POINT WILSON
SAN FRANCISCO BAY TRAIL
PRELIMINARY ENGINEERING STUDY
AND BIOLOGICAL ASSESSMENT

Prepared for:
East Bay Regional Park District
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Study Funded by a San Francisco Bay Trail Project Grant:

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Acknowledgments

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INTRODUCTION

This narrative report is designed to accompany the 20-scale preliminary design drawings prepared as a part of the Point Wilson Preliminary Engineering and Biological Assessment Study. This report presents information gathered during the project study that is not easily communicated in the project drawings. In an effort to provide a readable drawing set, and to provide thorough project documentation, relevant information that will help guide future project implementation is consolidated in the following sections.

Section 1, **Project Setting,** presents relevant information about stakeholder agencies and land ownerships.

Section 2, **Planning,** summarizes the project's compliance with existing relevant planning policies including the Bay Trail Plan, EBRPD Master Plan and others.

Section 3, **Existing Conditions**, provides a brief review of property boundaries and existing easements, utility information, existing biological conditions, and site and physical opportunities.

Section 4, **Trail Design**, reviews the process for determining the recommended horizontal and vertical alignments for the proposed trail, and discusses other design standards for the trail including width, loading, separation from the railroad, etc.

Section 5, **CEQA Compliance**, discusses a recommended environmental review approach for the Point Pinole and Point Wilson projects, and briefly reviews the technical considerations for each CEQA topic area.

Section 6, **Cost Estimate**, presents preliminary detailed cost estimates prepared as a part of design development. These costs are presented for future use by EBRPD when seeking competitive grant monies for detailed project design and implementation.

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1. PROJECT SETTING

1.1 PROJECT SETTING

This preliminary engineering study/biological assessment was commissioned by the East Bay Regional Park District (EBRPD), in September 2004 to identify design solutions, construction costs, and mitigation needs for the proposed trail alignment route through Union Pacific Railroad right of way extending from Point Pinole Steel Plant (located immediately east of Point Pinole Regional Shoreline Park) and Point Wilson. **Figure 1-1** illustrates the project area and adjacent land uses.

This study focuses on the identified Bay Trail corridor and no additional alternatives analysis is included. In a few areas, optional design solutions are shown in the project drawings. This segment of the Bay Trail is designated as the proposed trail alignment in the current Association of Bay Area Governments Bay Trail maps.[1] Based on previous alignment analysis and negotiations, this segment of the Bay Trail is proposed as a "rail with trail" facility. This term refers to recreational and multi-use trails located within an active railroad corridor.

EBRPD has an existing Memorandum of Understanding (MOU) negotiated in 1996 with the Union Pacific Railroad (UPRR), the owner of the subject railroad right of way. The existing MOU provides for trail use along specific segments of the project area, within the inland outermost 15' of the railroad right of way. This study analyzes the opportunities and constraints of the existing railroad right of way and presents the design solutions, construction costs and mitigation needs for the proposed trail.

The Capitol Corridor Commuter Express (AMTRAK) uses the Union Pacific Railroad (UPRR) corridor in addition to frequent freight traffic. The AMTRAK travels at approximately 45 to 65 miles per hour, requiring that an appropriate trail offset and other safety features be integrated into the trail design.

Frequent trespass occurs within the UPRR right-of-way creating both a current management problem for the UPRR and an opportunity to address this issue with implementation of the trail.

The segment of the railroad corridor within the project area changes character dramatically from the eastern end of the project site to the west. The eastern end of the project site (within the San Pablo Bay Regional Shoreline and immediately north of the Cypress Avenue neighborhood) is located on a steep coastal bluff. The trail must traverse down a segment of this bluff to reach the elevation of the rail bed. This segment is steeply sloped and will

[1] http://baytrail.abag.ca.gov/maps/Carquinez_Strait.pdf

require substantial slope and trail engineering to provide for the Bay Trail. At the center of the project site (adjacent to the Seaview School) the project corridor is characterized by marginal wetland areas requiring fill and mitigation to provide for the Bay Trail. The western reach of the project corridor consists of a graded gravel maintenance access road adjacent to some steep slopes and wetland areas, requiring a combination of minor cut and fill, and local retaining walls as needed.

This study presents proposed design and engineering solutions and costs to address each of the site conditions described above. The design standards for the proposed Bay Trail match the design requirements set forth by EBRPD for Point Pinole.

1. 2 PROJECT AGENCIES, LANDOWNERS AND STAKEHOLDERS

The following section describes the project stakeholders including lead agency(s), landowners, permitting agencies, and local interest groups.

EAST BAY REGIONAL PARK DISTRICT (EBRPD)

EBRPD is the lead agency for the proposed Point Wilson Segment of the Bay Trail. EBRPD will obtain all necessary easements and agreements, design, construct, manage and maintain the proposed trail segment subject to agreements with the UPRR and other landowners.

UNION PACIFIC RAILROAD (UPRR)

The UPRR is the sole landowner of the railroad corridor. UPRR retains the right to remove the proposed trail and any associated improvements if required for the construction and operation of additional tracks or other facilities as reasonably required for railroad operations. The existing MOU does not provide for the entire proposed trail length as described in this study. Additional negotiations are required between EBRPD and the UPRR.

STEELSCAPE INCORPORATED

Steelscape Incorporated owns and operates the Point Pinole Steel facility. The proposed trail will enter the Steelscape property at the western edge of the project site. A railroad spur line extends from the UPRR right of way into the Steelscape property. The proposed trail will follow the southern boundary of the spur line into the Steelscape property subject to agreements negotiated by EBRPD.

PINOLE POINT PROPERTIES

Pinole Point Properties owns land located between the UPRR right-of-way and BNSF right-of-way to the south. This parcel extends along the southern boundary of the proposed trail corridor from the approximate midpoint of the project site to near the western boundary. Pinole Point Properties ownership encompasses the cattail marsh areas described below, which may require minor fill encroachment to accommodate the proposed trail. Agreements addressing the potential impact of the proposed fill on the Pinole Point Properties will need to be negotiated by EBRPD.

CONTRA COSTA COUNTY SANITATION DISTRICT

Contra Costa County Sanitation District owns property abutting the UPRR right-of-way. The District leases property to the Montara Bay Community Center. Irrigated baseball fields are located adjacent to the proposed trail corridor. Agreements addressing the potential impact of proposed fill and drainage

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East Bay Regional Park District

Regional Location and Surrounding Land Uses

Scale: 1" = 24,000"

Feet
0 950 1,900 2,850

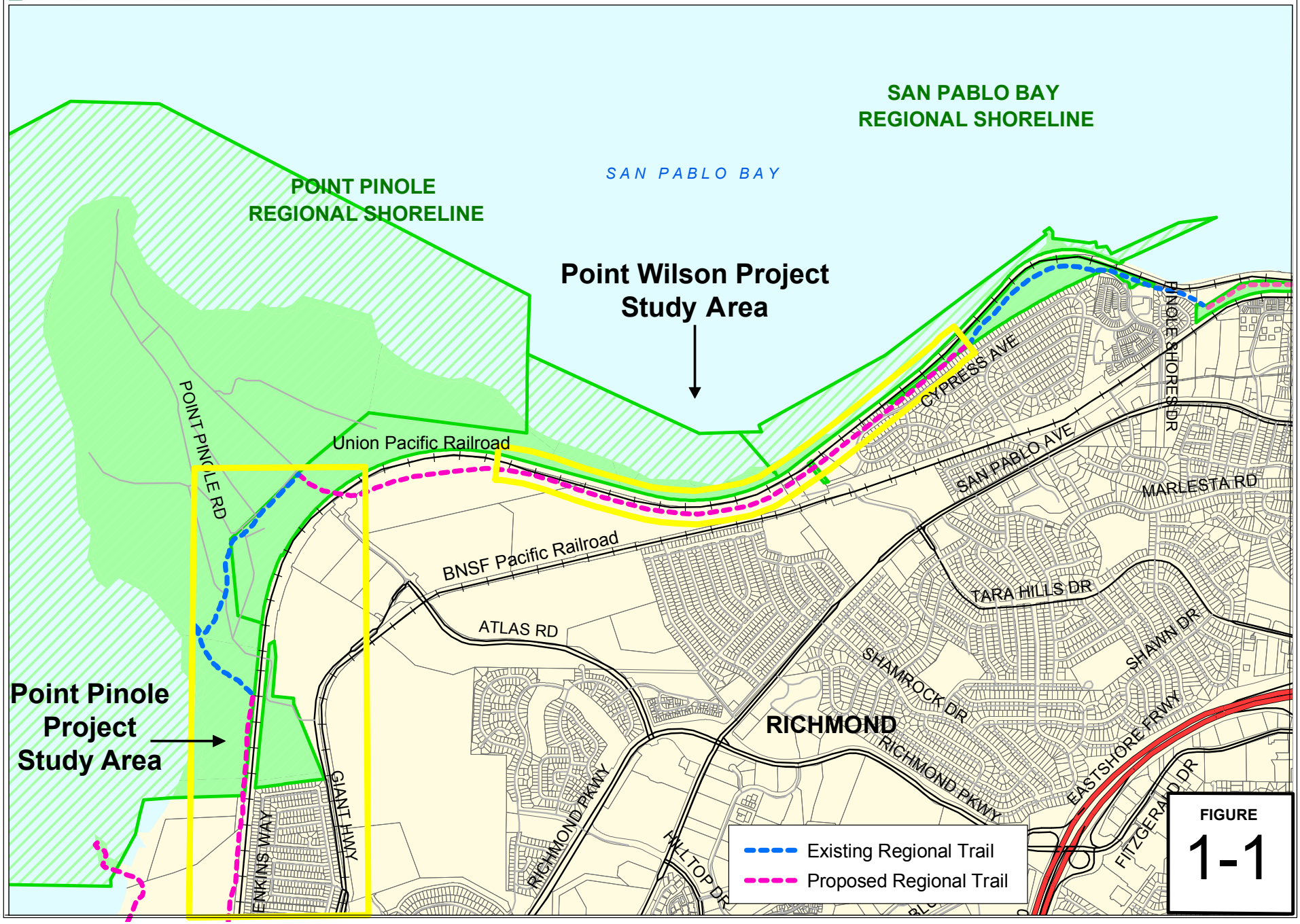

FIGURE
1-1

Figure 1-1

Regional Location 8.5x11 COLOR

BACK

on the on Montara Bay Community Center facilities will need to be negotiated by EBRPD.

ASSOCIATION OF BAY AREA GOVERNMENTS

ABAG is a regional agency coordinating planning among the cities and counties within the greater San Francisco Bay Area. It was established by the state legislature in 1961 to protect local control, plan for the future, and promote cooperation on area wide issues. ABAG's duties include implementation of the Bay Trail Plan. Bay Trail staff administers distribution of State funds from the California Coastal Conservancy for completion of feasibility, design and construction of Bay Trail segments and facilities. This feasibility and preliminary study was funded by ABAG and the Coastal Conservancy through a San Francisco Bay Trail Project Grant.

The Bay Trail is a regional trail system designed to provide shoreline access opportunities linking communities along San Francisco Bay. It is administered by the Association of Bay Area Governments (ABAG).

CALIFORNIA DEPARTMENT OF FISH & GAME (CDFG)

The CDFG's mission is *"to manage California's diverse fish, wildlife, and plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public."* In addition to review of projects for impacts to wildlife through CEQA, they administer the issuance of Streambed Alteration agreements, Sections 1600-1616 of the Fish and Game code. This requires that any person, state or local governmental agency, or public utility must notify CDFG before beginning an activity that will substantially modify a river, stream, or lake, and may require a Lake or Streambed Alteration Agreement. For this project, a Streambed Alteration Agreement would be required for fill or alteration of the drainage ditch adjacent to the proposed alignment, as well as any wetlands impacts.

U.S. FISH AND WILDLIFE SERVICE (USFWS)

The U.S. Fish and Wildlife Service is the principal federal agency responsible for conserving, protecting and enhancing fish, wildlife and plants and their habitats for the continuing benefit of the American people. It enforces federal wildlife laws including the Endangered Species Act, designates migratory flyways, and conserves and manages wildlife habitat and wetlands. The USFWS would need to be consulted regarding possible habitat impacts to endangered species, if trail planning conflicts with species protection. USFWS will also provide input as part of CEQA review. Consultation with USFWS is usually triggered when projects include wetlands impacts that are reviewed as part of Corps of Engineers regulatory permitting.

U.S. ARMY CORPS OF ENGINEERS (USACE)

The U.S. Army Corps of Engineers enforces Section 404 of the Clean Water Act, related to the protection of wetlands. In addition, the Corps is involved in navigation and coastal maintenance and improvements to ports and harbors, regulatory compliance and permit activities, flood control planning activities, and emergency management. At Point Wilson, the Corps would be involved in CEQA review, as well as permitting associated with fill or modification of jurisdictional wetlands within the ditch parallel to the trail alignment, bridge crossing at the slough outlets, and potential impacts to freshwater wetlands south of Seaview School.

BAY CONSERVATION AND DEVELOPMENT COMMISSION (BCDC)

The San Francisco Bay Conservation and Development Commission (BCDC), a state agency, was established in 1965 to protect and manage activities that affect San Francisco Bay. BCDC's responsibilities include: providing maximum feasible public access to and along the shoreline of the Bay consistent with the BCDC's policies on Public Access, as well as regulating all filling and dredging in San Francisco Bay and new development within the first 100-feet inland from the Bay to ensure that the limited amount of shoreline area suitable for high priority water-oriented uses is reserved for ports, water-related industries, water-oriented recreation, airports, and wildlife areas.

Portions of the trail alignment (within the 100-foot shoreline band, or below elevation 6.0) will be subject to review by BCDC. BCDC is charged under its law, the McAteer-Petris Act, with both protecting the Bay and its wildlife resources and providing for maximum feasible public access consistent with a project to and along the Bay. Recent revisions to BCDC's regulations as a result of the Aroner Bill (AB 954) require that the Commission, when considering whether a project provides maximum feasible public access, must determine whether the access is compatible with wildlife protection in the Bay and consult with the Department of Fish and Game on this matter.

In light of potential effects of public access on wildlife, BCDC undertook in 1999 an in-depth two year research and policy development process, the Public Access and Wildlife Compatibility Policy Development Project, which led to revisions of policies in the *San Francisco Bay Plan* and advisory *Public Access Design Guidelines* to include information on specific siting, design and management strategies to avoid or minimize adverse effects of public access on wildlife.

CONTRA COSTA COUNTY

The project area is located within an unincorporated area of Contra Costa County recently studied by the Contra Costa County Redevelopment Agency. The Montalvin Manor Pedestrian Safety and Transit Access Study was completed in 2003 under a Transportation for Livable Communities Grant from the Metropolitan Transportation Commission. The study emphasized a need for improved neighborhood access to the proposed Bay Trail within the project area of this current study.

WEST CONTRA COSTA UNIFIED SCHOOL DISTRICT

The West Contra Costa Unified School District administers the Seaview Elementary School, which borders the UPRR right-of-way. Student safety is an important issue for the school and access control to the right-of-way is addressed in this study. Recommendations for improved management of the school site are included in this study.

TRAC (TRAILS FOR RICHMOND ACTION COMMITTEE)

TRAC is a local trail advocate working to assist in the planning and implementation of the Bay Trail and connector trails in West Contra Costa County, primarily in Richmond. TRAC has advocated for design and development of the Point Wilson segment of the San Francisco Bay Trail.

CITY OF RICHMOND

The City of Richmond is located to the west and southwest of the proposed Pt. Wilson project site. City of Richmond agencies will not have management responsibility for the proposed trail, yet local

emergency services such as the City of Richmond Fire Department may be required to access the trail. Access requirements for emergency services vehicles are addressed below under 4.4.

CITY OF PINOLE

The City of Pinole is located to the east of the proposed Pt. Wilson project site. City of Pinole agencies will not have management responsibility for the proposed trail, yet local emergency services such as the City of Pinole Fire Department may be required to access the trail. Access requirements for emergency services vehicles are addressed below under 4.4.

2. PLANNING ISSUES

2.1 PUBLIC ACCESS POINTS

POINT PINOLE REGIONAL PARK

The Point Pinole Regional Shoreline Park provides an existing Bay Trail segment that is currently isolated from the Richmond Parkway Bay Trail segment to the south and the San Pablo Shoreline Bay Trail segment to the northeast. With the possible future completion of the Bay Trail through the Breuner Property, Giant Marsh, Point Pinole Regional Park and the UPRR right-of-way, the Point Pinole Regional Park will become a primary trail staging area and access point. The park is open between the hours of 5 AM and 10 PM unless otherwise posted. Access to the Bay Trail at this location will be restricted to the same hours and curfew. Parking is currently $4 per vehicle and would be required for trail users leaving a vehicle within the park while using the Bay Trail. This location is shown in Figure 2-1.

EXISTING EBPRD PARCEL AT SEAVIEW SCHOOL

EBPRD owns the parcel located between the Seaview School property and the Montara Bay Community Center. This parcel was acquired with the intent of providing public access to the proposed Bay Trail but is currently undeveloped. The Montara Bay Community Center property, owned by Contra Costa County Sanitation District, provides ample parking and direct access to the EBRPD parcel, thereby providing direct access to the proposed Bay Trail in this area. Prior to development of this EBPRD land as a formal access point and trailhead, EBRPD will develop a management, maintenance and parking agreement with Contra Costa County Sanitation District, owner of the existing informal gravel parking area serving the community center and ball fields.

MONTALVIN NEIGHBORHOOD ACCESS

The Montalvin Neighorhood Council has a stated interest in Bay Trail access and this issue should be addressed by the City of Richmond, Contra Costa County, and the East Bay Regional Park District. Opportunities for access are detailed below. Direct access from the Montalvin Neighborhood is addressed in Section 3.4 of this study under Neighborhood Access.

2.2 BAY TRAIL PLAN CONSISTENCY

The Bay Trail Plan provides overriding general policies for the planning, design and implementation of the regional Bay Trail. With multiple implementation and management agencies responsible for the Bay Trail, these policies help to ensure that the Bay Trail is implemented as a recognizable and cohesive facility. Consistency with the overriding general policies of the Bay Trail Plan is identified in the Table 2-

1 below. Table 2-1 is a general description of the five major Bay Trail Policy Areas and are not the specific Bay Trail Policies in the Bay Trail Plan. The complete Bay Trail Plan Policies can be found in the Bay Trail Plan available from ABAG.

Table 2-1
Bay Trail Design Guidelines and Project Consistency

Bay Trail Plan Policy	Project Consistency
Trail alignment policies reflect the goals of the Bay Trail program—to develop a continuous trail which highlights the wide variety of recreational and interpretive experiences offered by the diverse bay environment and is situated as close as feasible to the shoreline, within the constraints defined by other policies of the plan.	The proposed Point Wilson Bay Trail segment is located as close as is feasible to the shoreline, and will provide a variety of local and regional recreational opportunities. See Attached plans for the proposed trail alignment.
Trail design policies underscore the importance of creating a trail which is accessible to the widest possible range of trail users and which is designed to respect the natural or built environments through which it passes. Minimum design guidelines for trail development are recommended for application by implementing agencies.	The proposed Point Wilson Bay Trail segment will meet or exceed the recommended Bay Trail design guidelines.
Environmental protection policies underscore the importance of the San Francisco Bay's natural environment and define the relationship of the proposed trail to sensitive natural environments such as wetlands.	The proposed Point Wilson Bay Trail is designed to avoid environmental impact to the fullest extent possible. Detailed sensitive resource mapping was completed as a part of the trail feasibility analysis and the trail is designed to avoid sensitive plant and animal communities.
Transportation access policies reflect the need for bicycle and pedestrian access on Bay Area toll bridges, in order to create a continuous trail and to permit cross-bay connections as alternative trail routes.	The proposed Point Pinole Bay Trail segment will close a key gap in the Bay Trail system enabling non-motorized transportation access between the San Pablo Bay and East Bay areas.
Implementation policies define a structure for successful implementation of the Bay Trail, including mechanisms for continuing trail advocacy, oversight and management.	The East Bay Regional Park District will serve as the lead implementation and management agency for the proposed Bay Trail segments, enabling ease of management and maintenance in conjunction with adjacent park lands.

2.3 EAST BAY REGIONAL PARK DISTRICT MASTER PLAN CONSISTENCY

The East Bay Regional Park District Master Plan (1997) identifies the need for new paved and unpaved multi-use trails in *Chapter 3: Public Access and Services*, under the *Recreational Facilities and Areas, Trails* subheading. Paved multi-use trails are identified as needed in the Park District's West Metropolitan sector, an area that includes North Richmond and Unincorporated West Contra Costa County. In addition, the San Francisco Bay Trail is identified as a planning and implementation priority for the District in *Chapter 4: Planning and Acquisition*.

3. EXISTING CONDITIONS INVENTORY

The project area includes the Union Pacific Railroad (UPRR) right of way, a heavily-used rail corridor, from the San Pablo Regional Shoreline Park in the east to the Point Pinole Steel property in the west. The predominant width of the right-of-way (ROW) is 100 feet accommodating an existing double track. The track runs roughly east-west along this segment of the railroad.

North of the tracks is tidal marsh and rock hardened shoreline. This area is owned by the California State Lands Commission and leased and managed by the East Bay Regional Park District.

South of the tracks (from east to west) the following land uses and ownerships are present:

- Point Pinole Regional Shoreline and San Pablo Regional Shoreline, EBRPD
- Residential development served by Pinole Shores Drive and Cypress Avenue
- Seaview School, West Contra Costa School District
- West Contra Costa County Sanitation District #3, Montara Bay Community Center
- West County Waste Water District, Pump Station
- Pinole Point Properties, Undeveloped
- Burlington Northern Santa Fe Railroad Right of Way
- Steelscape Inc., Point Pinole Steel Manufacturing Plant

Land ownerships and parcel boundaries are presented in **Figure 3-1**. Relevant agencies and landowners are described above under Section 1.2, along with any necessary agreements that should be obtained by EBRPD.

The consultant team for this study conducted field reconnaissance investigation to identify project design considerations including:

- Property Boundaries and Easements
    - Property Boundaries
    - Existing Agreements and Easements
- Location of Existing Improvements
    - Fencing
    - Railroad Fixtures
    - Utilities
- Physical and Biological Considerations
    - Sensitive Habitat Areas
    - Wetlands
    - Drainage Patterns
    - Geotechnical Constraints
- Site and Physical Opportunities
    - Views
    - Trail Connections
    - Neighborhood Connections

3.1 PROPERTY BOUNDARIES AND EASEMENTS

PROPERTY BOUNDARIES

Figure 3-1 illustrates approximate locations of existing parcel boundaries in relationship to the project study area and proposed trail.

EXISTING AGREEMENTS AND EASEMENTS

UPRR EBRPD Memorandum of Understanding

EBRPD has an existing Memorandum of Understanding (MOU) negotiated in 1996 with the Union Pacific Railroad (UPRR), the owner of the subject railroad right of way. The existing MOU provides for trail use along specific segments of the project area, within the inland outermost 15' of the railroad right of way. **Figure 3-2** shows the location of the existing MOU as it pertains to the Point Wilson project.

Agreements for the railroad corridor segment between the Point Pinole Regional Shoreline Park and the San Pablo Regional Shoreline Park include a longitudinal access easement from UPRR milepost 20.95 to milepost 21.33. The milepost points demarcate roughly the eastern half of the project site. The boundary of the existing MOU is shown in the attached plans.

This longitudinal easement specifies that the trail shall be located in the outermost 15 feet of the right-of-way and shall be maintained according to District standards, including a suitable fence as determined by the District. The trail must also be patrolled by District law enforcement personnel. Any disagreement regarding the easement will be arbitrated by the California Public Utilities Commission (PUC). The PUC is the California agency responsible for administration of railroad safety. The MOU is included as Appendix A.

3.2 LOCATION OF EXISTING IMPROVEMENTS

Fencing

Property boundary fencing exists throughout the project site. Each of the ownerships described above under 1.2 are demarcated by existing chain link fence of varying heights, predominately six feet or fewer. Fences are maintained by private contractors to the property owners and the UPRR. Fences along the UPRR ROW are typically maintained via the ROW.

Railroad Fixtures and Appurtenances

Numerous mile post markers, switch indicators and other equipment boxes are located within the ROW within the project study area. Based on the field work conducted for this study, none of the observed fixtures are located such that they present a design concern for the proposed trail. Prior to construction of the proposed trail, all railroad fixtures will be surveyed in conjunction with other utilities as discussed below.

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East Bay Regional Park District

Land Ownership
Point Wilson Project Study Area

Scale: 1" = 24,000"

0 390 780 1,170 Feet

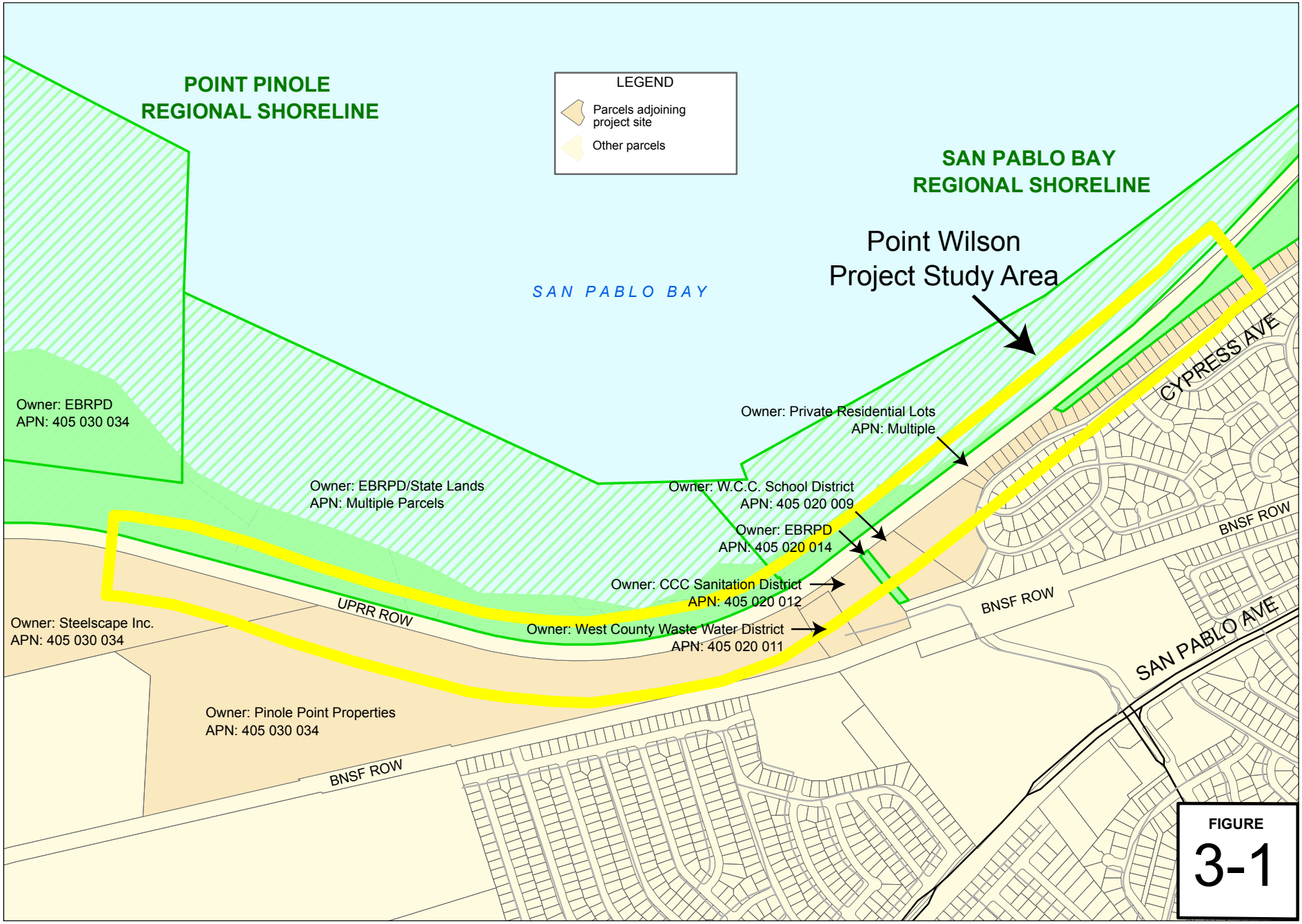

FIGURE
3-1

Figure 3-1

Land Ownerships 8.5x11

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Location of Existing MOU EBRPD/UPRR

Scale: 1" = 24,000"

0 390 780 1,170 Feet

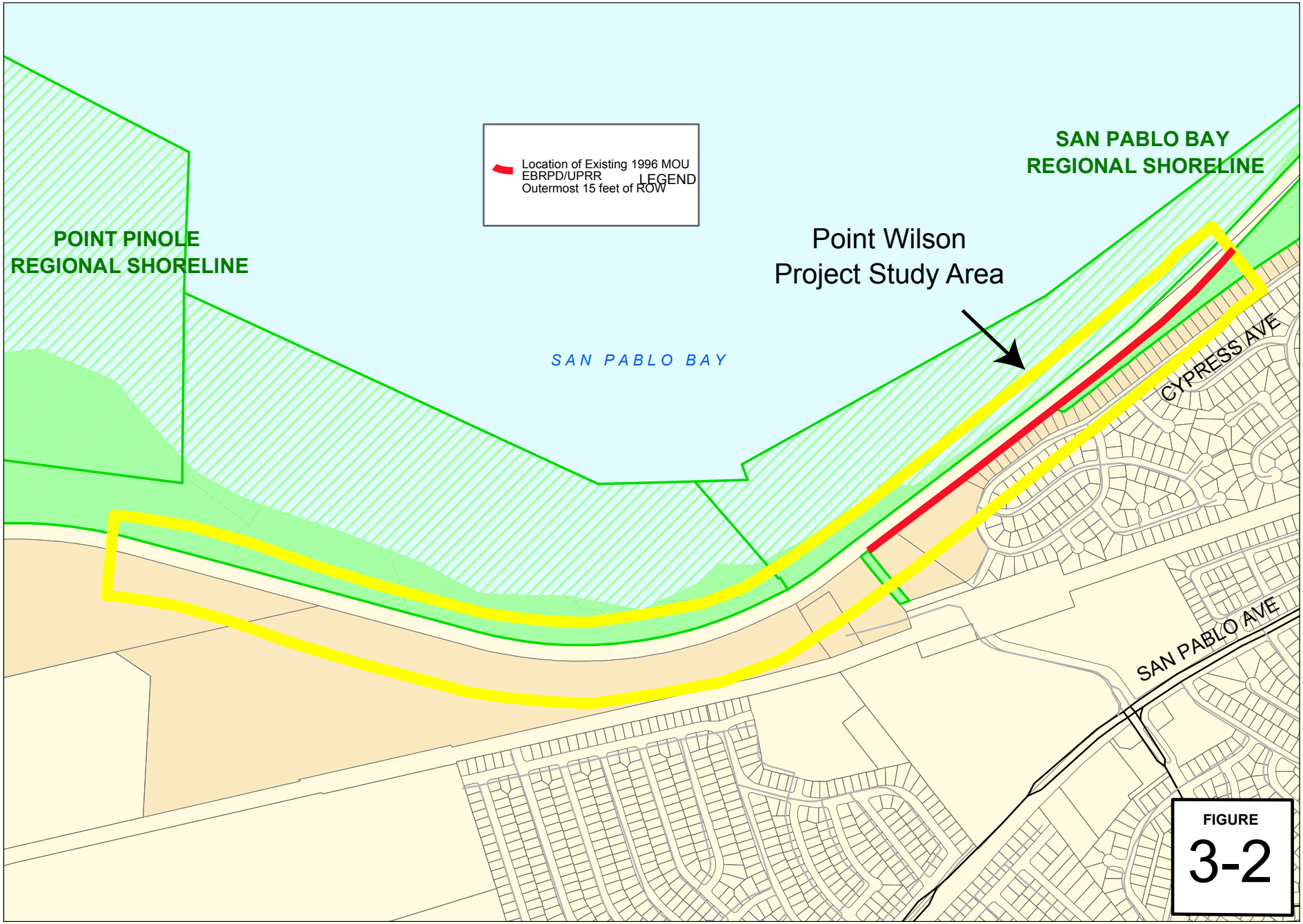


FIGURE
3-2

Figure 3-2

Location of Existing EBRPD UPRR MOU

8.5x11 COLOR

BACK

Utility Easements

As is common along many railroad rights-of-way (ROW) within the San Francisco Bay Area, the UPRR ROW in the Point Wilson area contains many underground utilities, including all identified in Table 3-1 below.

Table 3-1
Utilities Identified in Project Area

Utility	Type	Notes From Underground Service Alert (USA) Check Conducted by Project Consultants November, 2004
PG&E –	High Pressure Transmission	Will Need To Relocate 1000'lf Of Line
Kinder-Morgan	Petrochemical	Will Need To Relocate 60'lf Of Line
AT&T –	Fiber Optic	No Response To USA Ticket
Comcast –	Cable	No Response To USA Ticket
MCI –	Telephone	Line Within 8'-10' Offset Of RR
Qwest –	Telephone	Line Within 8'-10' Offset Of RR
West County Waste Water District–	Sewer	Line @ Garrity Creek Crossing
Chevron -	Petrochemical	Service Lines Between San Pablo Avenue And BNSFRR
Level 3 Communications –	Telephone	No Response To USA Ticket)
Pacific Bell –	Telephone	No Service Lines In Area
East Bay Municipal Utility District –	Water	No Service Lines In Area

Most of these utilities are currently only approximately marked in the field using marker posts, which may either directly overlay, or be an offset of the underground cables or pipelines. Existing utility company mapping is generally not precise enough to accurately locate all of the utilities, and even if they were accurately located, it would be nearly impossible to locate and design the trail to avoid overlying all of them.

The utilities within the potential trail easement or possible future right of way were field mapped as a part of this feasibility study after being field located and marked by representatives of the individual companies through the Underground Service Alert (USA) notification program. This does not represent an accurate survey, but is suitable for general trail planning purposes.

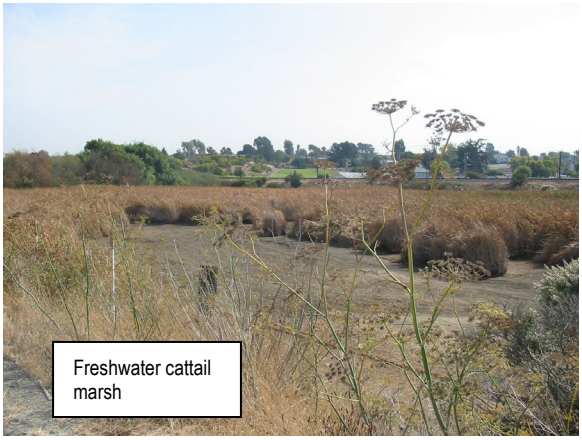
Because of the numerous utilities, the trail will need to be designed to overlie the majority of them, but allow for continued easy access and trail restoration following utility maintenance and repair. The biggest danger is in severing the utilities or rupturing the fuel pipelines during trail construction, especially during the installation of any wall footing or support piles. Trail installation near Seaview School and Montara Bay Community Center is of special concern, and if possible, trail construction work should be completed during a time period when school is not in session.

Two of the underground fuel pipelines are located along the bench top of the Cypress Avenue terrace, where a retaining wall and ramp portion of the trail structure will be needed to traverse down the face of the cliff from the terrace top to the railroad grade elevation. One of the pipelines has been exposed by erosion along the cliff face. Construction of the trail in this area (Segments 7& 8) will necessitate relocating up to 300 feet of the pipelines.

It will be necessary to accurately locate the fuel pipelines in the Cypress Ave. terrace top and along the cliff prior to final design engineering, as well as all of the utilities in areas where deep wall footings, piers or piles would be utilized. Except for the terrace top and cliff face portion, it has been possible to lay out the trail so as to avoid impacting the probable locations of the underground utilities by the wall footings and piles.

The majority of the utilities should be accurately located by potholing during the construction process, especially in areas where footings and piles are needed. The location of the utilities should be field located by potholing or other methods, precisely surveyed in, and then marked with an offset marker during the actual trail construction process. Copies of the surveyed utility locations, including the locations of field marking posts should then be provided to all of the affected utilities.


Freshwater wetland grasses caused by over-irrigation


Freshwater cattail marsh

3.3 PHYSICAL AND BIOLOGICAL CONSIDERATIONS

VEGETATION TYPES AND HABITAT AREAS


Pickleweed marsh east of UPRR/alignment

The Point Wilson site includes a variety of vegetation types. Wetland and riparian habitats are shown in **Figure 3-3**. Endangered and threatened species are shown in **Figure 3-4**.The majority of the alignment is located within the gravel access road next to the UPRR tracks, or adjacent to this area, within disturbed grassland habitat. Other vegetation types along the alignment include:

- Disturbed annual grasslands, at the north end of the project site at the top of the slope, as well as disturbed slope areas adjacent to the UPRR ROW. This area is characterized by non-native annual grasses, ornamental landscaping, and scattered live oak trees and coyote bush.

- Willow/riparian thicket, adjacent to the northeast project boundary, at the terminus of the existing trail. The willows occur within a small spring fed drainage way and along the hillside seeps of the lower portion of the bluff site. Most of the willow areas are considered jurisdictional wetlands under Section 404 of the Clean Water Act as administered by the U.S. Army Corp of Engineers. The trail alignment was selected to avoid this area, and no additional disturbance to this area is anticipated.

- Saltgrass/pickleweed ditch, west of Seaview School and may be draining into Garrity Creek. Minor fill of this ditch is required to provide separation from the rail tracks. This ditch is located between a paved parking lot and the UPRR gravel track area, and is isolated from other habitat areas. These areas are also assumed to be jurisdictional wetlands (see Appendix C: Wetlands Delineation)

- Garrity Creek is a tidal slough with a creosote/railroad tie bridge crossing west of Seaview School. Replacement with a clearspan pedestrian/emergency access bridge, and replacement of an existing pipe obstruction should improve habitat conditions in that area. Potential mitigation exists by creating or increasing tidal vegetative zones with a more gradual slope. The new bridge abutment shown in the 1:20 scale plans in Appendix B will likely disturb a small area of jurisdictional wetlands below the Mean High Water (MWH) elevation.

- Freshwater channel exists west of the Montara Bay Ballfields, and is saturated due to excessive irrigation of the fields. It is unlikely that this area would continue to function as a freshwater wetland without this supplemental inundation, and would likely resemble the ditch to the north.

- Tule marsh exists in a poorly drained wetland basin formed by the UPRR embankment between the steel plant and Seaview School. Limited fill of the lower slope may affect the edge of this habitat. This area contains a homeless encampment, and off road vehicles use the area for recreation. There are potential enhancement opportunities for improving the hydrologic regime, removing fill and improved plantings.

- Pickleweed marsh exists east of the UPRR alignment. As with the cattail marsh, this low lying area had poor drainage in part due to the railroad embankment. In addition to the pickleweed, saltgrass, and fat hen, a number of annual grasses and forbs occur in this basin, segregated by elevation. Limited fill of the slope edge may be needed to provide sufficient trail width/track separation. This area could be enhanced by removing existing fill spoils, removing debris and waste, and improving the hydrologic regime, created by the existing culvert with significant deferred maintenance.

Of these habitat types, the willow/riparian thicket, tidal channel and tule/pickleweed marshes are the most sensitive habitat areas. The trail alignment has been selected to completely avoid the willow/riparian thicket, and a clearspan bridge is proposed to avoid impacts to Garrity Creek. Special status species surveys may be needed to identify the presence of sensitive species within any of the habitat areas where limited fill is proposed.

In general, the alignment should be adjusted where feasible to avoid impacts to these habitat areas, and mitigation should be incorporated into the project to enhance disturbed areas. Recommended enhancement/mitigation efforts to be completed as part of the trail construction include:

1. Create/enhance pickleweed marsh east of UPRR by removing fill spoils, fencing to preclude off-road access, removal of debris and human waste, and culvert repair/replacement to enhance tidal connection.

2. Enhance tule habitat by precluding vehicular access to area, repair/replacement of culverts to improve circulation.

3. Plant native buffer species adjacent to Seaview School to increase shrub/tree canopy.

4. Remove railroad ties/creosote bridge abutments adjacent to Garrity Creek, repair/replace existing pipe obstruction.

VEGETATION

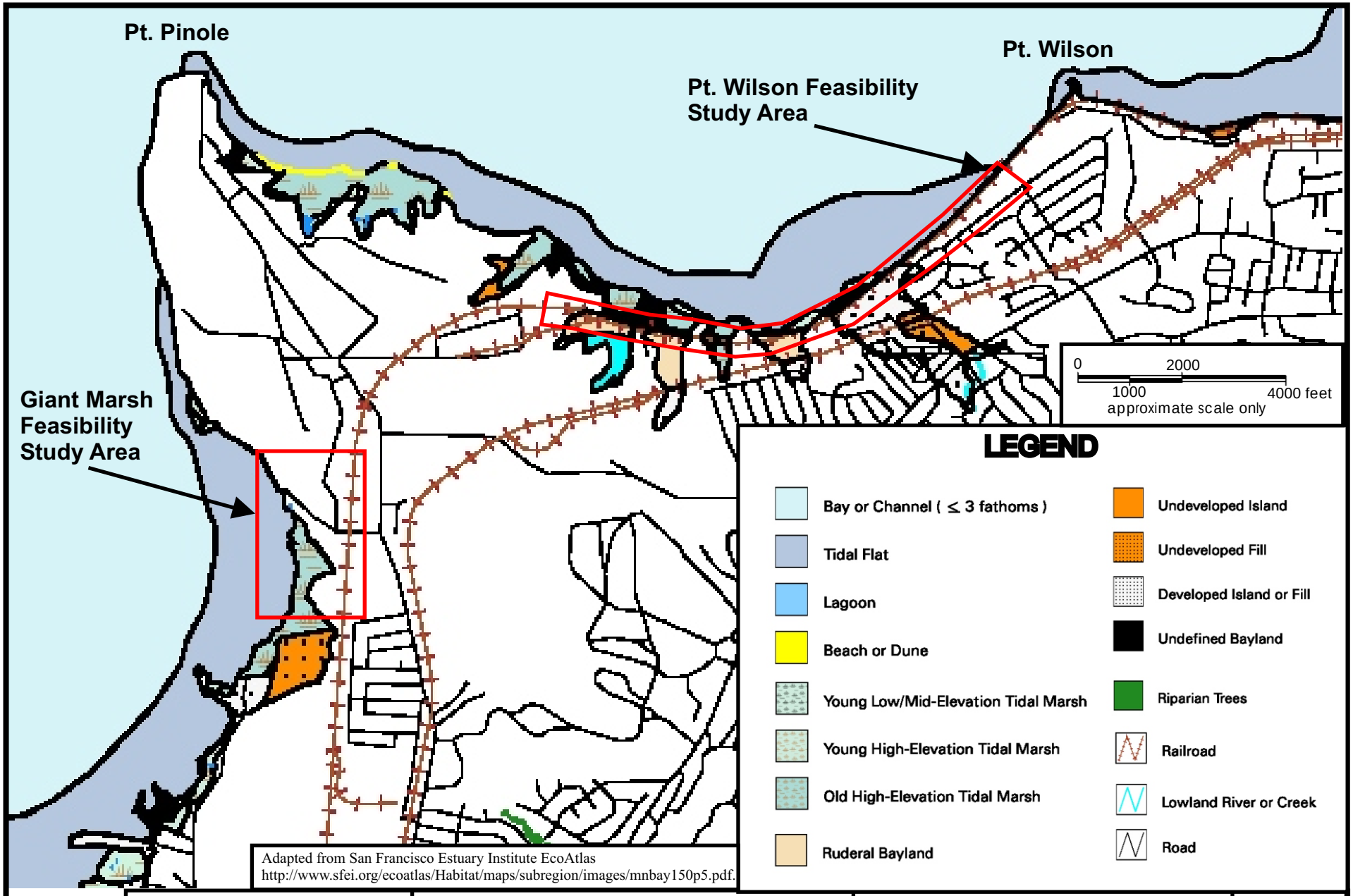
Plant species associated with upland, or non-wetland areas, within the project area are ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), oats (*Avena* spp.), fennel (*Foeniculum vulgare*), spring vetch (*Vicia sativa*), Italian thistle (*Carduus pycnocephalus*), and coyote brush (*Baccharis pilularis*). Weedy and exotic plants such as pampas grass (*Cortedaria* sp.), prickly pear cactus (*Opuntia* sp.) and palms also occur on the slopes. Houses along the trail have landscaped yards with non-native ornamental plants.

Most of the potential wetland areas occur as seasonal or freshwater marsh communities. This includes a ditch at the northern end of the study area associated with a willow scrub community that grows on the lower hill slope where springs and seeps emerge. Vegetation within the ditch changes to a more salt or brackish marsh community type. Garrity Creek is tidal within the study area and is also dominated by salt marsh plant species. At the south end of the study area potential wetlands consist of cattail marsh. Wetland plant species found within the study area include freshwater and seasonal wetland plants such as cattails (*Typha* spp.), willows (*Salix* spp.), bulrush (*Scirpus acutus*), umbrella sedge (*Cyperus eragrostis*), velvet grass (*Holcus lanatus*), and creeping wildrye (*Leymus triticoides*). Salt water to brackish marsh species included inland saltgrass (*Distichlis spicata*), pickleweed (*Salicornia virginica*), alkali heath (*Frankenia salina*), and cordgrass (*Spartina* sp.).

GEOLOGY

The geology of the site and vicinity is characterized on the US Geological Survey publication *The Preliminary Geologic Map Emphasizing Bedrock Formations in Contra Costa County, California (USGS Open-file report 94-622, 1994*), as consisting of undivided Quaternary deposits. Quaternary geologic mapping is shown in **Figure 3-5**. The State of California has mapped the area as belonging to the Upper Contra Costa Group, which consists of Pliocene-Pleistocene age poorly indurated sandstone, conglomerate, siltstone and shale (California Division of Mines and Geology, Preliminary Report 19, 1973). The USGS Preliminary Surficial Geologic Map of Contra Costa County indicates that surficial geology consists of Pleistocene age alluvial fan deposits (older alluvium). The maps generally agree that the units are of Pleistocene age and consist of terrigenous sedimentary deposits. These deposits form upland areas elevated above the modern bay plain by 20 to 30 feet. Pt. Wilson itself is a small promontory composed of shale of the Tice Formation, which projects into the bay. In the vicinity of Garrity Creek, recent alluvial deposits are present, as well as bay mud deposits. The bay muds are susceptible to settlement when loaded and may contain loose sandy deposits. The railroad grade has been constructed from a combination of cuts through the older alluvial deposits and bedrock and artificial fill on the low-lying recent alluvial deposits and bay mud to create relatively level to gentle grades. The embankments are constructed of predominantly crushed rock, as is the case with most railroad corridors.

The Hayward fault is located within two miles to the west of the trail section crossing to the west of Point Pinole. Strong to violent ground shaking can be expected to occur during the life of the project, and may be due to an earthquake on the Hayward fault, or other regionally significant faults such as the San Andreas fault, Rodgers Creek fault, or others. Alluvial deposits may be subject to secondary earthquake affects such as liquefaction, lateral spreading or lurch cracking as well as seismically induced landsliding. The older alluvial deposits present in the trail section are likely to be more consolidated than younger alluvial deposits, and are therefore considered to have a low to moderate susceptibility to seismically induced ground failures. Younger alluvial deposits and bay mud deposits, such as those in the Garrity Creek area, are considered to have a



Date: 12/15/04
Drawn: JF
Appr'd: JP
Dwg. No. 240083Wetlandsmap

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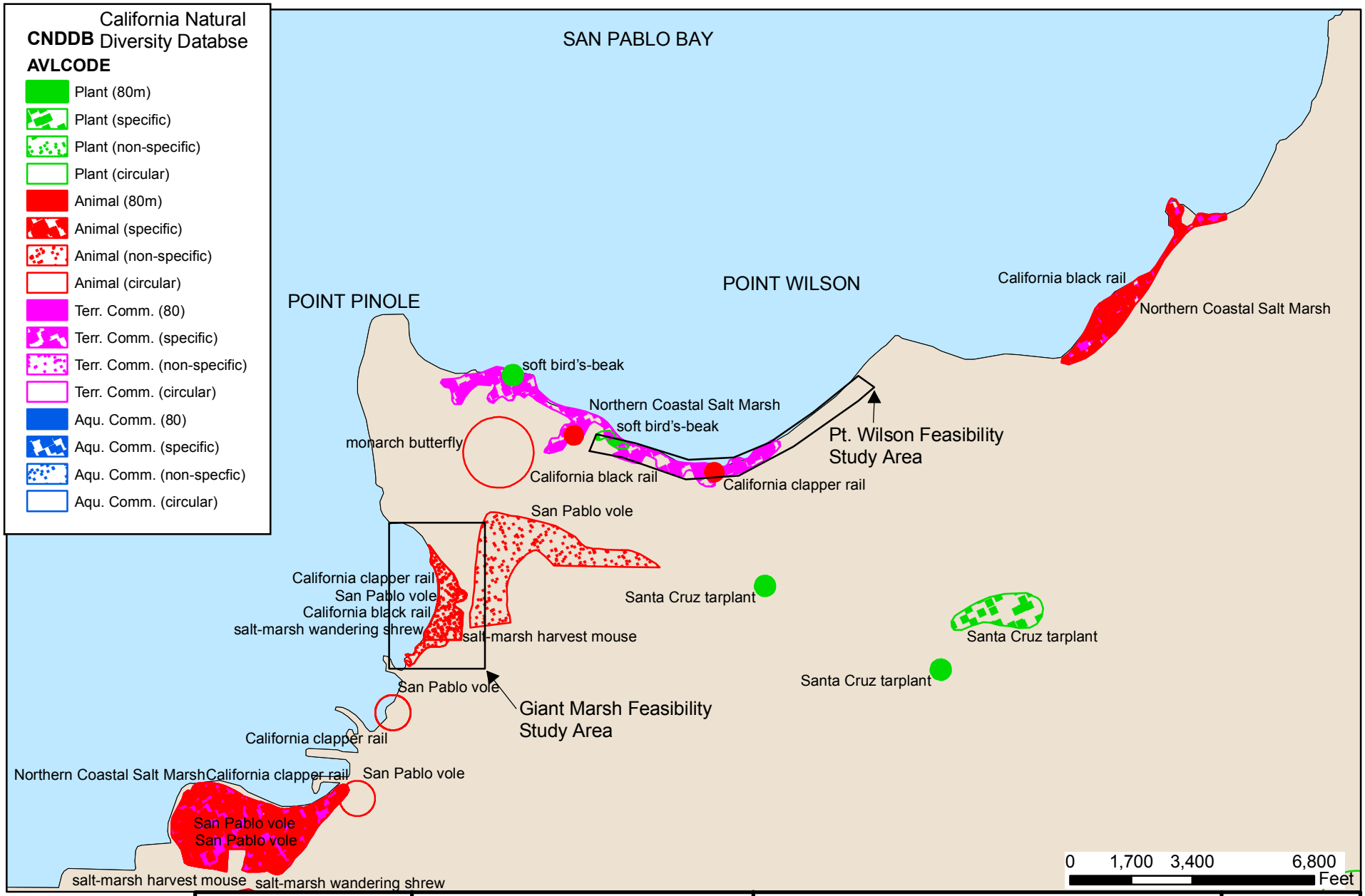
Wetlands/Riparian Habitats San Francisco Bay Trail Pt Pinole to Pt Wilson

FIGURE
3-3

Figure 3-3
Habitat Types
8.5 x 11
BACK



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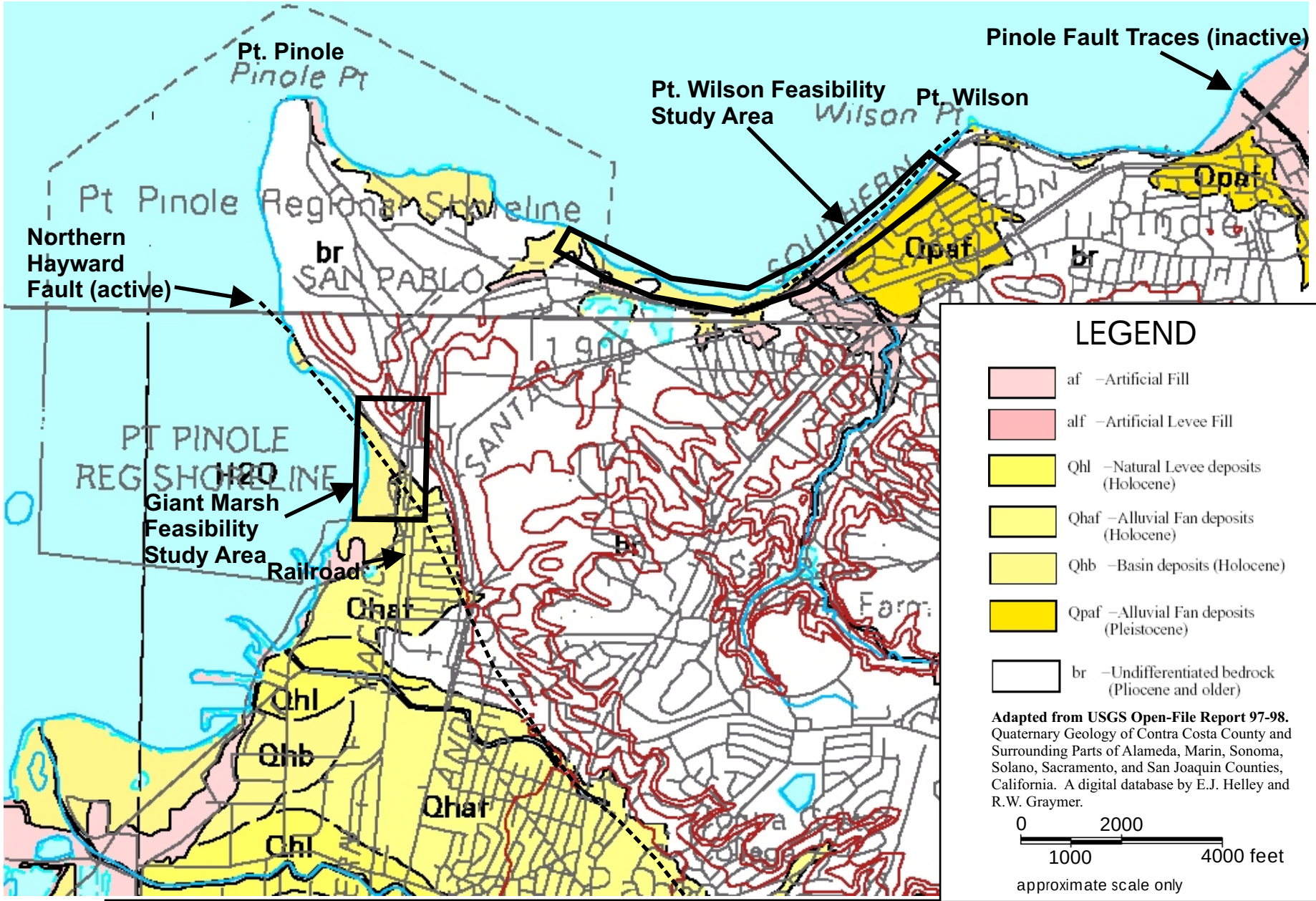
Endangered and Threatened Species San Francisco Bay Trail Pt. Pinole to Pt. Wilson

FIGURE
3-4

Figure 3-4
Species
8.5 x 11
BACK



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Quaternary Geologic Map San Francisco Bay Trail Pt Pinole to Pt Wilson

FIGURE 3-5

Figure 3-5
Geology
8.5 x 11
BACK

moderate to high susceptibility to seismically induced ground failures. Artificial fills, such as those constructed for the railroad embankment, generally have a lower susceptibility to seismically induced ground failure, but underlying soil conditions could result in damage to overlying fills and any structures on the fills during strong ground motion (earthquake) events.

Slightly inclined thin beds of firm weathered pebble conglomerate and sandy siltstone (older alluvium/poorly indurated rock) are exposed in a few areas along the railroad cut face. Cut slopes made along the railroad grade within the older alluvial deposits typically are most stable at slopes of 2 horizontal to 1 vertical (2:1) or less steep. Current slope steepness of the cut slope face varies, with some sections as steep as 1.5:1. The steeper sections tend to have small slumps, sloughing and erosion problems. Retaining walls constructed on the slopes should include drilling or excavation into firm underlying materials. Slopes proposed steeper than 2:1 require retention, or should be laid back to be no steeper than 2:1. A combination of retaining walls and laying back of upper slope areas to 2:1 slopes is an appropriate method. Shallow groundwater flows along and through the thin more permeable beds, and perennial seeps emerge in several places at the base of the cut face, especially in a zone that supports dense willows near the eastern end of the feasibility study area. Groundwater could be encountered during the grading of the older alluvial deposits and all retaining structures should be back drained to collect and remove groundwater from behind the structures.

Fills proposed in areas of recent alluvial deposits, bay muds, or other marsh deposits will be susceptible to a variety of unstable conditions. Alluvial deposits typically include areas of loose sands as well as tidal channel and over-bank deposits of soft silt and clay. Loose sands are susceptible to liquefaction and dynamic densification, which can result in settlement during strong ground shaking from earthquakes. Bay muds, marsh deposits, and over bank deposits are typically composed of low density silts and clays, which are commonly saturated. These materials can be subject to settlement due to loading with artificial fill soils. For trail segments to be constructed on fill over recent bay mud or marsh deposits, methods to control the potential for settlement should be incorporated into the design. This may include surcharging the fill, or the use of other stabilization measures.

Typically, firm older bay mud underlies the more recent bay mud and provides better foundation conditions. Although the depth to older bay mud is not known at Pt. Wilson, it is often in excess of 20 to 25 feet. Pile supported structures such as boardwalks and bridge abutments typically are supported on piles driven into the older bay mud.

SOILS

Soils information is taken from the Soil Survey of Contra Costa County, California published by the USDA Soil Conservation Service and issued September 1977. Soil types within the project area include cut and fill land Los Osos complex, 9 to 30 percent slopes; Tierra loam, 9 to15 percent slopes; Omni silty clay, and Reyes silty clay. The cut and fill land, Los Osos complex, 9 to 30 percent slopes occur on the cut slopes and developed area above the railroad tracks. Tierra loam occurs in the northern portion of the study area along the shoreline, including the railroad tracks. Omni silty clay occurs near Garrity Creek and Reyes silty clay occurs along the shoreline south of Garrity Creek and is representative of the salt to brackish marsh community type. Soils within the project area ranged from clay loam to sandy loam. Soil chroma was ranged from 2 to 4, so the soils were mostly light colored. Mottles or other hydric characteristics were generally lacking.

HYDROLOGY, DRAINAGE AND FLOODING

Although portions of the trail alignment studied occur at relatively low elevations of between 5 and 8 feet above mean sea level, most of the trail would be protected from tidal flooding from San Pablo Bay by the presence of the elevated Union Pacific railroad embankment, which is typically at an elevation of 10 to 12 feet or more. **Figure 3-6** shows local flood zones. The extreme (100-year) storm water and tidal flooding elevation is estimated by FEMA to be 6.9 feet (1929 NGVD) in this area. This creates a relatively wide 100-year floodplain along the low lying areas of lower Garrity Creek (Figure ---) in the vicinity of the UPRR. Typically, very high tides that can occur several times a year are at elevations of about 4.2 to as much as 4.5 feet, with rare tidal flooding up to about 5.0 feet. Tidal flooding above 5.5 is a very rare (once per decade or more) event.

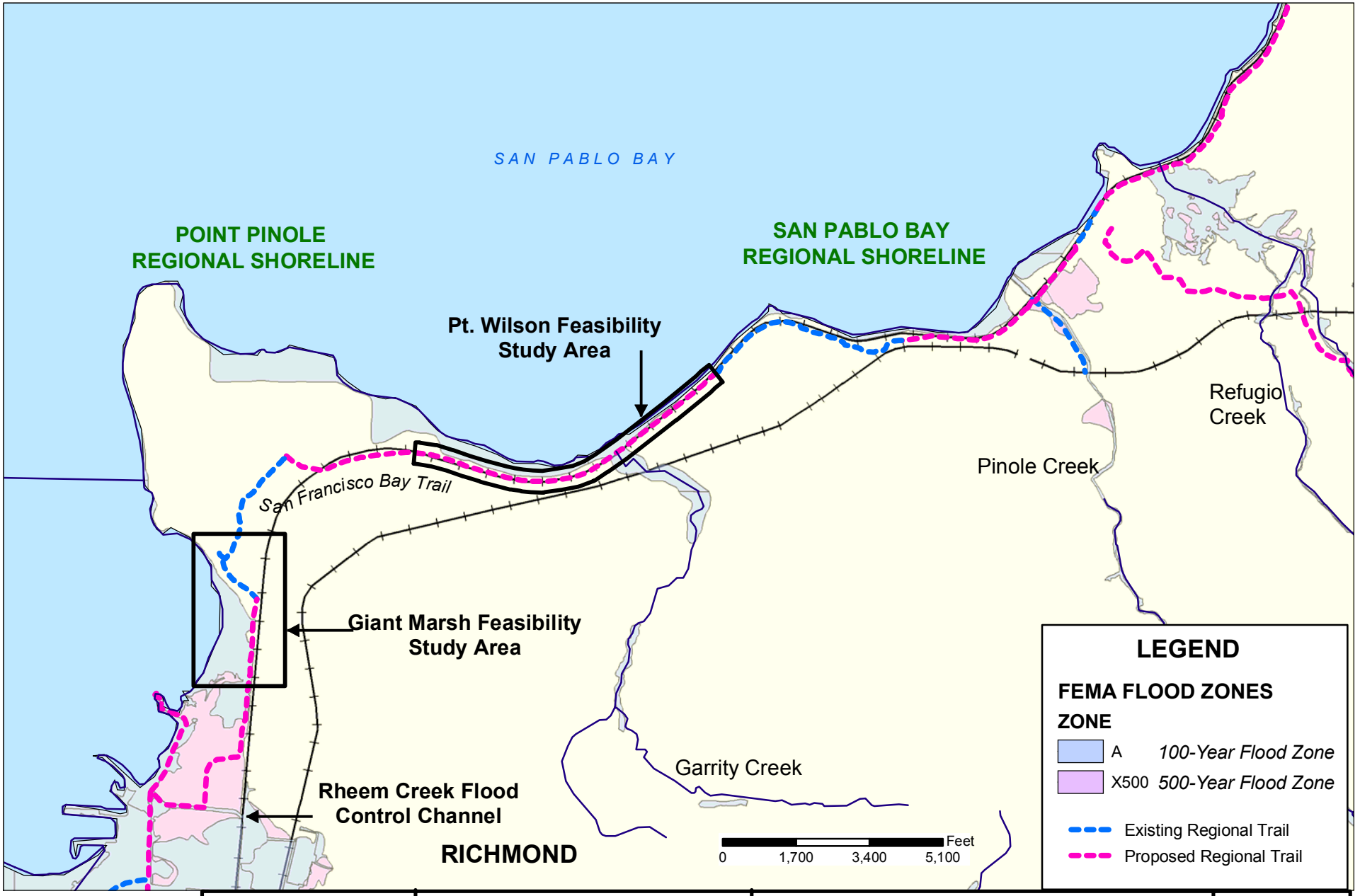
Garrity Creek is fully tidal, and the portion of the ditch drainage system that runs parallel to the UPRR on the southeast side of Garrity, (both to the east along Seaview School, and to the west below Montara Bay Community Center ballfields), with an invert elevation of about 4.0 to 5.0 feet, is subject to tidal inundation during the highest tide events. The Montara Bay Community Center is also at a relatively low elevation and drains primarily by sheet flow and along the EBRPD ROW in this area to Garrity Creek. This situation creates poor drainage conditions for low lying properties in this area, especially during the confluence of high tides and heavy rainfall runoff events, when there is nowhere for the stormwater runoff in the drainage ditches to go, until tide levels drop. Because of this condition, trail elevations will need to be at a minimum elevation of 8 feet, and a preferred elevation of 9 to 10 feet.

The drainage ditch system runs along the southern side of the UPRR from the base of the bluffs along Cypress Avenue to the east, to just beyond the West County Wastewater sanitary sewer pump station near the community center. However the ditch invert and grade line increases in elevation to the east and west, so that tidal influence does not extend the entire length of the ditch system. In addition to the ditch system, there are several small (6-8") culverts that provide cross drainage beneath the railroad grade to San Pablo Bay. Where the trail alignment encroaches into this ditch system, the ditch will have to be reconstructed outward or to the north to tie into Garrity Creek.

The trail system will also intercept runoff from the hillside areas and the backyards of houses to the south, along the segment from Cypress Drive to Seaview School, the Montara Bay Community Center and sanitary pump station area. Where the trail and fill sections abut these slopes, positive cross drainage will need to be provided, either in a V-ditch and drop inlet system or by cross sloping or outsloping the trail.

Further west of the Community Center and pump station, through the Pt. Pinole steel yard, the trail is primarily on the elevated embankment of the railroad and there are no significant drainage issues. The trail would primarily be at an elevation of 9 to 12 feet in this zone.

The elevated railroad embankment crosses two large low lying basins or wetland areas, partially created by the embankment blocking drainage outflow from these areas. The wetland basin created or accentuated by the partial damming effect of the railroad embankment to the east is higher lying with a bottom elevation of 5.0 to 6.0 feet and is above high tide. As a result, it is a freshwater and cattail dominated wetland. The culvert or structure that provides drainage beneath the railroad grade is obstructed by rocks on both the inflow and outflow sides, so the size and condition of the structure cannot be determined. Since the outlet is undersized to drain this area, the wetland acts as a detention basin during high tides and heavy rainfall events. The inlet is also partially blocked by sediment and debris, and detains stagnant water, but the outlet or marsh side appears to be relatively unobstructed and



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FEMA Flood Zones
San Francisco Bay Trail
Pt. Pinole to Pt. Wilson

FIGURE
3-6

Figure 3-6
Flooding
8.5 x 11
BACK

free-flowing. This structure should be examined again prior to construction to determine if maintenance or replacement (by slip lining) is warranted.

The second large wetland basin further to the west is at a slightly lower elevation, (4.0 to 4.5) and at one time prior to construction of the railroad embankment was likely a tidal marsh, with salt affected soils. This area is drained by a single open, 30"cmp culvert to the adjacent tidal marsh to the north of the UPRR. As a result, this wetland area is more brackish and contains pickleweed and other salt tolerant plants.

The base of the trail foundation walls that will be needed to provide a level trail on the embankment slopes at both of these locations will be located at or very near to the wetlands edge. As with the cattail wetland, the culvert in the pickleweed wetland should be inspected for maintenance needs at the time of trail construction. It is not recommended that the undersized culverts (from a drainage viewpoint) be increased in size, or converted to a flap gate system, as this will adversely effect the hydrology, and the functions and values of these wetlands.

The cattail wetland is being adversely impacted by its informal use as an off road motorcycle, four wheel drive, and BMX course. In addition, a large homeless encampment occurs in the willow grove on the south end of it. Although the majority of this wetland and the equally degraded pickleweed wetlands are privately owned, there are good opportunities for mitigation by creating wetlands via fill removal around the margins, trash and debris removal, and enhancement planting.

WETLANDS

The total area of potential Section 404 wetlands within the project is approximately 197,500 sq. ft. (4.53 acres). The total area of Section 10 waters (Garrity Creek within the mean high tide water mark) is approximately 0.01 acres. Section 404 wetlands within the project area include coastal salt marsh and freshwater/seasonal wetlands. Garrity Creek appears to fall under Section 10 since it is fully tidal within the study area. Coastal wetlands above the mean high water mark fall under Section 404. Wetlands within the mean high water would be under Section 10. Wetlands vegetation and hydrology in this area extend to an approximate upper elevation of 5.5 feet NGDU. Areas below the mean high water in Garrity creek are not well vegetated. There are no Section 10 wetlands, only Section 10 waters of the U.S.

The wetland delineation for the project site is contained in Appendix C.

ENDANGERED SPECIES

Special-Status Species

Special-status species are plants and animals that are legally protected under state and federal Endangered Species Act (ESA) or other regulations, and species that are considered sufficiently rare by the scientific community to qualify for such listing.

A list of special status plants with potential to occur at or near the study area was obtained from the California Natural Diversity Data Base (CNDDB). Only Soft bird's beak was listed in the CNDB for the coastal salt marsh along San Pablo Bay in the Pt. Wilson area.

Table 3-2:
Special-Status Plant Species with Potential to Occur Adjacent to Point Wilson Site

Common name Scientific name	Listing status State/Fed/ CNPS[2]	Habitat	Distribution	Flowering Period
Soft bird's beak *Cordylanthus mollis* ssp. *Mollis*	FE/CR/1B	Coastal salt marshes	Reported in CNDB in nearby saltmarsh north of UPRR, conditions unsuitable in study area. Plant not observed in saltgrass -pickleweed ditch during wetlands delineation of 10/14/04	July-September

A brief description of the listing status, distribution, and habitat association of each special-status animal species with potential to occur in the project area is provided in Table 3-3. The most significant of these from a trail planning perspective is the potential occurrence of the Salt Marsh Harvest Mouse (SMHM) and California black rail, both fully protected species that live in bay and coastal salt marshes. Black rail was listed in the CNDB as being observed in nearby coastal salt marsh on the north side of the UPRR. The narrow finger of pickleweed and saltgrass that occur in the vicinity of the tidally influenced Garrity Creek represents too small of a habitat patch and too poor in habitat quality to support the rail.

Salt Marsh Harvest Mouse has not been reported in the CNDB in the Pt. Wilson area. Potentially suitable habitat occurs associated with Garrity Creek and within the large pickleweed wetlands basin in the eastern end of the project area that was formed behind the railroad berm.

Table 3-3 :
Special-Status Wildlife Species with Potential to Occur Adjacent to Point Pinole Study Area

Species	**Status federal/ state**[3]	**California distribution**	**Habitats**	**Potential for occurrence**
Salt marsh harvest mouse Reithrodontomys raviventris raviventris	E/E	San Francisco, San Pablo, and Suisun Bays; the Delta.	Salt marshes with a dense plant cover of pickleweed and fat hen; adjacent to an upland site.	Moderate to high in nearby salt marshes north of UPRR, but not listed in CNDB
San Pablo vole Microtus californicus sanpabloensis	--/SSC	San Pablo Bay	Drainage Channels along San Pablo and Wildcat Creeks	Low-Not found in adjacent surveys in Giant Marsh in 1999-2000-2001
California clapper rail Rallus longirostris	E/E	Marshes around the San Francisco Bay and	Saltwater marshes/tidal	Presumed to occur in salt marshes north of

Source: CDNB database search

[3] Status explanation:
FE = Federal endangered
CR = listed as rare under the California Native Plant Protection Act. This category is no longer used for newly listed plants, but some plants previously listed as rare retain this designation.
C = species for which USFWS has on file sufficient information on biological vulnerability and threat(s) to support proposals to list them as endangered or threatened.
1B = List 1B species; rare, threatened, or endangered in California and elsewhere.
E: endangered; T: threatened; SC: species of concern; R: rare; SSC: California species of special concern; P: protected by CDFG

obsoletus		east through the Delta to Suisun Marsh	sloughs; pickleweed;	UPRR, habitat unsuited on south side.
California black rail Laterallus jamaicensis coturniculus	--/T	Permanent resident, San Francisco Bay & eastward	Tidal salt marshes, pickleweed, brackish or freshwater marshes at low elevations.	Species reported in CNDB at near-by salt marsh north of UPRR, unsuitable habitat on s. side
Northern harrier Circus cyaneus	--/SSC	Throughout lowland CA; has been recorded in fall at high elevations	Grasslands, meadows, marshes, and seasonal and agricultural wetlands providing tall cover.	Moderate
White-tailed kite Elanus leucurns	--/P	Lowland areas west of Sierra Nevada from head of Sacramento Valley south	Low foothills or valley areas, riparian areas, and marshlands near open grasslands for foraging.	Moderate
Saltmarsh common yellowthroat Geothlypos trichas sinuosa	SC/SSC	Found only in the San Francisco Bay Area,	Freshwater marshes/saltwater or brackish marshes, require tall grasses, tules, and willow thickets for nesting and cover	Moderate- possibly suitable habitat in large cattail marsh, but previously reported in this area.
Salt marsh vagrant (wandering) shrew Sorex vagrans holicoetes	--/SSC	Restricted to southern and northwestern San Francisco Bay.	Mid elevation salt marsh habitats with dense growths of pickleweed; requires driftwood and other objects for nesting cover.	Low
California red legged frog Rana aurora draytonii	FT/CSC/CP	Northern California	Ponds, lakes, streams	Low- no suitable habitat, basins dry out
Western pond turtle Clemmys marmorata	FSC/CSC	Northern California	Ponds, streams, ditches	Low, no suitable habitat
Osprey Pandion haliaetus	CSC	San Francisco Bay area	Open water areas	High-Observed flying over area,
Tricolored blackbird Agelaius tricolor	FSC/CSC	Northern California	Freshwater marshes and riparian scrub	Low-not documented in vicinity
Western burrowing owl Speotyto cunicularia hypugea	FSC/CSC	California	Grasslands with existing mammal burrows	V Low-Could occur potentially on grasslands south of UPRR, but not reported in CNDB
Short eared owl Asio flammeus	CSC	California	Open grasslands	Low-Could possibly occur on grasslands south of UPRR –

3.4 SITE AND PHYSICAL OPPORTUNITIES

VIEWS

Expansive views of the San Pablo Bay exist along the project corridor. Views are unobstructed due to the lack of urban development and lack of vegetation and because the railroad corridor is located on the shoreline and maintained free of obstructions. The development of all design features for the trail, including security fencing, should preserve existing views to the fullest extent possible.

TRAIL CONNECTIONS

The proposed Point Wilson Trail segment will connect to existing and proposed Bay Trail segments.

The Point Pinole Bay Trail segment to the west is currently under study and will be developed by EBRPD. The Point Pinole segment will extend through Point Pinole Regional Shoreline Park and a connection between the Point Pinole and Point Wilson segments will be developed through the Steelscape, Inc. property subject to agreements between EBRPD and the property owner.

The San Pablo Regional Shoreline Park Bay Trail segment currently extends from the existing parking area at Shores Drive in Pinole west to the vicinity of Point Wilson.

No other regional or local trails are located within the proposed project area or vicinity.

NEIGHBORHOOD CONNECTIONS

Several potential neighborhood connections exist in the vicinity of the proposed project.

Montalvin Manor and Tara Hills

The Contra Costa Redevelopment Authority recently completed the Montalvin Manor Pedestrian and Transit Access Project. This project identifies potential pedestrian and bicycle improvements between the Montalvin Manor neighborhood and surrounding land uses. Several potential projects for improving access from the neighborhood to the Montara Bay Community Center, Sea View School, and the Bay Trail are identified. These projects include:

1. **New Pedestrian and Bike Bridge**. This structure would be completed over the BNSF track from Montalvin Park to the Montara Bay Community Center, taking advantage of the existing cut for the RR ROW. This structure is estimated to cost $3,332,000.

2. **Sidewalk and Bikeway Improvements On San Pablo Avenue and Tara Hills Drive**. These improvements would include uninterrupted sidewalks along the north side of San Pablo Avenue to Tara Hills Drive and a dedicated sidewalk along Tara Hills Drive from San Pablo Avenue to the Montara Bay Community Center.

Cypress Avenue

No direct connection to the Bay Trail is planned or is readily apparent to the Bay Trail from the neighborhood encircled by Cypress Avenue. Homes on Cypress Avenue have rear yards abutting the Sea View School property and the UPRR ROW. The lack of a formal pedestrian and bicycle connection between this neighborhood and the Sea View School and proposed Bay Trail requires residents to use surface streets to San Pablo Avenue to gain access. A joint project undertaken by the City of Pinole, Contra Costa County and EBRPD could identify potential improvements to this connection.

4. TRAIL DESIGN

The preliminary design for the proposed Point Wilson Bay Trail segment is presented in the 20 scale drawing set prepared as a part of this study contract, also presented at 40 scale in 11x17 presentation size in Appendix B).

This narrative section summarizes selection of the trail alignment, rail with trail design issues, and design and construction approaches.

4.1 TRAIL ALIGNMENT SELECTION

The proposed trail alignment for the Point Wilson segment of the Bay Trail addresses several key factors:

- Safety of trail users on a trail facility located within a high use active railroad ROW
- Liability and operational concerns of the freight and passenger rail operators using the UPRR ROW
- Physical slope constraints and engineering costs within the UPRR ROW
- Biological and wetland resources within the UPRR ROW
- Management requirements and costs to be incurred by EBRPD for the long-term management and maintenance of the proposed trail facility.

Based on a field review, engineering analysis, and opportunities and constraints analysis related to the above factors, the proposed alignment and design approach was developed by the consultant team and agency project management staff.

4.2 RAIL WITH TRAIL DESIGN CONSIDERATIONS

The primary consideration influencing the horizontal alignment of the proposed Bay Trail for the Point Wilson segment is the requirement for sufficient offset from the UPRR tracks. There is no adopted offset standard promulgated by any agency or technical body. California and the U.S. Department of Transportation offer guidance on this design issue. A review of the relevant studies and precedents is provided here prior to statement of a recommended standard for this proposed project.

SEPARATION OF TRAIL FROM ACTIVE RAIL TRACKS

In rail with trail corridors, the minimum setback distances should take into consideration the speed and frequency of trains in the corridor, maintenance requirements, separation technique, historical problems, and engineering and cost considerations. Each of these topics is addressed below.

Minimum Standards

State public utilities commissions and the Federal Railroad Authority publish minimum setback standards (also known as "clearance standards" for fixed objects next to active railroad tracks, the distance between two active tracks, and adjacent walkways (for railroad switchmen). These published setbacks represent the legal minimum setbacks based on the physical size of the railroad cars (light rail cars are typically the smallest type), and are commonly employed along all railroads and at public grade crossings.

The California Public Utilities Commission (CPUC) has such standards. Minimum distance from the centerline of an active railroad to the outside edge of a RWT should be 2.6 m (8.5 ft) on tangent, and 2.9 m (9.5 ft) on curved track. However, for safety and liability protection, Federal Railroad Administration (FRA) officials recommend that the setback distance for the general public should be much greater than that allowed for railroad workers.

Speed and Frequency of Trains

The UPRR corridor is a high volume, high speed corridor serving both freight and passenger rail. Union Pacific freight runs approximately 25 times per day ranging in speed from 25 miles per hour to 45 miles per hour. The Amtrak Capitol Corridor commuter rail runs twelve eastbound and twelve westbound trains per day, for a total of 24 trains, moving at approximately 45 to 60 miles per hour.

Maintenance Requirements

The majority of UPRR ROW maintenance is conducted from the rail track itself using specialized rail-based equipment. Maintenance access to the corridor is important to maintain in order to address drainage or other issues along the perimeter of the ROW. The proposed trail and fence barrier will not preclude maintenance access to the corridor, however, periodic removable fence sections are desirable to allow UPRR equipment to pass through proposed fence without needing to remove a permanent structure. A recommended interval for removable fence sections is every 500 feet.

Historical Problems

Trespassing is common within the proposed project area. Residents of nearby neighborhoods, students from Seaview School, and visitors from throughout the region walk along and cross the UPRR track. Many trespassers are seeking to access the shoreline, such as the rocky promontory at Pt. Wilson, as evidenced by the clear user defined paths worn through existing vegetation and slopes. This desire to access the shoreline must be addressed in the trail design in order to minimize liability for the UPRR and EBRPD. No barrier solution will completely eliminate trespassing on the UPRR track, thus a design solution that serves as a physical reminder of the need to stay off the track is recommended over a more expensive, higher maintenance solution that would encourage vandalism.

User defined pathways from adjacent properties show a clear pattern of trespassing. This photo illustrates a cut fence and worn trail leading from the Sea View School parking area into the UPRR ROW.

Separation Technique

Background

Separation design (fencing and other barriers) can also help to reduce the minimum required setback for a specific facility. *Rails-with-Trails: Lesson Learned* contains a section on fencing types and details on specific barriers advocated by rail operators.

Fencing adjacent to the UPRR tracks should be used to provide protection and separation from track debris, with a curved section. Fencing should be non-climb. Typically four foot high chain link fencing can be used.

In 1996 and 1999 the Rails-to-Trails Conservancy surveyed managers of existing rail with trail facilities in order to gather data on a variety of typical rail with trail characteristics, including fencing and barriers. The findings from the most recent report, include that 70% of rail with trail facilities do include a barrier between the trail facility and the active railroad (26 facilities). This includes both partial and continuous barriers. Approximately 30 % (11 facilities) had no barrier.

Of the 26 trails with barriers separating the tracks and trail, the following types of barriers were used (Note: Many trail managers identified more than one type of separation.):

- Vegetation as a barrier 11 (32.4%)
- Grade separation 9 (26.5%)
- Chain link fence 7 (20.6%)
- Ditch 3 (8.8%)
- Wire fence 1 (2.9%)
- Split rail fence 1 (2.9%)
- Cement wall 1 (2.9%)
- Wrought iron fence 1 (2.9%)

On a similar high use, high speed corridor in Southern California, the South Coast Railroad Authority (SCRRA) Metrolink design guidelines for the project specify that the fence barrier shall be six feet minimum in height for the corridor segments, and four feet minimum in height within 150 feet of an at-grade intersection crossing. This lower height in proximity to the crossing is intended to increase visibility for trail users and motorists in the vicinity of the intersection.

Recommended Barrier

A continuous four foot high fence is recommended to serve as a deterrent to trespass from the proposed trail onto the UPRR track.

A four (4) foot barrier will preserve views to the Bay from the proposed trail. This is an important aspect of the proposed Bay Trail segment. Elimination of views from the proposed trail would significantly diminish trail user's experience and would negatively impact the goal of providing enhanced open space access in West Contra Costa County.

A variety of fence types should be considered depending on public input (stated important of view preservation), UPRR input on liability and access considerations, and the final project budget as established by EBRPD. Sample fence design options are presented in **Figure 4-1**.

RECOMMENDED SEPARATION FOR THE POINT WILSON BAY TRAIL SEGMENT

The U.S. Department of Transportation Federal Highway Administration and Federal Railroad Administration in the 2004 report *Rails-with-Trails: Lessons Learned* specifies that the minimum rail-with-trail setback (offset) for unconstrained flat sections of a high speed, high frequency rail corridor is 25 feet. This general description corresponds to the conditions of the project study area.

A 25-foot separation can be achieved within this corridor segment, using extensive cut and fill of existing slopes, and retaining wall and other structures in order to maintain a trail tread that is accessible and will be low maintenance.

A reduced setback along some sections of the proposed trail may be negotiable with the UPRR in order to reduce the project costs.

4.3 DESIGN AND CONSTRUCTION APPROACHES

Trail design sections as well as construction protocols to minimize disturbance to adjacent habitat, and mitigate impacted lower value wetlands, will be critical to successful project implementation. Trail design issues include:

- Trail Width, Vertical Clearance and Surface Needs
- Vehicular Load Rating for Emergency Access
- Fencing And Screening Adjacent to Marsh
- Construction Impacts to Wildlife Resources
- Post-Construction Effects Due to Increased Human Presence

4.4 TRAIL WIDTH, VERTICAL CLEARANCE AND SURFACE NEEDS

The trail alignment needs to provide sufficient area for maintenance and access by EBRPD personnel vehicles, UPRR maintenance and law enforcement vehicles, emergency response vehicles, and contractors to both agencies.

The Point Wilson Bay Trail segment is not projected to be a "high use" segment of the Bay Trail but will benefit from regular local use and occasional regional or "through" use. Thus, the "multi-use path" standards identified by ABAG are the most appropriate for this Bay Trail segment.

Consistency with the Bay Trail Plan design guidelines is important in order to create a regional trail system that provides similar accommodations for trail users and maintenance access. The Bay Trail Plan Design Guidelines for implementation of new trails is presented in Table 4-1 below.

Table 4-1
Bay Trail Design Guidelines

Item	High-use facilities (separate paths)*	Multi-use paths*	Bicycle-only paths*	Hiking-only paths	Natural trails
Min. width (one way)	8-10'	10'	8'	5'	3-5'[a]
Min. width (two way)	10-12'	10-12'	10-12'	8-10'	5'
Surface	asphalt[b]	asphalt	asphalt	hardened	natural/ boardwalks[c]
Horizontal clearance (incl. shoulders)	12-16'	14-16'	10'	9-12'	7-9'
Shoulder[d]	2'	2'	2'	2'	unspecified
Vertical clearance	10'	10'	10'	10'	unspecified
Cross slope	2% max	2% max	2% max	2% max	unspecified
Maximum grades[e]	5%	5%	5%	5%	unspecified

* Standards meet Caltrans Class I bikeway standards:
[a] Minimum widths that are less than 5' will be required to have 5'x5' turnouts at intervals to meet accessibility standards
[b] High-use pedestrian path could be hardened surface other than asphalt
[c] Natural surfaces may require surface hardening to provide accessibility
[d] Area specified is area on both sides of the trail
[e] Percentage grade for short distances with flat rest areas at turn outs, except where site conditions require a greater slope for short distance

Table 4-2
Bay Trail Design Standards Comparison
To Project Design Standards

Item	Bay Trail Multi-Use Paths Standards	Point Wilson Proposed Standards
Min. width (one way)	8-10'	12'
Min. width (two way)	10-12'	12'
Surface	asphalt[b]	asphalt
Horizontal clearance (incl. shoulders)	12-16'	14-16'
Shoulder[d]	2'	0'
Vertical clearance	10'	Unlimited
Cross slope	2% max	2% max
Maximum grades[e]	5%	5%
Pull Out Spacing (intervals between pullouts)	Not Specified	None required
Vehicle Loading	Not Specified	26,000 Lbs to 32,000 Lbs

4.5 STRUCTURAL REQUIREMENTS

TRAIL SURFACING AND TYPICAL TRAIL DESIGN SECTION

The standard trail will be a 12-foot-wide asphalt concrete (AC) paved section with 0.5-foot unpaved shoulders, providing a 13-foot-wide emergency vehicle access travel way. The typical 3-inch thick AC paving will be placed over a 6-inch section of Class 2 aggregate base (AB), compacted to 95% relative compaction.

As discussed in the next section, in a number of areas the trail section will need to be built up to provide a transition grade to higher lying areas, or to place the trail above the 100-year flood elevation of 6.0 feet NGVD, and to provide a site line to San Pablo Bay. The minimum trail surface elevation will be 8.0 feet, and generally in the 9- to 12-foot elevation range where the trail parallels the UPRR tracks. In general, there is adequate fill from cut sections at the east end of the project to meet trail engineered fill needs. The native soil (other than bay mud) is suitable for use and placement as an engineered fill section.

A geosynthetically supported cellular confinement system (geocell) will need to be used where fill is placed over soft, wet soils (especially in areas of bay mud) to provide the foundation support necessary to carry the proposed emergency vehicle design loads. Geocells typically come in 8-inch-high units, and in a few areas two or three stacked geocells may be needed. Areas where geocell trail foundation support is needed are shown on the drawings, but should be confirmed in follow-up geotechnical investigations.

GRADING

Trail construction will require a moderate amount of both slope cuts and engineered fill placement to achieve a uniform grade, with a maximum down-trail slope of 5%. The area of the most significant grading is along the terrace or bluff at the east end of the feasibility study area. Some 2 to 3 feet of fill placement would occur between stations 0+00 and stations 4+50, to fill in a low spot or saddle in the

bluff top topography and reduce the amount of cut to the bluff's high point. The initial trail section would include about 350 lineal feet of gravel filled perforated 8-inch geocell to provide drainage and stability under the soft wet soils in this area. The perforated geocell will also allow cross drainage of the shallow seepage water, and therefore will not intercept shallow flow or affect the willows that occur on side hill seeps at the base of the bluff. Geocells are used in wet, low-lying areas further east, along the existing constructed segment of the shoreline trail.

The trail profile would transition to a 2- to 3-foot cut slope for about 300 feet between stations 5+00 and 8+00, to knock off the highest portion of the hill along the terrace top, with the 2H:1V cut daylighting no closer than 5 feet from adjacent residential backyard property lines. This minimizes the amount of grading and wall height needed for construction of the 5% ramp descending diagonally down the face of the bluff. The 12-foot-wide AC-paved trail surface would be outsloped at 2% to provide drainage. The 2% grade cut is continued from the trail's edge until it daylights at the bluff face. The cut face and fill slope sides of the ramp section between stations 10+50 and 11+75 would have 4- to 8-foot-high concrete retaining walls. The trail crosses the PG&E distribution line in this area, and trail construction will necessitate pipeline relocation.

The slope cut soil material will be used to create a 2- to 4-foot-high engineered fill section abutting the elevated property line once the ramp descends to the general grade of the railroad corridor between stations 12+00 and 15+50. A 1- to 2-foot retaining wall is needed in a few areas along the eastern side (residential side) of the trail, while in other areas there is room between the trail and neighboring fence line/property line for a 2:1 cut slope. The north (railroad) side of the elevated trail could utilize a 2:1 outboard fill slope to avoid the costs of retaining wall construction along this segment, between stations 11+50 and 14+25. The 18-inch-deep by 5-foot top width drainage ditch would be reconstructed along the base of the slope to drain to Garrity Creek.

Fill placement also occurs along the next segment from Seaview School to Garrity Creek, and beyond the community center ball fields to near the pump station, between stations 15+50 to and 24+00. The fill would be placed immediately abutting the Seaview School playground, roughly matching the playground grade. A pickleweed/saltgrass ditch (Army Corps of Engineering jurisdictional wetlands) runs along most of this area, and the fill would be placed in the ditch, necessitating compensatory wetlands mitigation. Several sub-alternatives exist for the trail corridor in this area: 1) placing a retaining wall along the base of the ditch and moving or relocating the ditch immediately adjacent and northward towards and paralleling the railroad tracks, 2) filling the ditch and outsloping the fill section with a 2:1 section, and relocating the ditch at the base of the new 2:1 fill slope, or 3) placing the trail corridor on a fill section between the railroad tracks and the ditch, minimizing total wetlands fill. This last sub-alternative places the trail within 25 feet of the railroad track center line from station 17+00 to the school, which would still require crossing wetlands in a school zone to get to Garrity Creek Bridge, and is not recommended. A 4th option to consider would be the purchase of a trail access easement from West Contra Costa School District, to allow trail placement along the outer edge of the school play yard. Stacked geocells would be used in options 1 and 2, since the trail would be founded on soft, wet bay mud in this area.

The natural grade of the trail alignment for the fill trail segment west of Garrity Creek is only slightly higher and the ditch is broader south of the railroad tracks, necessitating wetlands fill and the need to use geocells between the proposed Garrity Crossing Bridge (station 24+75) and 29+50.

Retaining walls and fill sections will also be needed where the proposed trail alignment crosses two wetland basins (stations 34+50 to 41+50, and stations 48+00 to 51+00). The historic railroad embankment slopes down to the wetlands in these areas at approximately 2:1. There is insufficient level

area on the railroad embankment outside of the 25-foot rail setback to accommodate the trail, so the retaining wall is needed to level out the slope embankment for the trail. Narrowing the allowable rail setback to trail edge from 25 to 20 feet in these areas would avoid most of the wetlands fill.

Only minor amounts of fill (12 to 18 inches) are needed for the remainder of the proposed alignment, between stations 52+00 and 68+00 (end), to transition the trail elevation up to the approximate elevation of the adjacent railroad grade. The existing grade of the maintenance access road alongside the railroad tracks is only a few feet lower than track elevation in most of this area.

RETAINING WALLS

The preliminary engineering design for the project will utilize concrete retaining walls for:

1) the ramp structure that traverses diagonally down the face of the bluff slope at the east end of the feasibility study area,
2) along portions of the segment east of Seaview School and Garrity Creek to the ramp section,
3) for short distances where the railroad embankment occurs above and adjacent to the two wetland basins.

The majority of the retaining walls would be 3 to 4 feet in height, with some areas of 2-foot-high walls. The proposed ramp section would have wall heights between 5 and 8 feet. The most cost effective embankment retaining wall would be constructed using a steel H-beam or soldier beam system set in reinforced concrete (poured in place) piers. The soldier beams would typically be placed at 6- to-8 foot spacing. Three-inch (3") by twelve-inch (12") prestressed concrete lagging would form the face of the wall to provide strength and minimize future maintenance requirements common to use of pressure-treated wood lagging. A gravel subsurface drainage system should be installed behind the walls, and drainage weep holes should also be provided to relieve hydrostatic pressure. Alternatively, the wall could be cast in place concrete, where wall heights are 2 to 3 feet high, foundation conditions are good (no bay mud), and construction area is readily accessible by concrete pump trucks.

In areas where the wall is 2 feet or less, the steel soldier beams can be replaced with 6-inch x 6-inch pressure treated fir posts. For design consistency, construction simplicity, and appearance, short lengths of wall less than 2 feet in height may also be constructed using a similar concrete lagging system or poured in place concrete. Posts should be placed a maximum of 4 feet apart in these areas, with a depth of at least 4 feet in the ground. The following table provides guidance for the designing retaining wall.

Table 4-3
Retaining Wall Summary

Wall Height	Footing Depth	Pier/Footing Diameter	Soldier-Beam *	Lagging
1-1.5 foot	3 ft.	12"	6"x6" ptf @ 5'o.c.	2"x12"
2-2.5 foot	4 ft	18"	6"x6" ptf @ 4'o.c	3"x12"
3.0 foot	6 ft	18"	w6x9 @ 8'o.c.	3"x12"
4.0 foot	8 ft	18"	w6x12 @ 7' o.c.	3"x12"
5.0 foot	12 ft	18"	w6x16 @ 6' o.c.	3"x12"
6.0 foot	15 ft	18"	w6x16 @ 6' o.c.	3"x12"

* w6x9, etc.= steel H-Beam, ptf= pressure treated fir, o.c.= on-center

The preliminary design should be confirmed by additional geotechnical investigations and a structural engineer during preparation of final plans and specifications.

4.6 VEHICULAR LOAD RATING FOR EMERGENCY ACCESS

Vehicular load rating has been established by EBRPD with input from maintenance and emergency services staff, UPRR, local emergency services providers, and easement holders whose utilities may be impacted by the proposed trail. EBRPD fire and emergency services have stated preference for a 12 foot wide fire trail with a weight capacity of 26,000 pounds. Other agencies including the Cities of Pinole and Richmond would be approximately 26,000 to 32,000 pounds (H-20 Load) for their first response vehicles.

4.7 CONSTRUCTION PROTOCOLS

CONSTRUCTION IMPACTS TO WILDLIFE RESOURCES

Potential impacts to wetlands and wildlife during construction can have effects that are greater than the trail in place. It is critical that a construction protocol be established, as well as identifying appropriate staging and work areas prior to start of work. Concerns include:

- Type of equipment to be used
- Hand-clearing and construction techniques in sensitive areas
- Staging areas
- Temporary work areas/closures
- Use of marsh mats in areas of soft ground
- Provision of "through drainage" to not disrupt down-gradient flow of springs and seeps
- Wildlife protocols
- Timing and season of construction
- Construction methodologies and order of work

Recommended Protocol

Physical segregation of the trail construction zone from adjacent marsh supra-tidal habitats is a critical component of the project. In accordance with the recommendations of the consulting biologist for this project, the following construction procedures should be followed:

Install a temporary barrier between the natural habitat and the work space. This is usually in the form of a solid non-climb fence, with the base buried at least six inches below grade. For this project three foot high heavy grade plastic silt fence material with the bottom six inches buried below grade and supported by three foot wooden stakes on the railroad grade side would suffice. It should be installed along the entire outer (western) edge of the trail construction zone before any other work commences.

A qualified biological monitor should insure that the pathway ahead of the Ditch-Witch or other trenching device is free of rodent burrows before it passes through and that the fence is properly installed. The fence should be inspected daily for breaks, downed segments, and open passageways beneath. It should remain in place throughout the entire construction project and be the last item dismantled and removed from the trail construction site.

An orientation meeting shall be held for all persons performing work on the project. For this project, the most important protocol is that no activities of any sort should take place outside (west) of the small animal exclusion fence. Such rules and the reasons should be explained to them by the chief biologist for the project at a pre-construction orientation meeting, and he or she should be delegated the authority for dismissing anyone from the site for purposely not obeying rules.

Clearing the Trail Pathway Prior to Construction

Even though a barrier is in position between the work area and the adjacent natural habitat, a possibility still exists that small mammals may enter the work area to forage in wetland areas. Thus the entire trail pathway within the newly erected barrier fence must be carefully cleared of all vegetation. In this process, a qualified biologist should monitor the area ahead of the vegetation clearing crew to look for possible SMHM presence and to search any crevices or burrows which may occur within the area being cleared. Once the work space is cleared to bare soil, it permits the viewing of any small rodent which may wander into this area. If such a situation occurs, all construction work should be stopped until a biological monitor can arrive to identify the rodent. If it is indeed an SMHM, an attempt should be made to "herd" it through a temporary opening in the barrier fence which will be raised up for that purpose.

POST-CONSTRUCTION EFFECTS DUE TO INCREASED HUMAN PRESENCE

This site is adjacent to an active rail corridor, with noise, vibration and disturbance in the vicinity of potential trail alignments. Addition of a non-motorized trail alignment adjacent to the existing railroad is not expected to increase disturbance. Completion of the trail segment with railings to preclude access will also improve existing conditions, as hikers currently utilize the railroad right of way.

5. PERMITTING AND ENVIRONMENTAL COMPLIANCE

5.1 CEQA PROJECT DESCRIPTION

The following CEQA project description presents the areas studied under two separate EBRPD contract studies as a unified project. The areas studied under the *Point Pinole Preliminary Engineering and Biological Assessment Study* and the *Point Wilson Preliminary Engineering and Biological Assessment Study* are presented here as a single project. These segments are contiguous, are surrounded by similar land uses, and require similar construction and management techniques, and are thus most logically presented together for environmental review and permitting purposes. The textual descriptions and analysis presented in this section are intended to be used for CEQA documentation purposes and can be excerpted from this document and presented under separate title as a CEQA initial study.

5.1.1 REGIONAL LOCATION

The project site is located in the San Francisco Bay Area, within the County of Contra Costa, encompassing both parts of the City of Richmond and unincorporated areas bounded by the City of Richmond to the west and south and the City of Pinole in the east.

5.1.2 LOCAL VICINITY

The project site is located adjacent to several developed neighborhoods within the City of Richmond, including the Parchester Neighborhood, Montalvin Manor Neighborhood and Tara Hills Neighborhoods. The Montalvin Manor Neighborhood is a recently designated Contra Costa County Redevelopment Area. The project area is also adjacent and encompasses parkland and resource lands along the San Francisco Bay shoreline, owned by a variety of landowners, including private and public entities.

5.2 SURROUNDING LAND USES

The project site is surrounded by a variety of land uses and neighborhoods. Surrounding land uses include industrial, residential, railroad, resource lands, and recreational parklands.

For the purposes of this project description and environmental analysis, the project site is broken into two segments. The southern segment will be referred to as the Point Pinole segment, south of Point Pinole Regional Shoreline Park. The northern segment of the project will be referred to as the Point Wilson segment, from the eastern boundary of Point Pinole Regional Shoreline Park to Point Wilson.

The Point Pinole (southern) portion of the project site is bounded by undeveloped marsh lands to the west and residential development to the east. The area to the west is known as Parchester Marsh, located within the City of Richmond and is the site of possible future residential development. The area east of the southern project segment is known as the Parchester Neighborhood. This area is characterized by single-family homes developed predominantly in the 1950s through 1970s. This neighborhood is historically isolated from the San Francisco Bay shoreline by the north-south running double railroad track now owned by Union Pacific railroad and used for both freight and high speed passenger rail service. Immediately north of the Parchester Marsh and Parchester Neighborhood is the Point Pinole Regional Shoreline Park. Point Pinole Park is characterized by open grasslands, marsh, and Eucalyptus forest. The primary land mass of this park is accessed via a vehicle bridge over the railroad.

The park is a day use only area for hiking, picnicking, fishing and other permitted uses. Immediately east of the parkland area, is the Point Pinole Steel industrial property.

The Point Wilson (northern) portion of the project site extends from the Point Pinole Steel property east along the Union Pacific Railroad right-of-way. The railroad is located immediately adjacent to the San Pablo Bay shoreline, with the Bay located to the north. South of the railroad right-of-way extending from the steel plant property to approximately two thousand feet east is undeveloped wetland area. East of this wetland area, south of the railroad right-of-way, are several publicly owned properties including a small waste water pump station, a community center ballfield, and the Seaview Elementary School. East of the school site is a residential neighborhood elevated above the shoreline and railroad on a low coastal bluff. The proposed project is located entirely within the railroad right-of-way along the Point Wilson segment.

5.3 PROJECT SETTING

5.3.1 SITE CONDITIONS

The project site can generally be divided into two areas, as described above, the Point Pinole segment (southern) and the Point Wilson segment (northern).

The Point Pinole segment of the project corridor consists of undeveloped tidal upland areas, imparted tidal upland areas, former industrial lands, active railroad right-of-way and actively managed recreational lands. The proposed trail will be located primarily on previously impacted areas.

The Point Wilson segment of the project corridor is located within the active railroad corridor, on areas that are regularly graded and used for maintenance access to the railroad track. Some existing drainage areas subject to tidal influence and flooding will be filled to provide a dry trail surface for year round use.

5.4 PROJECT OBJECTIVES

5.4.1 BACKGROUND

The project objective is to provide a continuous multi-use trail corridor through the proposed project area. This objective stems from the longstanding goals of the San Francisco Bay Trail program and the goals of the East Bay Regional Park District to provide recreational access to the San Francisco Bay Shoreline in the underserved areas of western Contra Costa County.

5.4.2 OBJECTIVES OF THE ABAG SAN FRANCISCO BAY TRAIL PROGRAM AND EAST BAY REGIONAL PARK DISTRICT (PROJECT PROPONENT)

Bay Trail Program

In 1987, State Senator Bill Lockyer authored S.B.100 to produce a "Ring around the Bay". This Bay Trail would preserve and make available this land for recreational, educational and aesthetic purposes. State and planning funds came to the project, as well as widespread support from local agencies and organizations around the Bay Area, thus making this project truly regional. The Bay Trail Project's mission is solely for the public's benefit; to enhance their appreciation of the Bay.

The Bay Trail is a proposed 500-mile network of multi-use pathways that one day will circle the San Francisco and San Pablo Bays, passing through all nine Bay Area counties and 47 of its 98 cities.

Currently, just over one half of the Trail is complete. The Trail will serve walkers, runners, cyclists, nature lovers and hikers of every age and cultural background. When finished, the San Francisco Bay Trail will be an aesthetic, cultural and recreational asset for the entire Bay Area.

When complete, this "Ring around the Bay" will be a trail system comprised of three components: spine trails, encircling the Bay and creating a continuous recreational corridor which links all nine Bay Area counties; spur trails, providing access from the spine trail to points of natural, historic and cultural interest along the Bay shoreline; and connector trails, providing restricted access to interpretive trails in environmentally sensitive areas along the shoreline and connections to recreational opportunities as well as residential and employment centers inland from the Bay. The Bay Trail is a rich natural resource that contributes to the quality of life in the Bay Area.[4]

East Bay Regional Parks Trails Program

East Bay Regional Park District is the primary implementing agency for the San Francisco Bay Trail in Alameda County and Contra Costa County, pursuant to the District's Master Plan which identifies access to the Bay Trail as a primary goal. The District works closely with local cities, landowner agencies, private landowners, and nonprofit organizations to identify, plan, design and implement segments of the Bay Trail that will provide better access for the residents of West Contra Costa County.

5.5 PROJECT ELEMENTS

The proposed project consists of multi-use trail construction through the above described land uses, project setting, and site conditions. The multi-use trail standard for the proposed project is 12-feet in width, and requires a range of structures to provide for a stable, year round, walking and bicycling surface, depending on the specific location along the proposed corridor. Each of the typical required sections is described below in Appendix B.

5.6 PROJECT REVIEW AND APPROVAL

Portions of the project are within the jurisdiction of Cities of Richmond and Pinole, as well as unincorporated Contra Costa County. In addition, the following agencies may have jurisdictional authority over the project, will review the environmental document and may require issuance of a permit. The trail implementation project will incur both temporary disturbance and permanent fill of wetlands. As such, the following agencies will have jurisdictional review as well as permitting authority for the project:

[4] http://www.abag.ca.gov/bayarea/began.html

Table 5-1
Permitting Agencies

	Agency	Permitting Authority
Federal	US Army Corps of Engineers	Section 404 Clean Water Act permit: Fill of jurisdictional waters of the U.S. or wetlands fill (fill of ditch west of Seaview School, minor wetlands fill, fill associated with bridge/boardwalk over pickleweed marsh) Section 10 (Rivers and Harbors Act): Impacts to navigable waters of the U.S. (bridge over Garrity Creek)
	US Fish and Wildlife Service	Section 7 (U.S. Endangered Species Act) Consultation for effects to special status species, associated with federal (Corps) permit application. (Pickleweed marsh impacts; Garrity Creek crossing)
	National Marine Fisheries Service (NMFS)	Section 7 (U.S. Endangered Species Act) Consultation for effects to anadromous species associated with federal (Corps) permit (Garrity Creek crossing)
State	CDFG	Streambed Alteration Agreement, Section 1603 Fish and Game code (alteration of ditch west of Seaview School, bridge crossing at Garrity Creek)
	BCDC	Development permit for construction within shoreline band.
	RWQCB	National Pollution Discharge Elimination System (NPDES) Permit, Waste Discharge Requirements to prevent impacts to surface water quality from construction runoff
Local	City of Richmond	Grading permit, building permit, encroachment permit (Goodrick Avenue) (non-discretionary)
	City of Pinole	Grading permit, (non-discretionary)
	Contra Costa County	Grading permit, building permit (bridge, boardwalk) (non-discretionary)

5.7 INITIAL STUDY CHECKLIST

Appendix D contains the Initial Study checklist for use in evaluating potential project impacts related to the Point Pinole to Point Wilson trail alignment.

6. PRELIMINARY PROJECT COSTS

The following sheets present the project cost estimate. This preliminary cost estimate is for planning purposes and grant seeking purposes. Segment totals include all estimated construction costs, contingencies, mobilization, design and engineering costs. Details quantities are provided in the following sheets for segments 1 through 3. All quantities are based on field analysis and calculations completed in AutoCAD Land Desktop. All unit costs are based on current market conditions and local professional expertise and are subject change.

Point Wilson Preliminary Engineering Study and Biological Assessment

COST ESTIMATE SUMMARY
Segments 1 through 3
Station 1+00 to Station 68+18

SEGMENT 1	$1,448,109
SEGMENT 2	$268,663
SEGMENT 3	$1,311,099
TOTAL	**$3,027,871**

NOTES: Segment totals include all estimated construction costs, contingencies, mobilization, design and engineering costs. Details quantities are provided in the following sheets for segments 1 through 3. All quantities are based on field analysis and calculations completed in AutoCAD Land Desktop. All unit costs are based on current market conditions and local professional expertise and are subject change.

COST ESTIMATE

Segment 1: Ramp Segment

Station 1+00 to Station 12+00

TOTAL CONSTRUCTION COSTS SECTION 1 **$1,448,109**

	Quantity	Unit	Unit Price	Item Cost	Subtotal
I. TRAIL ITEMS					
1. Earthwork and Utilities					
Vegetation Clearing and Grubbing	600	LF	$2	$1,200	
Fill	0	CY	$28	$0	
Cut (Off-Haul)	4614	CY	$40	$184,560	
Locate Mark and Map Utilities (Pothole and Survey)	1100	LF	$2	$2,200	
Utility Relocation (Pipe Line)	800	LF	$300	$240,000	
Utility Relocation (Fiber Optic)	0	LF	$150	$0	
Erosion Control Allowance	Job	LS	$10,000	$10,000	
Earthwork Contingencies	$ Item Costs* % = (Subtotal Fill + Export)			$43,839	
			Subtotal Earthwork		$479,599
2. Structures and Retaining Walls					
6'-8' Pile Support Retaining Wall Linear Feet	20	LF	$375	$7,500	
4'-6' Pile Support Retaining Wall Linear Feet	770	LF	$265	$204,050	
2'-4' Pile Support Retaining Wall Linear Feet	50	LF	$190	$9,500	
2' Retaining Retaining Wall Linear Feet	0	LF	$130	$0	
Clear Span Bridge with Pile Support Footing	0	LF	$200	$0	
Structures Contingencies	$ Item Costs* % = (Subtotal Fill + Export)			$22,127	
			Subtotal Structures		$243,177
3. Trail Surface					
	Quantity	Unit	Unit Price	Item Cost	Subtotal
Class II Aggregate 6" Base, 13' width	428	CY	$65	$27,820	
Asphalt 3" Surface, 12 feet width	1100	LF	$45	$49,500	
8" Geocell Foundations	140	LF	$35	$4,900	
Trail Surfacing Contingencies	$ Item Costs* % =			$8,230	
			Subtotal Surfacing		$90,450
4. Specialty Items					
Security Fence 4' Height	230	LF	$20	$4,600	
Safety Railing, 54"	1100	LF	$30	$33,000	
Bollard/ Gate Access Control		EA	$1,000	$0	
Lump Sum Drainage Items	$ Subtotal Section 1-3 * 1%			$8,132	
Lump Sum Signage	$ Subtotal Section 1-3 * 2%			$16,265	
			Subtotal Specialty Items		$61,997
5. Minor Items					
Wetlands Mitigation Allowance (3x impacted area)	200	Sq. Ft.	$2.25	$450.00	
Lump Sum Minor Items	$ Subtotal Section 1-4 * 5%			$43,761	
			Subtotal Minor Items Section		$44,211
			Total Section 1-5		$919,434
6. Mobilization					
Lump Sum Mobilization	$ Subtotal Section 1-5*5%			$45,972	
			Subtotal Mobilization Section	$45,972	
			Total Section 1-6		$965,406
7. Trail Additions					
Contingencies	$ Subtotal Section 1-6*20%				$193,081
Design and Construction Management	$ Subtotal Section 1-6*30%				$289,622
(EBRPD design 30%)	Subtotal Trail Additions Section				$482,703
	TOTAL (SECTIONS 1 - 7)				**$1,448,109**

COST ESTIMATE
Segment 2: Seaview School Segment
Station 12+00 to Station 25+00

TOTAL CONSTRUCTION COSTS SEGMENT 2 **$268,663**

	Quantity	Unit	Unit Price	Item Cost	Subtotal
I. TRAIL ITEMS					
1. Earthwork and Utilities					
Vegetation Clearing and Grubbing		LF	$2	$0	
Fill	187	CY	$28	$5,236	
Export	0	CY	$40	$0	
Locate Mark and Map Utilities (Pothole and Survey)	1225	LF	$2	$2,450	
Utility Relocation (Pipe Line)	0	LF	$300	$0	
Utility Relocation (Fiber Optic)	0	LF	$150	$0	
Erosion Control Allowance	Job	LS	$3,000	$3,000	
Earthwork Contingencies	$ Item Costs* % = (Subtotal Fill + Export)			$524	
			Subtotal Earthwork		$11,210
2. Structures and Retaining Walls					
6'-8' Pile Support Retaining Wall Linear Feet	0	LF	$375	$0	
4'-6' Pile Support Retaining Wall Linear Feet	0	LF	$265	$0	
2'-4' Pile Support Retaining Wall Linear Feet	650	LF	$190	$0	
2' Retaining Retaining Wall Linear Feet	200	LF	$130	$0	
Clear Span Bridge with Pile Support Footing	0	LF	$200	$0	
Structures Contingencies	$ Item Costs* % = (Subtotal Fill + Export)			$0	
			Subtotal Structures		$0
3. Trail Surface					
	Quantity	Unit	Unit Price	Item Cost	Subtotal
Class II Aggregate 6" Base, 13' width	476	CY	$65	$30,940	
Asphalt 3" Surface, 12 feet width	1225	LF	$45	$55,125	
8" Geocell Foundations	900	LF	$35	$31,500	
Trail Surfacing Contingencies	$ Item Costs* % =			$8,615	
			Subtotal Surfacing		$126,180
4. Specialty Items					
Security Fence 4' Height	1225	LF	$20	$24,500	
Safety Railing, 54"	0	LF	$30	$0	
Bollard/ Gate Access Control	2	EA	$1,000	$2,000	
Lump Sum Drainage Items	$ Subtotal Section 1-3 * 1%			$1,374	
Lump Sum Signage	$ Subtotal Section 1-3 * 2%			$2,748	
			Subtotal Specialty Items		$30,622
5. Minor Items					
Wetlands Mitigation Allowance (3x impacted area)	7200	Sq. Ft.	$2.25	$16,200.00	
Lump Sum Minor Items	$ Subtotal Section 1-4 * 5%			$8,401	
			Subtotal Minor Items Section		$8,401
6. Mobilization					
Lump Sum Mobilization	$ Subtotal Section 1-5*5%			$8,821	
			Subtotal Mobilization Section		$8,821
7. Trail Additions					
Contingencies	$ Subtotal Section 1-6*20%			$37,047	
Design and Construction Management *(EBRPD design 30%)*	$ Subtotal Section 1-6*30%			$46,383	
			Subtotal Trail Additions Section		$83,430
			TOTAL (SECTION 1-7)		**$268,663**

COST ESTIMATE
Segment 3: Wetland Segment to Steelscape Property
Station 25+00 to Station 68+18

TOTAL CONSTRUCTION COSTS SEGMENT 3	**$1,311,099**

	Quantity	Unit	Unit Price	Item Cost	Subtotal
I. TRAIL ITEMS					
1. Earthwork and Utilities					
Vegetation Clearing and Grubbing	0	LF	$2	$0	
Fill	608	CY	$20	$12,160	
Export	0	CY	$28	$0	
Locate Mark and Map Utilities (Pothole and Survey)	4318	LF	$2	$8,636	
Utility Relocation (Pipe Line)	0	LF	$300	$0	
Utility Relocation (Fiber Optic)	0	LF	$150	$0	
Erosion Control Allowance	Job	LS	$2,000	$2,000	
Earthwork Contingencies	$ Item Costs* % = (Subtotal Fill + Export)			$2,282	
			Subtotal Earthwork		$16,442
2. Structures and Retaining Walls					
6'-8' Pile Support Retaining Wall Linear Feet	0	LF	$375	$0	
4'-6' Pile Support Retaining Wall Linear Feet	0	LF	$265	$0	
2'-4' Pile Support Retaining Wall Linear Feet	900	LF	$190	$171,000	
2' Retaining Retaining Wall Linear Feet	550	LF	$130	$71,500	
Clear Span Bridge with Pile Support Footing	0	LF	$200	$0	
Structures Contingencies	$ Item Costs* % = (Subtotal Fill + Export)			$24,274	
			Subtotal Structures		$266,774
3. Trail Surface					
	Quantity	Unit	Unit Price	Item Cost	Subtotal
Class II Aggregate 6" Base, 13' width	1679	CY	$65	$109,135	
Asphalt 3" Surface, 12 feet width	4318	LF	$45	$194,310	
8" Geocell Foundations	475	LF	$35	$16,625	
Trail Surfacing Contingencies	$ Item Costs* % =			$32,039	
			Subtotal Surfacing		$352,109
4. Specialty Items					
Security Fence 4' Height	1409	LF	$20	$28,180	
Safety Railing, 54"	4318	LF	$30	$129,540	
Bollard/ Gate Access Control	2	EA	$1,000	$2,000	
Lump Sum Drainage Items	$ Subtotal Section 1-3 * 1%			$6,353	
Lump Sum Signage	$ Subtotal Section 1-3 * 2%			$12,706	
			Subtotal Specialty Items		$178,780
5. Minor Items					
Wetlands Mitigation Allowance (3x impacted area)	3228	Sq. Ft.	$2.25	$7,263.00	
Lump Sum Minor Items	$ Subtotal Section 1-4 * 5%			$31,766	
			Subtotal Minor Items Section		$31,766
6. Mobilization					
Lump Sum Mobilization	$ Subtotal Section 1-4*5%			$42,294	
			Subtotal Mobilization Section		$42,294
7. Trail Additions					
Contingencies	$ Subtotal Section 1-5*20%			$169,174	
Design and Construction Management	$ Subtotal Section 1-5*30%			$253,761	
(EBRPD design 30%)					
			Subtotal Trail Additions Section		$422,935
	TOTAL (SECTION 1-7)				**$1,311,099**