LONG-TERM PROJECTS | | | | | | | |
| NAPA COUNTY | | | | | | | |
| 7008.0 | American Canyon | Wetlands Edge Trail between Kensington Way and Kimberly Dr | planned | 120 | 1 | $270,636 | 8 |
| 7011.0 | American Canyon | Union Pacific Railroad from Green Island Rd to American Canyon Rd | planned | 12311.1 | 2 | $805,300 | 3 |
| 7023.0 | Napa | Slough to Kennedy Park | planned | 7936.7 | 1 | $1,231,720 | 4 |
| 7026.1 | Napa | Napa-Vallejo Hwy between Streblow Dr and Kaiser Rd | transportation | 4497.9 | 3 | $52,000 | 6 |
| SONOMA COUNTY | | | | | | | |
| 8000.0 | Sonoma County | Leveroni Rd between Hwy 121 and 8th St East | planned | 15779.2 | 2 | $1,073,445 | 4 |
| 8007.0 | Sonoma County | Skaggs Island trail levee | planned | 30498.1 | 1 | $2,606,500 | 7 |
| 8012.1 | Sonoma County | Hwy 37 connection to Petaluma River Bridge | transportation | 1238.1 | 1 | $2,436,732 | 2 |
| 8014.1 | Sonoma County | Railroad alignment between Reclamation Road and residential area adjacent to Hwy 37 | planned | 8008.5 | 1 | $2,606,500 | 6 |

| LONG-TERM PROJECTS | | | | | | | |
|---|---|---|---|---|---|---|---|
| Gap Segment Number | Jurisdiction | Location | Project Category | Gap Segment Length (Feet) | Project Type (Class) | Cost of Construction , Design, and Permitting | Benefit Rank |
| MARIN COUNTY | | | | | | | |
| 9000.0 | Marin County | Highway 37 Bike Ped Bridge over Petaluma River | transportation | 834.5 | 1 | $1,831,905 | 3 |
| 9001.0 | Marin County | Railroad Bridge over Petaluma River | transportation | 811.7 | 1 | $1,781,854 | 4 |
| 9011.0 | Novato | Hamilton southern levee gap | planned | 961.4 | 1 | $236,666 | 11 |
| 9013.0 | Novato | Connection through Las Gallinas property | planned | 5374.2 | 1 | $2,410,014 | 11 |
| 9015.0 | Novato | Railroad corridor from North Ave to Bolling Dr | planned | 9558.2 | 1 | $4,416,820 | 5 |
| 9022.0 | San Rafael | Railroad corridor from end of McInnis Pkwy to North Ave | planned | 6008.7 | 1 | $3,119,753 | 6 |
| 9023.0 | Marin County | North San Pedro Road between Miwok Meadows and La Pasada | planned | 10176.9 | 1 | $1,170,776 | 6 |
| 9024.0 | San Rafael | Redwood Hwy between McInnis and Smith Ranch Rd | planned | 7769 | 2 | $528,782 | 4 |
| 9027.0 | Marin County | North San Pedro Rd from China Camp State Park to Biscayne Dr | planned | 12790 | 1 | $1,434,565 | 6 |
| 9034.0 | San Rafael | Marina Quarry | planned | 8790.2 | 1 | $701,810 | 7 |
| 9043.0 | San Rafael | Beach Park between Grand and edge of park | planned | 1004.7 | 1 | $104,953 | 5 |
| 9043.1 | San Rafael | Beach Park between edge of park and Francisco Blvd | private development | 1988.7 | 1 | $207,670 | 5 |
| 9057.0 | San Rafael | Sir Francis Drake Blvd approach to Richmond-San Rafael Bridge | transportation | 5308.8 | 1 | $7,234,460 | 7 |
| 9058.0 | Larkspur | crossing over Sir Francis Drake Blvd to Calpark Tunnel | planned | 151 | 1 | $297,324 | 7 |
| 9061.0 | Larkspur | Corte Madera Creek crossing | planned | 1229.5 | 1 | $4,320,216 | 9 |
| 9063.0 | Marin County | San Quentin State Prison between Main and Sir Francis Drake Blvd | planned | 6635.4 | 1 | $529,750 | 10 |
| 9063.1 | Marin County | San Quentin State Prison along Main St Richmond-San Rafael Bridge | planned | 1754.4 | 1 | $200,513 | 5 |
| 9066.0 | San Rafael | Richmond-San Rafael Bridge | transportation | 12769.1 | 1 | $28,030,894 | 5 |
| 9067.0 | Corte Madera | Along edge of Corte Madera Ecological Reserve | planned | 4099.3 | 1 | $445,471 | 10 |
| 9073.0 | Tiburon | Paradise Dr between Trestle Glen and Corte Madera boundary | planned | 9528.9 | 3 | $504,604 | 3 |
| 9082.0 | Marin County | Paradise Dr between Trestle Glen and Tiburon boundary | planned | 23905.8 | 3 | $1,265,850 | 3 |

## Project Example: Long-Term

### Bayfront to Ravenswood Preserve, Menlo Park: Segment 2092

San Francisco Bay Trail
***Image Credit***: San Francisco Bay Trail Project

A short but important gap in the Bay Trail spans the boundaries of Menlo Park and East Palo Alto in the South Bay and contains a diverse array of land uses and infrastructure, resulting in significant challenges for gap closure. When complete, this 0.5-mile section will ultimately provide an important connection between the Dumbarton Bridge bicycle and pedestrian pathway and the Ravenswood Open Space District.

Multiple stakeholders are involved in decisions related to this trail gap, including the City of Menlo Park, the City of East Palo Alto, the County of San Mateo, the San Francisco Water Department, Samtrans, the Peninsula Joint Powers Board and the Midpeninsula Regional Open Space District. The site is adjacent to a residential area, existing wetlands, a railroad spur (currently inactive but reserved for future use), above-ground Hetch-Hetchy pipes that supply water to the San Francisco Bay Area, a former salt pond planned for restoration and a former sportsmen's gun club currently undergoing an extensive cleanup process.

With plans for a future Caltrain rail extension across the bay in this area and a proposal to construct a double track system on the existing levee, a section of the proposed trail would likely be an elevated boardwalk structure. The wetland habitat issues and costs associated with this alignment have not been explored in depth. The alignment would also require crossing a wetland area to connect the existing trail at Ravenswood Open Space Preserve. Also factored into the decision is the timing for a proposed wetland restoration and lead cleanup on the north side of the project area.

This area represents an extremely complicated shoreline with multi-layered decision requirements.

**Lessons learned:**

- Future plans for improvements in a planned Bay Trail corridor, such as future double-tracking of the rail line in this segment, must be incorporated into the planning process. Where necessary, interim and short-term solutions may be needed until these improvements are more clearly defined. In those cases, long-term Bay Trail alignments may be constructed as part of those improvement projects.
- Including all relevant agencies in the planning process is critical, as is a strong lead agency willing to take on the responsibilities and effort of resolving complex right-of-way issues.
- Developing a feasibility study that anticipates issues such as easement acquisition, liability, maintenance, and safety concerns, the cost and impacts of boardwalks and other structures, will help to resolve these issues in advance of final design.

# 6. CLOSING THE GAPS

This section reviews the types of physical and institutional obstacles that local agencies are likely to face in completing the remaining Bay Trail segments, and provides strategies that local agencies may use to overcome these obstacles. In reviewing the remaining gaps, the diversity of locations is striking. However, they all share a common thread. First, the majority of the highly aesthetic, available and accessible segments have been constructed. Second, what remains are often the locations that are less attractive, often with major constraints, or in remote and isolated areas. Note that in many cases a Bay Trail gap may have more than one of the issues cited below.

Numerous Bay Trail gaps have some type of right-of-way issue that is hindering construction of the project. This may take one or more of the following forms:

- Privately-owned land with existing development (easement needed)
- Privately-owned undeveloped land (easement needed through permitting and zoning)
- Publicly-owned land (by multiple agencies)
- Publicly-owned land (incompatible uses)

### Privately Owned Land: Existing Development

Privately owned land with existing development represents one of the greatest obstacles to Bay Trail development, because the owners have little or no incentive to provide public access, the land is often very expensive, and property owners wish to retain their privacy. A good example of this condition can be seen in Burlingame along Airport Boulevard where the Bay Trail is slated to be on hotel and business park shoreline property. Public agencies may be faced with several difficult options: (a) offering payment for an easement, zoning incentives and/or other inducements to the owner, (b) offering a well-conceived plan to address their concerns about privacy, security, liability, (c) waiting until the property changes hands, (d) waiting until the property owner wishes to upgrade, expand, or conduct any improvements that will require a permit approval from BCDC which will likely require public access.

### Privately Owned Land: Undeveloped

It is typically easier to obtain an easement on privately owned undeveloped land for the Bay Trail because (a) the Bay Trail alignment is likely part of the local agency General Plan and therefore dedication is required as part of any development, and (b) access would be required if within BCDC's jurisdiction. The location, configuration, access, and other aspects of the easement may need to be negotiated with the property owner. A good example of this is the proposed Bay Trail along the shoreline of Point San Pablo Peninsula in Richmond, where the trail would be developed as part of a future development project in the area.

### Publicly Owned Land: Multiple Agencies

Publicly owned parcels typically offer the least complicated process to obtain easements for the Bay Trail. In some areas, the complexity of land ownership titles, and/or possible conflicts with agency goals and policies may hinder the proposed project. Fort Baker in Marin County illustrates this condition where numerous agencies (Caltrans, Golden Gate Bridge District, Marin County, National Park Service, Sausalito) all have an interest and sometimes conflicting expectations and needs. Various agencies may have different ideas regarding the alignment and design of the Bay Trail, or the planned segment may conflict with future plans. In all of these cases, a well-conceived master plan and feasibility study should resolve most if not all of these conflicts.

### Publicly Owned Land: Incompatible Uses

Publicly owned parcels with possible incompatible uses, such as a sewage treatment plant, airports, or sanitary landfills, can potentially be resolved through a comprehensive master plan and feasibility process. Good examples of this include a waste water treatment plant in Richmond, a trail segment along the shoreline at the Port of Richmond and the San Carlos Airport in San Mateo County. Trails have been developed in virtually every type of setting in the United States, and there will almost always be an alignment, design, or management practice that addresses the concerns of the relevant agencies.

Negotiation of right-of-way for public shoreline access generally requires a clearly defined plan for trail location, features, and means of controlling and managing access. Development of such a plan requires direct contact and collaborative agreement with the property owner and managers. All of this requires dedicated resources. The Bay Trail Project has been effective in addressing this need in recent years through grants to cities, counties and parks agencies. These agencies through their own staff and consultants can dedicate the necessary time to identifying the exact design parameters and management agreements that make implementation of a new trail segment agreeable to all parties. Without resources to complete this careful planning work, the majority of remaining gaps in the Bay Trail system will not be implemented.

**What the Bay Trail Project Can Do:**

- **Provide funding for technical assistance**
- **Provide model easement agreements**
- **Facilitate communication between agencies**
- **Provide 'best practices' and case studies**

**What Local Agencies Can Do:**

- **Conduct a master plan and feasibility study process**
- **Adopt the Bay Trail alignment in the General Plan**
- **Require easements/improvements as part of project approval process**

### Physical Constraints

One of the most common obstacles on the Bay Trail are physical constraints, ranging from steep topography to tunnels and bridges, that do not allow for development of a multi-use trail without experiencing major engineering, cost, and environmental impacts. This is especially true in places like Marin, Contra Costa, and Solano Counties where the Bay Trail is planned along rugged terrain. While each location is different and requires its own solution, the typical constraints can be classified into the following categories:

- Steep Terrain Adjacent to Existing Road
- Steep Terrain in Undeveloped Area
- Bridge, Tunnel or Highway

### Steep Terrain Adjacent to Existing Road

Where the Bay Trail is identified along an existing roadway corridor in an area with steep terrain (such as Paradise Drive in Tiburon), the physical, environmental, and right-of-way obstacles may be so great compared to what is already a serviceable facility for some Bay Trail users (in this case bicyclists), the lead agency may focus more on signage and minor improvements such as turn outs and minimal shoulders rather than attempting to provide a Class I path. A feasibility study, if needed, will be able to evaluate the trade-offs between need, benefit, cost, and impacts in this type of corridor.

### Steep Terrain in Undeveloped Area

Where the Bay Trail is proposed in steep topography, but there is no active paved road (such as Carquinez Straight Regional Shoreline in Martinez and Contra Costa County), the cost of providing a Class I facility might be considered if (a) there is no viable paved facility through the corridor, and (b) there will be a higher demand for a facility that is located away from a roadway for aesthetic reasons.

### Bridge, Tunnel or Highway

Bridges, tunnels, and highways represent major physical barriers to the Bay Trail, for which there may or may not be plans to provide adequate Bay Trail improvements. Examples of these constraints include the Alameda Tubes (Webster/Posey Tubes), Petaluma River Bridge (SR 37), Powell Street Under Crossing in Emeryville, and the I-580 crossing in Richmond. While it may be possible to facilitate Bay Trail improvements in these types of locations by funding the trail portion of the project, it is more likely that the Bay Trail portion will only be constructed when the facility is replaced or upgraded in the future (such as the East Span of the Bay Bridge)—unless there is sufficient demand to warrant the investment.

**What the Bay Trail Project Can Do:**

- **Provide funding for technical assistance**
- **Provide best practices and case studies to agencies showing how other agencies have overcome similar problems**
- **Provide a technical resource library and experts as needed**
- **Help ensure major transportation projects include the Bay Trail**
- **Accept roadways as the Bay Trail alignment in some locations**

**What Local Agencies Can Do:**

- **Pursue funding and improvements for roadway projects**
- **Ensure that the Bay Trail is included in transportation projects**
- **Provide alternative routes around major gaps**
- **Pursue Class I paths where no roads exist**

## Environmental Issues

Some gaps in the Bay Trail system are located near environmentally sensitive areas. The Bay Trail is trying to understand and add to the body of information about the potential impacts of trail use on birds through sponsorship of the *Wildlife and Public Access Study*. Three existing Bay Trail sites and three additional nearby control sites are under investigation. All six study sites are located adjacent to mudflat foraging habitat, a typical habitat along the Bay Trail. Research on this issue will continue, and lessons learned relating to the design and operation of the Bay Trail will be incorporated into existing and future projects as appropriate.

## Planning, Environmental Review and Permitting

To implement construction of Bay Trail segments located near environmentally sensitive areas, it is important to engage in a thorough, well-planned process in order to be able to proceed efficiently through the required environmental review and permitting process. Below is a suggested list of steps that should be incorporated into such a process.

**Fatal Flaw Analysis:** A key first step in any Bay Trail feasibility analysis is the determination of whether there is an environmental 'fatal flaw' with a specific alignment or design. While most potential environmental impacts can be mitigated or avoided, some either cannot be mitigated or the mitigation is so expensive as to impact the viability of the alternative.

**Pre-Mitigation:** If at all possible, the environmental assessment and preliminary design work should be completed by experienced professionals, who can then try and 'pre-mitigate' potential environment impacts in the planning and design process. This will simplify the planning process, minimize environmental impacts, and expedite the permitting and approval process.

**TAC:** Include all relevant permitting agencies on a Technical Advisory Committee (TAC) in order to find out early in the process what may or may not be acceptable to their agencies.

**CEQA/NEPA:** Depending on the source of the money and requirements of the lead agency, CEQA and/or NEPA requirements may need to be met in an assessment or full environmental impact report (EIR) or environmental impact statement (EIS). Much of the information needed for either of these efforts, such as the analysis of alternatives, should be developed in a feasibility study/master plan.

**Engineering:** Many environmental impacts can be reduced or eliminated through innovative design, engineering, and construction techniques. For example, new bridge decking materials have been developed that allow light to go through the structure, minimizing shading. New pier installation techniques minimize impacts to wetlands.

**Management Plan:** Completing a management plan for the trail can help eliminate or reduce the perceived impacts of a new trail. For example, the management plan may recommend limitations or prohibitions on dogs, closing the trail during breeding season, or posting signs to keep people out of habitat areas.

**Permitting:** Permitting can be a lengthy process even if all of the procedures are followed properly. Enlisting the help of experts knowledgeable about all agency permitting requirements can greatly facilitate this process.

**Restoration:** Work with stakeholders to identify environmental opportunities such as: joint-funded public access and restoration efforts; securing habitat mitigation funds through trail projects; and, identification of strategies for habitat improvement through the trail planning and design process.

**What the Bay Trail Project Can Do:**

- **Provide best practices and case studies to agencies showing how other agencies have overcome similar problems**
- **Provide a technical resource library and experts as needed**
- **Utilize findings in the *Wildlife and Public Access Study***

**What Local Agencies Can Do:**

- **Consider fatal environmental flaws and pre-mitigate environmental impacts in the feasibility/master plan process**
- **Include permitting agencies on TACs**
- **Utilize innovative engineering and management practices to minimize impacts**
- **Include restoration and education efforts as part of projects when possible**

### Roads

A significant number of remaining Bay Trail segments are located on roadways, such as East Sir Francis Drake Boulevard in Larkspur, Highway 37 in Sonoma County, 3rd Street in San Francisco, and Maritime Avenue in Oakland. Most people do not think of roadways when they think of the Bay Trail, and it is a Bay Trail goal to provide a Class I path whenever possible. Where the Bay Trail is located on a roadway, its functional use is substantially different than where it exists as a trail. The number of users will be usually be much smaller, most of the users will be more experienced bicyclists, and the route will serve more of a connector function than as a destination. All on-road Bay Trail segments should include (a) Bay Trail signs and stencils, and (b) standard bicycle and pedestrian advisory and warning signs.

The following recommendations may help agencies understand how they can make their on-road segments of the Bay Trail function as efficiently as possible.

**Highways:** Bay Trail segments on highways, such as Highway 37 in Sonoma County, have two basic options. First, exploration of alternate locations for a pathway or bikeway should be conducted. If demand is sufficient and space available, a parallel pathway within the highway corridor may be feasible, assuming there are no major obstacles such as bridges. If the highway is a limited access freeway, bicyclists and pedestrians are typically prohibited by law in most locations, and an alternate route should be identified. If bicycles are allowed on the highway, a determination should be made whether to encourage people to use the route given traffic volumes and speeds, or simply to leave the segment usable for more experienced bicyclists but not promoted in maps and signs.

**City Streets:** Bay Trail segments on city streets, such as 3rd Street in San Francisco and Powell Street in Emeryville, should be programmed to provide (a) sidewalks and (b) bike lanes whenever possible. Where bike lanes are not possible, Class III bike routes, wide curb lanes and traffic calming measures should be implemented.

**Rural Roads:** A significant number of Bay Trail segments are located on rural-type roads, such as paradise Drive in Tiburon and Duhig Road in Napa County. Rural roads are typically

two-lane roads with no curb or shoulder, low traffic volumes, and low to high speeds. Where traffic volumes are less than 1,000 ADT (average daily traffic), all that may be needed are signs. Where traffic volumes are higher than this, it would be prudent to add at least three (3) foot wide shoulders (possibly by narrowing the travel lanes) and/or turn outs where possible.

**What the Bay Trail Project Can Do:**

- **Provide best practices and case studies to agencies showing how other agencies have overcome similar problems**
- **Provide a technical resource library and experts as needed**
- **Work with local public works departments to find the appropriate solution**
- **Work with Caltrans to post Bay Trail signs**

**What Local Agencies Can Do:**

- **Implement the appropriate type of solution for each roadway type, including sidewalks and bike lanes**
- **Utilize innovative engineering and management practices**
- **Include Bay Trail improvements as roadways are expanded or rehabilitated**

## Best Practices for Feasibility Studies

Most of the recommendations on how to overcome constraints in this report mention the importance of conducting a feasibility study, sometimes also known as a master or corridor plan, and preliminary engineering. While The Bay Trail Project already provides guidance to local agencies on the elements that should be included in a feasibility study, a recommended 'best practice' is presented below.

### Conducting a Feasibility Study

Also known as a preliminary engineering study, this is a critical step for almost all bikeway and trail gap projects. Feasibility studies are important for several reasons. Feasibility studies:

- Allow local agencies and the public an opportunity to provide input
- Evaluate multiple alignment and design options
- Include an understanding of user needs and patterns
- Consider connectivity, access, safety, and other elements
- Help develop more accurate cost estimates

Many trail and bikeway projects that have received funding for final design may have been conceived completely differently had they gone through a feasibility study process. Basic elements of a feasibility study include:

**Goals and Policies:** A summary of the goals and policies for the project, how they relate to existing local policies, and how they can be used as evaluation criteria and design objectives.

**Existing Conditions:** A summary of existing trails and bikeways, activity centers, destinations, land use zoning, traffic volumes and speeds, collision patterns, right-of-way ownership, plans and policies, and environmental issues.

**Needs Analysis:** A summary of user needs and patterns, input from the public and local agencies typically through a public workshop and/or surveys, and estimates of future demand.

**Alternatives Analysis:** An evaluation of each alternative using criteria based on the adopted goals and policies, plus factors such as cost, demand, right-of-way availability, and other issues.

**Preferred Alignment:** A preferred alignment and design is selected and shown in maps, sections, and plans. Normally, base mapping is done on available aerial photos.

**Design Standards:** Design standards on all trail elements are shown, including sections and plans that conform to relevant published sources. Details of the project such as crossings, bridges, and other features may be developed in concept-level detail. Items such as signing and striping, drainage, landscaping, trailheads, and other support features may also be developed.

**Cost and Phasing:** Cost estimates are developed based on the plans and designs, and broken down by item and segment. As needed, the project phasing over time is shown along with priorities for implementation.

**Management Plan:** A summary of how the pathway will be operated and maintained, including safety, security, liability, emergency response, and other topics are addressed.

Feasibility studies typically cost about 3-5% of the total project cost, or roughly 20-35% of the total design cost. Feasibility studies provide important information needed by public agencies on costs, required right-of-way, permits and approvals, alignment location, and other items. With the completion of a feasibility study, public agencies stand a much greater chance of receiving competitive funding for final design and construction as well.

### Institutional Challenges

Bay Trail staff should continue working to elevate the priority of the Bay Trail in these communities through outreach, participation in local waterfront planning processes and by providing funding opportunities. Some local agencies do not have the staff, resources, and/or interest to pursue the completion of Bay Trail segments in their jurisdiction. Often, the segment is simply a low priority when compared to other local projects, may lack a strong project proponent, and may have multiple constraints.

# 7. FINANCIAL NEEDS

While many Bay Trail projects identified in this report will be completed as part of planned transportation (bridge and roadway) projects and as part of development projects, most remaining segments will need to be funded by public agencies. Table 13 shows how the $187,798,000 in projected costs for these segments may be partially paid for by existing funding sources, in addition to estimating the funding shortfall. Aside from the existing Bay Trail grant program (which has $3.8 million remaining), much of the funding is expected to come from local sources such as TDA Article III moneys.

A conservative approach is used in this table to project the likely amount of these sources that will be used on Bay Trail projects, since the Bay Trail represents only one small part of the bicycle, pedestrian, and trail needs in any community. For example, 10% of the available TDA Article III funds over the next 15 years are projected to be used on Bay Trail segments (and only those segments that are paved and provide a transportation benefit), and 10% of the estimated $50 million available from county sales tax measures for bicycle and pedestrian projects.

Regional sources available for bicycle and pedestrian projects such as Bridge Toll funds, Safe Routes to Transit, and other sources including Clean Air funds, are projected to total $50 million over the next 15 years of which 15% could be used on the Bay Trail.

State sources available for bicycle and pedestrian projects such as the Bicycle Transportation Account, Safe Routes to Schools, Office of Traffic Safety, and other sources is expected to total $31 million over the next 15 years, of which 20% could be used on the Bay Trail.

Federal sources from the newly approved SAFETEA-LU legislation includes numerous sources, some of which could be used on the Bay Trail. For estimating purposes, the amounts assume two (2) authorizations (which typically run 6 years). The Bay Trail could potentially receive 10% of the Bay Area allocation for Transportation, Community, & System Preservation, 10% from the Recreational Trails allocation, 10% from the Congestion Mitigation and Air Quality program, 5% from the safe Routes to School program, 5% from the Transportation Enhancements program, and 20% from Congressional earmarks such as the $25 million Model Community grant awarded to Marin County.

Based on these assumptions, there will be a shortfall of $116,626,000 to complete the Bay Trail, averaging about $7.8 million per year. A dedicated source of funding on the state or regional level for the Bay Trail is instrumental in assuring that the system is completed in a 15-year timeframe.

## Table 13: San Francisco Bay Trail Estimate of Funding Needs

| Projected Costs[8] | |
|---|---|
| Total | $187,798,000 |
| | |
| **Potential Bay Trail Funding Sources [9]** | |
| Bay Trail Funding[10] | $3,800,000 |
| Local Sources[11] | |
| TDA Article III | $19,830,000 |
| Sales Tax Measures | $5,000,000 |
| Regional Sources[12] | $7,500,000 |
| State Sources[13] | $3,100,000 |
| Federal Sources[14] | |
| TCSP[15] | $1,425,600 |
| Recreational Trails[16] | $580,800 |
| CMAQ[17] | $2,270,400 |
| Safe Routes to School[18] | $1,615,680 |
| Transportation Enhancements[19] | $4,290,000 |
| Earmarks/Model Cities[20] | $21,760,000 |
| **Total** | **$71,172,480** |
| | |
| **Surplus/(Shortfall)** | **$(116,626,000)** |
| **Average annual (15 years)** | **$($7,775,000)** |

[8] Excludes Bay Trail projects to be constructed as part of transportation and development projects.
[9] Excludes Bay Trail projects to be constructed as part of transportation and development projects.
[10] Remaining Bay Trail funding available as of 2005.
[11] Assumes 10% of TDA moneys over next 15 years (from MTC Regional Bicycle Plan) and 10 % of county sales tax measure moneys for bikeways/trails (estimated at $50 million).
[12] Assumes 15% of regional funding sources including Bridge Tolls, Safe Routes to Transit, and other sources (totaling $50 million) used on Bay Trail.
[13] Assumes 10% of state funding in Bay Area from Bicycle Transportation Account, Safe Routes to School, Office of Traffic Safety and other sources.
[14] Federal funding from SAFETEA-LU estimated based on state and Bay Area share; assumes two authorizations over the next 15 years.
[15] Transportation, Community and System Preservation Program, 10% of Bay Area share.
[16] Recreational Trails program, 10% of Bay Area share.
[17] Congestion and Mitigation and Air Quality Program, 10% of Bay Area share.
[18] Safe Routes to School Program, 5% Bay Area share.
[19] Transportation Enhancements, 5% Bay Area share.
[20] Congressional earmarks, Model Cities Program, 20% Bay Area share.

# 8. CONCLUSION

The San Francisco Bay Trail is an integral part of what makes the Bay Area livable. With a growing population and worsening traffic congestion, the need and demand for places to walk or bicycle has never been greater. The importance of the Bay Trail as a recreation and transportation facility is clear: every day thousands of people use the trail either to access transit, get to work, or simply exercise.

While the Bay Trail may include many miles of trail in isolated wetland areas, it also serves as a major transportation corridor for commuters in other areas. For example, Bay Trail segments in San Mateo County directly serve numerous high tech employers, while segments in Marin and Alameda link directly to ferries and transit. As congestion increases and multi-modal options expand, the Bay Trail is expected to serve an even greater transportation role in the Bay Area.

Healthy lifestyles and environmental protection are some of the top priorities of Bay Area residents, and the Bay Trail is instrumental in helping to achieve these goals. Easily accessible by the vast majority of residents, the Bay Trail offers a car-free environment for recreational use. Bay Trail projects also help educate people on environmental issues, helping to build support for further restoration and protection efforts. Bay Trail projects are often accompanied by environmental improvements as well.

Restoration of and access to the San Francisco Bay and its wetlands has enjoyed widespread public support since the 1960s, expressed through passage of laws and funding programs. The Bay Trail is an important element of this effort, helping to increase access, views, and understanding of eco-systems.

This Gap Analysis Study will be an important tool for Bay Trail project and local agency staff to focus efforts on completing the remaining gaps. More accurate cost estimates developed for each remaining segment will help identify funding needs and phasing of implementation. Much of the cost to complete the Bay Trail will be born by on-going transportation and development projects.

This study clearly identifies the remaining $187,798,000 in costs needed to complete the Bay Trail within 15 years. In order to meet this goal, new and increased public and private funding will be required. This will involve the approval of a dedicated regional and/or state funding source for the Bay Trail that will help match funds generated from existing sources. This dedicated source of funds will leverage millions of dollars in other funds, and help achieve the vision of a completed 500-mile long Bay Trail.

# San Francisco Bay Trail

# The Vision

Contributing Funders and Consultants:

Association of Bay Area Governments · Coastal Conservancy · alta PLANNING + DESIGN · Greenlnfo Network

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