DRAFT

ENVIRONMENTAL IMPACT REPORT

Pantages Bays
Residential Development Project

Volume I

SCH No. 2007-052130

Prepared for

Contra Costa County
Department of Conservation and Development
30 Muir Road
Martinez, CA 94553

County File Numbers:
GP99-0008
RZ04-3146
SD06-9010
DP04-3062

June 2012

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Appendix I Traffic Impact Analysis

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1.0 INTRODUCTION

This draft Environmental Impact Report (draft EIR) evaluates the potential impacts of the Pantages Bays project (project). The project applicant is seeking approval for a General Plan Amendment to change the general plan designations of an approximately 171-acre project site from Agricultural Lands (AL), and Delta Recreation to the following:

- Single-Family Residential-Medium Density (SM)
- Single-Family Residential-High Density (SH)
- Water (WA)
- Public/Semi-Public (PS)
- Open Space (OS)

Under the amended land use designations, the project would develop 292 residential homes with associated streets and infrastructure on approximately 80 acres of the project site. The remaining 91 acres would consist of open-water areas, emergent marsh, wetlands, open space areas, and a marine patrol substation. Refer to **Chapter 3.0, Project Description**, for a detailed description of the project components.

As part of the project, the portion of Kellogg Creek immediately east of the project site would be widened. Reclamation District No. 800[1] (RD 800) is co-sponsoring the proposed widening, which would reduce water velocities in that section of Kellogg Creek, thereby improving boater safety. The widening would also reduce bank erosion and sedimentation, and would limit the need for dredging.[2] The project would require approval from the Contra Costa Local Agency Formation Commission (LAFCO) for annexation to the RD 800 and to the Discovery Bay Community Services District sphere of influence and corresponding service boundary.

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[1] RD 800 controls and is responsible for the waterways in Discovery Bay.

[2] RD 800 is a co-applicant on the project in the U.S. Army Corp of Engineers 404 permit process and related resource agencies applications, per personal communication with Jeff Conway, District Manager.

As part of the draft EIR, two alternatives to the project were evaluated including a no build alternative and a reduced density (no project) alternative. The no build alternative considers no future development on the project site, while the reduced density (no project) alternative considers future development according to the existing land use designations.

1.1 PURPOSE OF THE DRAFT EIR

As Lead Agency, Contra Costa County (County) prepared this project-level draft EIR to assess the potential significant environmental impacts of development of the project. The draft EIR has been prepared pursuant to the California Environmental Quality Act (CEQA) Guidelines, as amended in March 2010 and the County CEQA Guidelines. CEQA requires all state and local government agencies to consider the environmental consequences of projects over which they have discretionary authority.

This draft EIR is intended to inform County decision makers, responsible agencies, and the public of the potential environmental consequences of implementing the project. This draft EIR discloses the significant environmental impacts of the project and identifies: 1) mitigation measures to reduce these effects; 2) significant impacts that cannot be avoided; 3) growth-inducing impacts; 4) effects found not to be significant; and, 5) cumulative impacts of the project in combination with past, present, and reasonably foreseeable future projects. This draft EIR also addresses a reasonable range of alternatives that may avoid or substantially lessen potential environmental impacts, including the no project alternative.

The County is required to consider the information in the EIR, along with any other relevant information, in making its decision on the proposed project. It is not the purpose of an EIR to recommend approval or denial of a project. In accordance with CEQA Section 15090, the decision makers must certify the final EIR prior to taking action on the proposed project and requested entitlements. Pursuant to CEQA statues and guidelines, other responsible agencies may also use the EIR in their review and approval process.

1.2 LEVEL OF ANALYSIS

As noted in CEQA Guidelines Section 15146, the degree of specificity in an EIR will correspond to the degree of specificity in the underlying activity described in the EIR. Detailed preliminary project plans and technical studies were included in the evaluation of the potential environmental consequences of implementing the

project. It is anticipated that the level of analysis contained in this EIR will be sufficient to proceed with project implementation without further environmental review.

As described in CEQA Guidelines Section 15162, further environmental review could be required if subsequent development plans contain new information of substantial importance or substantial changes to the project, or if the surrounding circumstances change or other new information is available, which will result in a new significant impact, a change in mitigation measures, or a change in the level of significance of impacts identified in this EIR.

1.3 REPORT ORGANIZATION

The draft EIR is organized into the following chapters:

- **Chapter 1.0, Introduction**: provides an introduction and overview describing the focus of the draft EIR and the environmental review process.
- **Chapter 2.0, Executive Summary**: summarizes the project and environmental consequences that would result from the project, provides a summary table of significant environmental impacts, identifies mitigation measures, and indicates the levels of significance of impacts after mitigation.
- **Chapter 3.0, Project Description**: describes the project, the project location, project objectives, and required project approvals.
- **Chapter 4.0, Setting, Impacts, and Mitigation Measures**: describes the environmental setting and provides an analysis of the environmental impacts of the project, identifying mitigation measures for any significant environmental impacts. An evaluation of a project's contribution to cumulative environmental impacts is provided for each environmental subsection. Each environmental subsection also provides a list of the references, including the people and agencies contacted for information, which were included in the analysis of impacts.
- **Chapter 5.0, Alternatives**: provides an evaluation of the alternatives to the proposed project.
- **Chapter 6.0, CEQA-Required Conclusions:** provides a discussion of impacts found to be less than significant, and a summary of significant environmental impacts, including unavoidable and growth-inducing impacts.
- **Chapter 7.0, List of Preparers**: provides a list of organizations and individuals involved in the preparation of the draft EIR.

1.4 SCOPE OF THIS EIR

The focus of this draft EIR is to evaluate the environmental consequences of the project. The following topics are addressed in **Chapter 4.0**, **Setting, Impacts, and Mitigation Measures**:

- Agricultural and Forest Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Energy
- Geology and Soils
- Global Climate Change
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Mineral Resources
- Noise
- Population and Housing
- Public Services and Recreation
- Public Utilities
- Transportation and Circulation
- Visual Resources and Aesthetics

1.5 ENVIRONMENTAL REVIEW PROCESS

On May 24, 2007, the County filed a Notice of Preparation (NOP) with the Governor's Office of Planning and Research. During the 30-day comment period (ending June 25, 2007), written comments regarding the scope and content of the draft EIR were received from regulatory agencies and the public. Additionally, a scoping session on the draft EIR was held on June 18, 2007, at the County Administration Building in Martinez, CA. All written and oral comments received during the comment period and scoping session were considered in the preparation of the draft EIR.

Following the scoping period, the preparation of the draft EIR was delayed due to design modifications and internal preliminary review processes. No major changes to the project design were made since the filing of the NOP. As such, the County has not held additional scoping sessions beyond the first meeting in 2007. However, the analysis of environmental impacts in **Chapter 4.0, Setting, Impacts, and Mitigation Measures,** have been updated to include the current baseline conditions of the project site and region.

CEQA requires a 45-day public review and comment period on the draft EIR. Written comments on the draft EIR may be submitted to the following address:

Department of Conservation & Development
Community Development Division
ATTN: John Oborne
30 Muir Road
Martinez, CA 94553

While reviewing the draft EIR, reviewers should focus on the document's adequacy in identifying and analyzing effects on the environment and on the ways in which the significant effects might be avoided or mitigated. CEQA Guidelines Section 15204(c) states that reviewers should explain the basis for their comments, and should submit data or references offering facts, reasonable assumptions based on facts, or expert opinion supported by facts.

Following the close of the public comment period, responses to public input will be prepared and published as a separate document. The draft EIR text and appendices, together with the response to comments document, will constitute the final EIR. The final EIR will be available to the public before the County considers certifying the document.

The County Planning Commission will consider the final EIR as well as approval of the project during an open public hearing. The Commission will approve or deny the major subdivision with proposed tree removal and make recommendations to the Board of Supervisors whether to certify the final EIR, approve or deny the Final Development Plan, the Rezoning, and the General Plan Amendment. If the project is approved by both the Commission and Board of Supervisors, then the project applicant may move forward and seek other necessary County approvals, such as grading permits, building permits, encroachment permits, etc.

PLANNING ACTIONS

GENERAL PLAN AMENDMENT AND REZONING

The project applicant is seeking approval for a general plan amendment from Agricultural Lands (AL) and Delta Recreation (DR) to the following designations: Single-Family Residential-Medium Density (SM), Single-Family Residential-High Density (SH), Water (WA), Public/Semi-Public (PS), and Open Space (OS). In addition, the project applicant is seeking approval of a rezoning from General Agricultural District (A-2) and Heavy Agricultural District (A-3) to Planned Unit District (P-1).

The project site is inside the County urban limit line (ULL) and would not therefore require any adjustment to the ULL. See **Section 4.10, Land Use and Planning,** for more description of the assessor parcels and consistency with land use policy.

SERVICE DISTRICT ANNEXATION

The project would require approval from LAFCO for annexation to the RD 800 service boundary and the Discovery Bay Community Services District, including the corresponding spheres of influence for these two districts.

FINAL DEVELOPMENT PLAN AND SUBDIVISION MAP

Construction of the project requires approval of a final development plan, and a major subdivision approval is required to divide the site into individually-owned residential lots.

On December 12, 2006, Pantages at Discovery Bay, LLC and the East Contra Costa Irrigation District (ECCID) entered into a Property Transfer Agreement whereby the project applicant will acquire approximately 9 acres of land owned by the ECCID, commonly known as Pantages Island. The project applicant is also working with the RD 800 and ECCID to secure future conservation easements over RD 800 properties in the vicinity of the project site. These properties include Parcel “C” and “D” near the project’s northern boundary; and the west and east banks of Kellogg Creek between Newport Drive and State Route 4 (SR4). The conveyance of this ECCID property (i.e., Pantages Island) and the RD 800 conservation easements would take place prior to final map approval of the project.

1.6 PROJECT PERMITS AND APPROVALS

The project would require several permits and approvals from the County and other responsible agencies/service providers. A list of the required permits and approvals is shown in **Table 1-1.**

Table 1-1 Project Permits and Approvals

Agency/Provider	Permit/Approval
Contra Costa County	Certification of EIR
	General Plan Amendment
	Rezoning
	Vesting Tentative Map
	Final Development Plan
	Tree Removal
	Development Agreement (optional)
	Final Subdivision Maps
	Final Pantages Bays Stormwater Control Plan per approved C.3 Report
	Grading Plan, Improvement Plans
	Building Permits, including Grading Permits
	Participation in the East Contra Costa Habitat Conservation Plan / Natural Community Conservation Plan (HCP/NCCP) (Potentially)
Reclamation District No. 800 (RD 800)	Annexation, Service Agreement, Prop. 218 Assessment
Contra Costa Local Agency Formation Commission (LAFCO)	Annexation to Discovery Bay Community Service District sphere of influence and corresponding service district boundary for water and sewer, Service Agreement, and Landscaping and Lighting District. Annexation to RD 800 for control and responsibility of the new waterways in Discovery Bay.
Town of Discovery Bay Community Services District (TDBCSD)	Annexation, Service Agreement, Landscaping and Lighting District, Prop 218 Assessment
US Army Corps of Engineers (USACE)	Section 10 Permit, Work in Navigable Waters
	Section 14 Permit, Rivers and Harbors Act
	Section 404 Permit, Clean Water Act
California Department of Fish and Game (CDFG)	Section 1602 Streambed Alteration Agreement
California Regional Water Quality Control Board (CRWQCB)	National Pollutant Discharge Elimination System Permit
	Storm Water Pollution Prevention Plan
	Section 401 Water Quality Certificate
California State Reclamation Board	Reclamation Board Encroachment Permit
Pacific Gas & Electric (PG&E)	Approval of utilities relocation, gas and electric infrastructure and hook-ups
SBC Communications (SBC)	Approval of communication line relocation, infrastructure and hook-ups

Source: Circlepoint, 2011.

1.7 INCORPORATING BY REFERENCE

This draft EIR references several technical studies, analysis, and reports. The CEQA Guidelines set forth three methods that may be used to incorporate data from other sources in the EIR:

- Incorporation by reference (14 Cal Code Regs 15150)
- Use of an EIR appendix (14 Cal Code Regs 15148)
- Citation to technical information (14 Cal Code Regs 15148)

Information incorporated by reference has been summarized in the appropriate sections(s) of this draft EIR, as permitted in Section 15150 of the CEQA Guidelines, with a description of how the public may obtain and review these documents.

Information in an EIR appendix may include summarized technical data, maps, plot plans, diagrams, and similar information in sufficient detail to permit the public and reviewing agencies to make full assessment of the project's significant environmental effects. To achieve a balance between the highly technical analysis referenced in an EIR and EIR's public information function, the CEQA Guidelines allow technical analysis as appendices to the main body of the EIR. The appendices are presented on a CD-Rom as Volume II to this draft EIR.

Source documents that are not project-specific are cited in the draft EIR.

All documents referenced in this draft EIR are available for review at the Contra Costa County, Department of Conservation and Development, Community Development Division, 30 Muir Road, Martinez, California.

2.0 EXECUTIVE SUMMARY

2.1 PROJECT UNDER REVIEW

The Pantages Bays Project (project) consists of construction of 292 detached single-family residential housing units, Sheriff Marine Patrol Substation, and associated roadways, pedestrian facilities, and utilities infrastructure. One hundred and sixteen of these units would be water-oriented and would include docks. In addition to residential development, the project would widen the portion of Kellogg Creek immediately east of the project site. The proposed widening of Kellogg Creek is cosponsored by Reclamation District No. 800 to reduce water velocities and improve public safety in that section of Kellogg Creek. In order to proceed as planned, the project requires approval of a General Plan Amendment, Rezoning, Subdivision/Tentative Map Approval, Final Development Plan and tree removal.

The project site is located in unincorporated eastern Contra Costa County (County) approximately 16 miles west of Stockton, CA; approximately 4.5 southeast of Brentwood, CA; and 19 miles north of Livermore, CA. The approximately 171-acre project site is undeveloped except for several dilapidated residential and agricultural buildings. The site is located west of the original Discovery Bay subdivisions, at the eastern terminus of Point of Timber Road.

2.2 SUMMARY OF IMPACT AND MITIGATION MEASURES

The California Environmental Quality Act (CEQA) requires the summary to include a discussion of: 1) potential areas of controversy; 2) significant impacts; 3) significant unavoidable impacts; and 4) alternatives to the project. Under CEQA, a significant impact on the environment is defined as, “a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by a project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance.”

Based on the analysis completed for this draft EIR, impacts in the following resource areas would be considered significant without the implementation of mitigation measures:

- Air Quality
- Biological Resources
- Cultural Resources
- Geology and Soils
- Global Climate Change
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Noise
- Public Services and Recreation
- Public Utilities
- Transportation and Circulation
- Visual Resources and Aesthetics

2.3 POTENTIAL AREAS OF CONTROVERSY/ISSUES TO BE RESOLVED

On May 24, 2007, the County filed a Notice of Preparation (NOP) with the Governor's Office of Planning and Research. During the 30-day comment period (ending June 25, 2007), written comments regarding the scope and content of the draft EIR were received from regulatory agencies and the public. Additionally, a scoping session on the draft EIR was held on June 18, 2007, at the County Administration Building in Martinez, California. All written and oral comments received during the comment period and scoping session were considered in the preparation of the draft EIR. Potential areas of controversy identified during the scoping period and evaluated in **Chapter 4.0, Settings, Impacts, and Mitigation Measures,** of this draft EIR include:

- Adequate emergency vehicle access
- Impacts to sensitive biological resources and habitat
- Recreational access to the delta and public access to open space

- Impacts to prime and other agricultural lands
- Identify the County's regional housing needs allocation
- Identify if the project would require annexation into nearby service districts
- Impacts to the hydrodynamics of Kellogg Creek and surrounding waterways
- Boat traffic
- Construction phasing and details on the creation of the bays and coves
- Assess potential hazardous substances in project site soil and groundwater and potential remediation activities
- Identify impacts to State Route 4, local traffic impacts, cumulative traffic impacts, and mitigation measures

2.4 SIGNIFICANT UNAVOIDABLE IMPACTS

Impacts relating to the following topics would remain significant with the implementation of mitigation:

- Global Climate Change: The project would generate greenhouse gas (GHG) emissions in excess of the BAAQMD threshold of 4.6 metric tons of carbon dioxide equivalents (CO_2e) per service population per year.
- Traffic: The project would increase traffic volumes and worsen level of service (LOS) conditions along Marsh Creek Road and Vasco Road.

2.5 ALTERNATIVES TO THE PROJECT

ALTERNATIVE 1 — NO BUILD ALTERNATIVE

Under Alternative 1, the project site would remain in its current state and there would be no development of residential housing units, roadways, and utilities infrastructure. The site would remain privately-owned and the open space wetland mitigation area would remain unimproved. There would be no changes to parcels on the site or any amendments to the General Plan or Zoning Ordinance.

ALTERNATIVE 2 — REDUCED DENSITY (NO PROJECT) ALTERNATIVE

Under Alternative 2, the project site would be developed with uses allowed under the existing General Plan Land Use and Zoning Ordinance designations. Project site parcels are currently designated by the General Plan as Agricultural Lands (AL), Delta Recreation (DR) and Water (WA) by the Contra Costa General Plan and zoned General Agricultural District (A-2) and Heavy Agricultural District (A-3) .

The Agricultural Lands (AL) land use designation allows for all land-dependent and non-land dependent agricultural production and related activities. The General Plan permits residential uses at a maximum allowable density of one dwelling unit per 5 acres. Other uses related to processing of agricultural products, agricultural support services and small-scale visitor uses are allowed with a land use permit.

The A-2 and A-3 zoning designations allow the site to be developed with agricultural uses, such as general farming and sheds and warehouses, and with residential uses, such as a single-family dwelling or a family care home. A detached single-family dwelling is allowed on each parcel with the A-2 or A-3 zoning designation. Other uses, such as commercial recreational facilities, medical offices, or churches, may be allowed with a land use permit.

Alternative 2 assumes primarily rural residential land uses on approximately 171 acres as allowed under the existing general plan and zoning designations. For purposes of this analysis, five of the parcels on the project site are considered developable. This alternative assumes five single-family residential units would be constructed on the project site in accordance with current zoning designations. This alternative would not require a General Plan amendment.

2.6 SUMMARY TABLE

Table 2-1 summarizes the significant environmental impacts of the project and mitigations measures to reduce significant impacts. The table is arranged in four columns: 1) significant impacts; 2) level of significance without mitigation; 3) mitigation measures; and 4) level of significance after mitigation. Levels of significance are categorized as follows: SU = Significant and Unavoidable; S = Significant; LTS = Less Than Significant. For a complete description of potential impacts and recommended mitigation measures, please refer to the specific sections within **Chapter 4.0, Settings, Impacts, and Mitigation Measures**.

Table 2-1 Summary of Impacts and Mitigation Measures

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Agricultural Resources			
There are no significant impacts to agricultural resources.			
Air Quality			
Impact AQ-1: Project development that includes wood burning stoves would result in a net increase of Reactive Organic Gases (ROG), a criteria pollutant for which the project region is non-attainment in an applicable federal or state ambient air quality standard.	S	Mitigation Measure AQ-1: Wood burning fireplaces or stoves shall not be permitted. Only natural gas fireplaces or stoves shall be permitted. Project plans shall not include wood burning fireplaces or stoves and shall clearly indicate the prohibition against such use.	LTS
Impact AQ-2: The project would not expose sensitive receptors to criteria air pollutants during project construction but could expose sensitive receptors to toxic air contaminants.	S	Mitigation Measure AQ-2a: To reduce the air quality impacts of PM associated with grading and new construction, the project applicant shall incorporate the following mitigation measures for all phases of construction: ▪ All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day. ▪ All haul trucks transporting soil, sand, or other loose material off-site shall be covered.	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Air Quality (continued)			
Impact AQ-2, continued.		▪ All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited. ▪ All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph). ▪ All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used. ▪ Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points. ▪ All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment	

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Air Quality (continued)			
Impact AQ-2, continued.		shall be checked by a certified mechanic and determined to be running in proper condition prior to operation. ▪ Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations. Mitigation Measure AQ-2b: To reduce health risks from TACs during project construction, the project applicant shall incorporate the following mitigation measures into the project: ▪ Minimize the idling time of diesel powered construction equipment to two minutes; ▪ Develop a plan demonstrating that the off-road equipment (more than 50 horsepower) to be used in the construction of the project (i.e., owned, leased, and subcontractor vehicles) would achieve a project wide fleet-average 20 percent NOx reduction and 45 percent PM reduction compacted to the most recent ARB fleet average. Acceptable option for reducing	

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Air Quality (continued)			
Impact AQ-2, continued.		emissions include the use of late model engines, low-emission diesel projects, alternative fuels, engine retrofit technology, after-treatment projects, add-on devices such as particulate filters, and /or other options as such become available; ▪ Require that all construction equipment, diesel trucks, and generators be equipped with best available technology for emission reductions of NOx and PM; and ▪ Require all contractors use equipment that meets CARB's more recent certification standard for off-road heavy duty diesel engines.	
Impact CUM AQ-1: Development of the project in conjunction with other development in the region would result in a net increase of reactive organic gases (ROG).	S	Mitigation Measure CUM AQ-1: Implementation of Mitigation Measure AQ-1, which prohibits the uses of wood burning fireplaces or stoves within the project and permits only natural gas fireplaces or stoves, would reduce ROG emissions associated with project development to 36 pounds per day, which is below the BAAQMD significant threshold (see Table 4.2-6). Therefore, the project's contribution to this impact would not be cumulatively considerable.	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Biological Resources			
Impact BIO-1: Development of the project would have a significant impact on trees.	S	Mitigation Measure BIO-1: Landscape trees. To offset impacts resulting from the removal of 80 trees on the project site, the project includes landscaping with approximately 770 trees that would be planted along the project roadways and at the project site entry as part of the proposed landscaping. This is an approximately 9.5:1 mitigation ratio. Comply with the following landscape/irrigation improvement and initial protection requirements subject to the review and approval of the Zoning Administrator: A. Final Landscape Plan: At least 30 days prior to the issuance of a grading permit a final landscape/irrigation plan, prepared by a licensed landscape architect shall be submitted to the Community Development Department (CDD) for review and approval of the Zoning Administrator. The Final Plan shall be designed in general accord with the preliminary landscape plan, Sheet 10 of 10 of the Project Plans dated October 2009. B. Minimum Size Plants: All proposed trees shall be a minimum of 15-gallon size; all shrubs shall be a minimum 5-gallon size. C. Maintenance Cost: Landscaping shall generally be designed to minimize landscape maintenance cost.	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Biological Resources (continued)			
Impact BIO-1, continued.		D. Compliance with Water Conservation and Sight Obstruction Ordinance Requirements: The landscape plan shall contain sufficient information to demonstrate compliance with the reporting requirements and standards of the Water Conservation Landscaping in New Developments ordinance (Chapter 82-26) as amended, and the Sight Obstruction at Intersections ordinance (Chapter 82-18). The latter ordinance applies to intersections with public roads. The landscape architect shall certify that the plan complies with the ordinance improvement standards and reporting requirements. E. To assure the long term viability of this landscaping the applicant shall post a bond for the value of the landscaping, installation plus 20%. The term of the bond shall extend 24 months beyond the installation of landscaping. Prior to the acceptance of the bond by the County a qualified landscape designer shall assess the value of the landscape and provide a copy of that assessment to the Community Development Department. Prior to the release of the bond a landscape designer shall submit a letter to the Zoning Administrator that the landscaping is in good health.	

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Biological Resources (continued)			
Impact BIO-2. Development of the project would have a significant impact on bank habitat.	S	Mitigation Measure BIO-2: Bank habitat. a. Prior to removal of bank habitat along Kellogg Creek or disturbing any creek/channel banks within the project site and at Pantages Island, the applicant shall contact the CDFG, the Corps, the RWQCB, and the Reclamation Board and determine if permits are warranted for the activities pursuant to the regulations that are in effect. Proof of permits (for example, a Section 404 permit, Section 401 permit, Section 1602 permit) or an absence of requirements for such permits from these resource agencies shall be provided to Contra Costa County Department of Conservation and Development. b. All mitigation measures implemented to improve bank habitat shall be approved by the Corps, the RWQCB, CDFG, and the Reclamation Board (if necessary) through issuance of necessary permits. c. Mitigation for loss of bank habitat shall be completed as prescribed by the CDFG, Corps, RWQCB, and Reclamation Board. The applicant has provided a report to Contra Costa County describing how the applicant will mitigate impacts to bank habitats, and these stated mitigations, described below, shall become a condition of project approval.	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Biological Resources (continued)			
Impact BIO-2, continued.		d. Specifically, the applicant proposes to mitigate for the loss of 5,380 lineal feet of excavated low and moderate quality bank habitat by: (1) enhancement of 9,157 lineal feet of existing low and moderate low quality bank habitat, both onsite and offsite, to high quality bank habitat (shaded riverine aquatic habitat and shallow water habitat) on Pantages Island, ECCID Property on the south side of the ECCID Dredge Cut/Channel, Old Kellogg Creek, and Kellogg Creek between Newport Pointe and State Route 4; and (2) creation of 1,903 lineal feet of moderate quality bank habitat (shallow sloping or level bench to MHW with riparian trees and grasses, rip-rap with willows between MHW and MLW) on the excavated portion of Pantages Island, the North Cove and the end of Point of Timber Road in the North Bay. Bank habitat mitigation totals approximately 11,060 lineal feet. e. Enhance existing bank habitat or create new bank habitat on-site, approximately 11,060 linear feet in total, including shaded riverine aquatic habitat and shallow water habitat (high quality bank habitat on Pantages Island and the ECCID portion of the project site; moderate quality bank habitat on the easterly side of Pantages Island and the northerly side of the north cove at the northeasterly end of the project site; and low quality bank habitat at the back of some waterfront lots).	

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Biological Resources (continued)			
Impact BIO-2, continued.		f. The revegetation design shall restore the bank to *moderate quality habitat* following construction, which includes the following: i. Riprap with willow plantings shall be established between mean low water (MLW) and mean high water (MHW) to provide additional stabilization and some shaded riverine aquatic habitat. ii. A shallow sloping or level bench shall be established at approximately MHW to support larger riparian trees such as Fremont cottonwood. iii. The upper bank shall be sloped at 5:1 and also planted with riparian trees and grasses. iv. Riparian trees planted along the shallow sloping or level bench shall be planted on 15-foot centers to ensure adequate bank coverage. v. Native riparian trees such as valley oaks, California buckeyes, and Fremont cottonwoods and native grasses can be used for revegetation. vi. The planted riparian trees shall be monitored by a biologist or arborist annually for a period of 5 years to ensure that mortality does not exceed 20 percent after 5 years. If there is greater than 20 percent mortality of planted	

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Biological Resources (continued)			
Impact BIO-2, continued.		trees after 5 years, the project proponent shall be responsible for replanting and monitoring the trees for an additional 3-year period. vii. During the 5-year monitoring period invasive weed monitoring shall also be conducted. In the event that an increase in the distribution or density of invasive plants is documented (for example, water hyacinth or Brazilian waterweed), an invasive weed management and eradication program shall be developed and implemented. viii. A performance bond, letter of credit, or other financial instrument shall be established to pay for any remedial work that might need to occur. ix. Once vegetation has become established, the upper bank should provide overhanging vegetation cover for fish during most tidal elevations. However, the placement of riprap without natural habitat features (e.g., large woody debris) along most of the lower bank would create minimal in-water habitat for fish. Given incorporation of both high quality and low quality habitat features, this design is characterized as being overall of moderate value.	

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Biological Resources (continued)			
Impact BIO-2, continued.		To improve the overall habitat value of the bank, installation of tree species along the lower bank may be possible by installing Sonatubes in the rip-rap and planting the trees within these tubes. The Sonatubes allow trees to grow along rip-rap banks without harming the integrity of the bank. g. Low and moderate quality habitat along the south side of the ECCID Dredge Cut/Intake Channel, the section of Old Kellogg creek at the southwestern end of the project site and the east and west sides of Kellog Creek between Newport point and State Route 4, shall be restored to high quality habitat by creating a slope setback. h. The setback shall be created by excavating existing bank material from approximately MLW to the top of the bank. i. An intertidal berm with a 10:1 or 20:1 slope shall be established to create shallow water habitat and stabilize the bank. ii. The berm shall be planted with tules to provide in-water resting and hiding places for fish. iii. The upper bank shall be sloped at 3:1 or 5:1 and planted with native riparian trees and shrubs to create shaded riverine aquatic habitat.	

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Biological Resources (continued)			
Impact BIO-2, continued.		iv. Trees and shrubs planted along upper bank shall be monitored by a qualified biologist or arborist for a minimum 5-year period. If there is greater than 20 percent mortality of planted trees and shrubs after 5 years, the applicant shall be responsible for replanting and monitoring the trees for an additional 3-year period. v. During the 5-year monitoring period invasive weed monitoring shall also be conducted. In the event that an increase in the distribution or density of invasive plants is documented (for example, water hyacinth or Brazilian waterweed), an invasive weed management and eradication program shall be developed and implemented. vi. A performance bond, letter of credit, or other financial instrument shall be established to pay for any remedial work that might need to occur. i. Existing low and moderate quality bank habitat around the perimeter of Pantages Island shall be restored to high-quality habitat by implementing the setback design as described for the ECCID Dredge Cut/Intake Channel. This design shall be established around most of the island, except for bank habitat adjacent to Kellogg Creek. Bank	

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Biological Resources (continued)			
Impact BIO-2, continued.		habitat along Kellogg Creek shall be stabilized with riprap to prevent erosion due to wave action from existing and future boater activity. Therefore, this area of Pantages Island will be designed to provide moderate-quality bank habitat as prescribed above. Also to address wave action, moderate quality habitat shall also be created along the North Cove and in the North Bay at the end of Point of Timber Road.	
Impact BIO-3: Development of the project would have a significant impact on vernal pool fairy shrimp.	S	Mitigation Measure BIO-3: Vernal pool fairy shrimp. a. In order to offset the project's impact on vernal pool fairy shrimp the applicant shall implement one of the following measures: i. Purchase credits in an existing fairy shrimp mitigation bank at a ratio determined during negotiations with USFWS during Section 7 Consultation between the Corps and the USFWS; ii. Acquire suitable mitigation property via fee title at a ratio determined during negotiations with USFWS during Section 7 Consultation between the Corps and the USFWS; or iii. With permission from state and federal regulatory agencies and in agreement with the Conservancy, the project proponent shall make a financial contribution to the	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Biological Resources (continued)			
Impact BIO-3, continued.		Conservancy, to offset the project's impact to the vernal pool fairy shrimp. The financial contribution to the Conservancy or the amount of mitigation land that shall be purchased via fee title shall be determined during negotiations with USFWS during Section 7 consultation between the Corps and the USFWS. b. Prior to impacting the seasonal wetland where the vernal pool fairy shrimp were found, documentation of the mitigation transaction (e.g., financial contribution to the Conservancy), and/or a copy of the Biological Opinion outlining the mitigation requirements and incidental take statement from USFWS, shall be provided to Contra Costa County Department of Conservation and Development. c. Prior to grading onsite, and as prescribed in a Biological Opinion issued for the project, topsoils from the wetland containing the fairy shrimp egg bank shall be scalped by a qualified federal 10(a)(1)(A) permitted biologist and redeposited in appropriate seasonal mitigation wetlands that shall be created within the wetland mitigation preserve onsite.	

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Biological Resources (continued)			
Impact BIO-4: Development of the project would have a potentially significant impact on the California red-legged frog.	S	Mitigation Measure BIO-4: California red-legged frog. a. Mitigation shall be 1:1 for impacts to aquatic and upland buffer habitat, that is, for each 1 acre of aquatic or upland buffer habitat impacted, 1 acre of compensatory habitat shall be preserved onsite or acquired offsite in a suitable location) or mitigation may be as required by the USFWS during consultation initiated by the Corps with USFWS pursuant to Section 7 of FESA. b. Replacement habitat can be acquired via fee title acquisition of land, contribution into an existing mitigation bank, or, with permission from state and federal regulatory agencies and in agreement with the Conservancy, the applicant may make a financial contribution to the Conservancy. c. Any mitigation and subsequent monitoring requirement stipulated in permits/ authorizations issued by the USFWS and the Corps for this project shall be completed as stated in the permits/authorizations. Copies of all survey reports and monitoring reports required by USFWS in the conditions of the Biological Opinion shall be submitted to Contra Costa County Department of Conservation and Development. d. Contra Costa County shall receive copies of all agency agreements/ authorizations related to this species, and shall not issue a grading or building permit until all agency agreements/ permits	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Biological Resources (continued)			
Impact BIO-4, continued.		relating to the California red-legged frog have been obtained for this project and mitigation has been implemented.	
Impact BIO-5: Development of the project would have a potentially significant impact on the giant garter snake.	S	Mitigation Measure BIO-5: Giant garter snake. a. Mitigation shall be 1:1 for impacts to suitable aquatic and upland habitat (that is, for each 1 acre of suitable aquatic and upland habitat impacted, 1 acre of compensatory habitat shall be preserved onsite or acquired offsite in a suitable location) or mitigation may be as required by the USFWS during consultation initiated by the Corps with USFWS pursuant to Section 7 of FESA. b. Replacement habitat can be acquired via fee title acquisition of land, contribution into an existing mitigation bank, or, with permission from state and federal regulatory agencies and in agreement with the Conservancy, the project proponent may make a financial contribution to the Conservancy. Any mitigation and subsequent monitoring requirement stipulated in permits/ authorizations issued by the USFWS and the Corps for this project shall be completed as stated in the permits/authorizations. c. Contra Costa County shall receive copies of all agency agreements/authorizations related to this species, and shall not issue a grading permit or building permit until all agency	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Biological Resources (continued)			
Impact BIO-5, continued.		agreements/permits relating to the giant garter snake have been obtained and mitigation for this species has been implemented.	
Impact BIO-6: Development of the project would have a potentially significant impact on the western pond turtle.	S	Mitigation Measure BIO-6. Western pond turtle. The applicant shall install turbidity barriers around construction areas in Kellogg Creek and the buffers protecting the preserved emergent marsh to ensure that western pond turtles do not enter the project construction areas. a. The western pond turtle is not a state listed species; therefore, it is not protected pursuant to the California Endangered Species Act. Thus, the resource agencies (CDFG and USFWS) do not have specific mitigation guidelines that must be followed to offset a project's impact to the western pond turtle. Mitigation for this special-status species is determined on a project by project basis. It is likely that any mitigation implemented for the California red-legged frog and the giant garter snake would also mitigate the proposed project's impact on the western pond turtle. The mitigation measure for impacts to these two listed species would be a 1:1 mitigation ratio (that is, for each 1 acre of impact, 1 acre of mitigation land would be acquired offsite or preserved onsite) for impacts to aquatic habitat and a surrounding upland buffer area, or mitigation would be as worked out by the	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Biological Resources (continued)			
Impact BIO-6, continued.		applicant, the USFWS, and the Corps at the time applications for permits/authorizations from these two agencies are submitted. Replacement habitat can be acquired via fee title acquisition of land, contribution into an existing mitigation bank, or, with permission from state and federal regulatory agencies and in agreement with the Conservancy, the applicant may make a financial contribution to the Conservancy.	
Impact BIO-7: Development of the project would have potentially significant impact on federal and/or state listed fish species and fish species designated by the State of California as Species of Special Concern.	S	Mitigation Measure BIO-7: Federal and/or State listed fish species and California species of special concern fish. a. To minimize potential impacts to federal and/or state listed fish and California "species of special concern" during construction and dredging of the two interior bays, a levee shall be maintained between the area to be excavated and the Kellogg Creek channel. b. A qualified fisheries biologist shall be onsite during all pumping and siphoning activity to ensure that these activities do not result in take of federal and/or state listed fish and California "species of special concern." c. Silt curtains or suction dredges shall be used when conducting work in the ECCID Dredge Cut/Intake Channel and Kellogg Creek. Use of this	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Biological Resources (continued)			
Impact BIO-7, continued.		equipment will localize sediment movement and protect fish from entrainment and the effects of increased turbidity. d. All in-water work shall be conducted between August 1 and November 30 to minimize the potential for take of threatened and endangered fish species. By conducting work within this time period, the project will avoid most critical spawning, migratory, and dispersal periods for listed fish species. e. Long-term impacts to fish are not expected provided the proposed bank habitat mitigation to re-create and replace impacted bank habitat is implemented by the applicant.	
Impact BIO-8: Development of the project would have a potentially significant impact on tree nesting raptors.	S	Mitigation Measure BIO-8: Tree nesting raptors. a. If possible, tree removal shall be completed outside the nesting season (that is, between September 2 and February 28). In an abundance of caution, a preconstruction nesting survey of the tree to be removed shall be conducted within 30 days of the scheduled removal to ensure no birds are nesting. b. If construction or tree removal would commence between March 1 and September 1 during the nesting season, nesting surveys shall be conducted 30 days prior to grading/construction of the project or any proposed tree removal work.	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Biological Resources (continued)			
Impact BIO-8, continued.		The raptor nesting surveys shall include examination of all trees and shrubs within sphere of influence of the proposed project, and not just of those trees slated for removal. c. If nesting raptors are identified during the surveys, the dripline of the nest tree shall be fenced with orange construction fencing (provided the tree is on the project site), and a 300-foot radius around the nest tree shall be staked with bright orange lath or other suitable staking. d. If the tree is adjacent to the project site then the buffer shall be demarcated per above where the buffer occurs on the project site. The size of the buffer may be altered if a qualified raptor biologist conducts behavioral observations and determines the nesting raptors are well acclimated to disturbance. If this occurs, the raptor biologist shall prescribe a modified buffer that allows sufficient room to prevent undue disturbance/ harassment to the nesting raptors. This buffer may be reduced no smaller than 100 feet from the nest tree. e. No construction or earth-moving activity shall occur within the established buffer until it is determined by a qualified raptor biologist that the young have fledged (that is, left the nest) and have attained sufficient flight skills to avoid	

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Biological Resources (continued)			
Impact BIO-8, continued.		project construction zones. This typically occurs by August 1. This date may be earlier than August 1 or later, and would have to be determined by a qualified raptor biologist.	
Impact BIO-9: Development of the project would have a potentially significant impact on the Swainson's hawk.	S	Mitigation Measure BIO-9: Swainson's hawk. a. To meet the CDFG's mitigation requirements for impacts to Swainson's hawk foraging habitat the applicant shall implement one of the following scenarios: i. Dedicate and preserve 135 acres of habitat[1] (this is a 1:1 impact to mitigation ratio), as approved by CDFG, to a conservation organization. An operating endowment shall be provided to the conservation organization to manage any preserved lands in perpetuity. ii. With permission from state and federal regulatory agencies and in agreement with the Conservancy, the applicant may make a financial contribution to the Conservancy, commensurate with approximately 135 acres of impacts to Swainson's hawk foraging habitat.	LTS

1 The mitigation requirement for 135 acres is the 171-acre project site minus the 36.43 acres of Corps jurisdictional waters of the U.S. onsite which do not provide foraging habitat for Swainson's hawk.

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Biological Resources (continued)			
Impact BIO-9, continued.		b. To ensure that no impacts occur to any nesting Swainson's hawks, preconstruction nesting surveys shall be conducted no more than one month prior to construction to establish whether Swainson's hawk nests within 1,000 feet of the project site are occupied. c. If an active nest is found on or adjacent to the project site "to avoid potential violation of Fish and Game Code 2080 (i.e., killing of listed species), project-related disturbance at active Swainson's hawk nesting sites should be reduced or eliminated during critical phases of the nesting cycle (March 1- September 15 annually)"(CDFG 1994). d. If Swainson's hawks are found nesting on the project site, a qualified raptor biologist shall establish a non-disturbance boundary around the nesting site. The size of this non-disturbance boundary shall be determined by the qualified raptor biologist in the field and in coordination with CDFG. The buffer shall be based on the location of the nesting tree, the birds' tolerance of noise and other disturbance (e.g., ground vibrations). e. Upon completion of nesting cycle, as determined by a qualified raptor biologist, and in coordination with CDFG, any non-disturbance boundary/nest buffer could be vacated.	

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Biological Resources (continued)			
Impact BIO-9, continued.		f. If the nest tree must be removed as part of the project, removal of this tree shall be mitigated in accordance with the mitigation measure prescribed for tree removal impacts in Mitigation Measure BIO-1. Tree planting is proposed as mitigation at a 9.5:1 ratio (that is, planting: removal). Replacement nest trees shall be native species (such as oaks or cottonwoods).	
Impact BIO-10: Development of the project would have a potentially significant adverse effect on the western burrowing owl.	S	Mitigation Measure BIO-10: Western burrowing owl. Burrowing owl surveys conducted according to the methodologies prescribed by CDFG in their 1995 *Staff Report on Burrowing Owl Mitigation* and the Burrowing Owl Consortium in their 1993 *Burrowing Owl Survey Protocol and Mitigation Guidelines* are more likely to be accepted by CDFG. Below we provide the survey methodology that shall be used to conduct burrowing owl surveys. These surveys would meet the standards of care required by CEQA for conducting surveys for the western burrowing owl and are accepted by CDFG. a. A nesting survey shall be conducted for western burrowing owl in the spring of the year prior to construction of the project and again 30 days prior to construction of the project. b. If the site would be developed in the winter, then the following surveys should be conducted in the winter months. Since burrowing owls move	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Biological Resources (continued)			
Impact BIO-10, continued.		around (through dispersal and local movements) readily in the winter months, and since there are migrants that can temporarily occupy burrows in the winter, surveys conducted in the winter months are less reliable at detecting resident burrowing owls. Regardless of whether development commences in the winter months, surveys must be completed as described below for spring/summer surveys. c. Surveys shall commence at least 90 days in advance of projected site disturbance and again in the 30 day period just prior to breaking ground. In accordance with the Consortium's guidelines, four site visits are recommended for a complete survey. Two surveys shall be conducted 90 days before ground disturbance associated with the project and two surveys shall be conducted in the 30 day period prior to ground disturbance associated with the project. The CDFG Staff Report states that preconstruction surveys need to be completed within 30 days of grading prior to CDFG accepting a survey conclusion that no burrowing owls occur in a proposed study area (i.e., negative findings). If no owls are found during these surveys, no further regard for the burrowing owl would be necessary.	

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Biological Resources (continued)			
Impact BIO-10, continued.		d. Western burrowing owl surveys shall be conducted from two hours before sunset to one hour after, or one hour before to two hours after sunrise. All burrowing owl sightings, occupied burrows, and burrows with owl sign (*e.g.*, pellets, excrement, and molt feathers) must be counted and mapped. e. Surveys shall be conducted by walking all suitable habitat on the entire project site and (where possible) in areas within 150 meters (approx. 500 feet) of the project impact zone. The 150-meter buffer zone is surveyed to identify burrows and owls outside of the project area which may be impacted by factors such as noise and vibration (heavy equipment) during project construction. f. Pedestrian survey transects shall be systematically spaced to allow 100 percent visual coverage of the ground surface. The distance between transect center lines shall be no more than 30 meters (approx. 100 ft.) and shall be reduced to account for differences in terrain, vegetation density, and ground surface visibility. To effectively survey large projects (100 acres or larger), two or more surveyors shall be used to walk adjacent, parallel transects. g. To avoid impacts to owls from surveyors, owls and/or occupied burrows should be avoided by a minimum of 50 meters (approx. 160 ft.) if in the	

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Biological Resources (continued)			
Impact BIO-10, continued.		non-breeding months (October 1st through February 1st) and 250 feet during the breeding permanent impacts to burrowing owl habitat. To months (February 1st through October 1st).Disturbance to occupied burrows and within the established buffers should be avoided until no burrowing owls occur on the site. Note that CDFG can approve a passive western burrowing owl eviction plan during the non-breeding season. h. If burrowing owls are detected on the site during the breeding season (peak of the breeding season is April 15 through July 15), and appear to be engaged in nesting behavior, a fenced 250-foot buffer would be required between the nest site(s) (*i.e.*, the active burrow(s)) and any earth-moving activity or other disturbance in the project area. This 250-foot buffer could be decreased to 160 feet once it is determined by a qualified raptor biologist that the young have fledged (that is, left the nest). Typically, the young fledge by August 31. This date may be earlier than August 31, or later, and would have to be determined by a qualified burrowing owl biologist. If burrowing owls were found on the project site, a qualified biologist would also need to delineate the extent of burrowing owl habitat on the site.	

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Biological Resources (continued)			
Impact BIO-10, continued.		i. To mitigate impacts to burrowing owls, CDFG prescribes that six and a half acres (6.5 acres) of replacement habitat be set aside (*i.e.,* protected in perpetuity) per pair of burrowing owls, or unpaired resident bird. Such a set-aside will offset illustrate the extent of mitigation land required by California Department of Fish and Game, we provide this example: If two pairs of burrowing owls are identified on the project site, 13 acres of mitigation land would be acquired. Or, if one pair and one resident bird are identified, 13 acres of mitigation land would be acquired. The protected lands should be adjacent to occupied burrowing owl habitat if possible, and at a location selected in consultation with CDFG. Land identified to offset impacts to burrowing owls must be protected in perpetuity by a suitable property instrument, e.g., a conservation easement or fee title acquisition. Any mitigation lands set aside for burrowing owl would also include preparation of a Mitigation Plan for burrowing owl and their habitat. A Mitigation Plan shall be prepared and submitted to CDFG for this agency's review and comment. Contra Costa County Department of Conservation and Development must approve the Mitigation Plan prior to issuing a grading permit for the proposed project.	

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Biological Resources (continued)			
Impact BIO-10, continued.		j. The Mitigation Plan shall identify the mitigation site and any activities proposed to enhance the site, including the construction of artificial burrows and maintenance of California ground squirrel populations on the mitigation site. In addition, for each pair of burrowing owls found in the construction area, two artificial nesting burrows will be created at the mitigation site. The Plan should also include a description of monitoring and management methods proposed at the mitigation site. Monitoring and management of any lands identified for mitigation purposes would be the responsibility of the applicant for at least five years. An annual report must be prepared for submittal to CDFG and Contra Costa County Department of Conservation and Development by December 31 of each monitoring year. Contingency measures for any anticipated problems should be identified in the plan. k. With permission from state and federal regulatory agencies and in agreement with the Conservancy, the applicant may make a financial contribution to the Conservancy to mitigate impacts to burrowing owls and burrowing owl habitat.	

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Biological Resources (continued)			
Impact BIO-11: Development of the project would have a potentially significant impact on other protected nesting birds.	S	Mitigation BIO-11: Impacts to other nesting birds. a. A nesting survey shall be conducted prior to commencing with construction work if this work would commence between March 15 and August 31. b. If special-status birds, such as loggerhead shrike or tricolored blackbird, are identified nesting within the area of affect, a 100-foot non-disturbance radius around the nest must be fenced. No construction or earth-moving activity shall occur within this 100-foot staked buffer until it is determined by a qualified ornithologist that the young have fledged (that is, left the nest) and have attained sufficient flight skills to avoid project construction zones. This typically occurs by August 1. This date may be earlier than August 1, or later, and would have to be determined by a qualified ornithologist. Similarly, the qualified ornithologist could modify the size of the buffer based upon site conditions and the bird's apparent acclimation to human activities. c. If common (that is, not special-status) passerine birds (that is, perching birds such as northern mockingbirds) are identified nesting in the trees proposed for removal, tree removal would have to be postponed until it is determined by a qualified ornithologist that the young have fledged and have attained sufficient flight skills to leave the project	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Biological Resources (continued)			
Impact BIO-11, continued.		site. Typically, most passerine birds can be expected to complete nesting by August 1, with young attaining sufficient flight skills by this date that are sufficient for young to avoid project construction zones. Unless otherwise prescribed for special-status bird species, upon completion of nesting no further protection or mitigation measures would be warranted for nesting birds.	
Impact BIO-12. Impacts to Waters of the United States and/or State.	S	Mitigation Measure BIO-12: Impacts to waters of the United States and/or State Authorization from the Corps and the RWQCB (for example, an Individual Permit and a Certification of Water Quality) shall be obtained prior to filling any waters of the U.S./State on the project site. A *Conceptual Wetland and Emergent Marsh Preservation and Mitigation Plan* for Pantages Bays was prepared by Gibson & Skordal, LLC (dated November 15, 2006). According to this mitigation plan, minimization of indirect impacts would be accomplished by grading home pads to drain toward streets and away from open space areas, landscaping with native plants, construction on bioswales, maintaining natural buffers between the development and the preserved marsh habitat within the open space areas, and using native plantings as landscaping buffers between development and open space preserve areas. An exception is at the Emergency Vehicle Access (EVA) crossing of the marsh	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Biological Resources (continued)			
Impact BIO-12, continued.		where there is no buffer. The location of the EVA was chosen so that the road crossed the marsh at its narrowest point. In most other cases, there is a minimum of 50 feet between the edge of the residential development and the preserved marsh. At some locations, grading would encroach into the 50 foot width; however, the graded area would be planted with native vegetation and maintained naturally (no irrigation) such that it functions as a buffer. The open space preserve area shall be separated from adjacent development or recreational areas with permanent fencing that protects the open space preserve from unauthorized use while providing a visual connection to the open space. Residential fences would be tubular steel or some other form of permanent, visually open, fencing where houses back up to the open space preserve. Past mitigation efforts from other development projects have shown that with open fencing, protected areas are kept free from dumping of trash by homeowners as the community has more connection and feels more stewardship of the open space. In addition, along the EVA/trail, kiosks with educational signage will be developed to reduce human-induced impacts. Impacts to waters of the United States/State will also be minimized by implementing the following measures:	

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Biological Resources (continued)			
Impact BIO-12, continued.		a. The project proponent shall implement best management practices consistent with the Storm Water Pollution Prevention Plan (SWPPP) prepared for the project to protect the emergent marsh and wetland mitigation area, including installing orange construction fencing, hay or gravel waddles, and other protective measures. b. During project construction, a biological monitor shall be onsite to monitor the integrity of preserved wetlands and other waters. c. For those wetland areas that cannot be avoided, compensation wetlands shall be enhanced/created to replace those wetlands permanently affected by project activities. If possible, wetlands shall be created on-site and shall resemble those wetlands affected by the project (known as in-kind replacement). d. All impacted wetlands shall be replaced at a minimum 1:1 ratio (for each square foot of impact, one square foot of wetland would be enhanced/created) or as otherwise specified in permitting conditions imposed by the Corps and RWQCB. e. The specific mitigation for the project consists of the components listed here: ▪ Creation of approximately 5.29 acres of seasonal wetland on-site;	

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Biological Resources (continued)			
Impact BIO-12, continued.		▪ Creation of approximately 0.30 acre of marsh habitat on-site; ▪ Creation and enhancement of approximately 11,060 linear feet of bank habitat on-site, including Shaded Riverine Aquatic habitat and shallow water habitat; ▪ Creation of approximately 46 acres of open water habitat on-site; ▪ Preservation of all avoided and created aquatic areas; and ▪ Implementation of a comprehensive long-term storm water management plan designed to protect water quality. The compensatory mitigation envisioned for the project will consist of two major efforts. First will be the creation of seasonal wetland habitat in the uplands adjacent to the preserved marsh, and second will be the creation and enhancement of bank habitat within the project area. *Creation (Compensatory Mitigation)* *Seasonal Wetland/Emergent Marsh/Open Water Habitat* a. A minimum of approximately 5.29 acres of seasonal wetland and 0.30 acre of marsh shall be created within the 44-acre preserve area. Specifically, the creation of the seasonal wetland will occur in the 12.58-acre upland area in the	

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Biological Resources (continued)			
Impact BIO-12, continued.		northwest corner of the site. The expansion of the marsh shall be accomplished either on the eastern side of the existing marsh on the new peninsula created by the opening of the northern bay or along the western side of the existing marsh. This represents a 1:1 mitigation ratio (created wetlands to impacted wetlands). b. Soil borings shall be taken prior to the construction of the seasonal wetlands within the open space preserve to verify the suitability of the proposed wetland soils (e.g. cobbly soils or old alluvium would not be suitable soils). c. Ground water depths shall also be identified within the open space preserve. d. The locations of the created wetlands shall be selected based on the existing topography within the uplands, soil composition, and ground water depths, and the created seasonal wetlands shall be excavated to a depth necessary to accumulate seasonal (winter) groundwater and/or to any clay layer that will perch rainfall. e. The upper 6 inches of top soil shall be scalped from the seasonal wetlands to be impacted and will be placed in the created wetlands for seed source. These topsoils would contain a seed bank of the impacted pool plant species which would germinate with fall/winter hydration of the re-created pools.	

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Biological Resources (continued)			
Impact BIO-12, continued.		f. The created wetlands shall be very slightly over excavated to accommodate the addition of topsoil. g. This mitigation measure may be substituted by implementing another wetland compensation plan that is approved for the project by both the Corps and the RWQCB. *Bank Habitat* Overall, the project will remove approximately 5,380 linear feet of the 10,120 linear feet of existing habitat along the project site. The applicant proposes to mitigate for the loss of 5,380 lineal feet of excavated low and moderate quality bank habitat by: (1) enhancement of 9,157 lineal feet of existing low and moderate low quality bank habitat, both onsite and offsite, to high quality bank habitat (shaded riverine aquatic habitat and shallow water habitat) on Pantages Island, ECCID Property on the south side of the ECCID Dredge Cut/Channel, Old Kellogg Creek, and Kellogg Creek between Newport Pointe and State Route 4; and (2) creation of 1,903 lineal feet of moderate quality bank habitat (shallow sloping or level bench to MHW with riparian trees and grasses, rip-rap with willows between MHW and MLW) on the excavated portion of Pantages Island, the North Cove	

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Biological Resources (continued)			
Impact BIO-12, continued.		and the end of Point of Timber Road in the North Bay. Bank habitat mitigation totals approximately 11,060 lineal feet. *Open Space Preservation* The preserved and created seasonal wetlands and marsh habitat would be located within a 44-acre permanently preserved area. In addition, the approximately 11,060 linear feet of enhanced and created bank habitat shall be preserved in perpetuity. It is envisioned that ownership of the 44 acres of open space preserve areas as well as the enhanced bank habitat on ECCID property and Pantages Island and the created banks within the bays and coves will be transferred to RD 800, and that a conservation easement would be conveyed to the Town of Discovery Bay Community Services District (TDBCSD) for preservation in perpetuity. The TDBCSD would also function as the Preserve Manager and conduct the long-term monitoring and maintenance of the preserve areas in perpetuity. On the adjoining Ravenswood project, a conservation easement has been conveyed to the TDBCSD for the same purpose pursuant to Corps Permit No. 199400928. TDBCSD will therefore be able to ensure consistent and coordinated management of the two conservation areas. RD 800 will own and be responsible by conservation covenants to monitor and maintain the bank habitat within Pantages Bays in perpetuity.	

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Biological Resources (continued)			
Impact BIO-12, continued.		Funding will be provided through annual assessments of homeowners in Pantages Bays that are secured through a binding, permanent agreement. This funding and monitoring is separate from the compensatory mitigation monitoring for the created wetlands is outlined in the Conceptual Wetland and Emergent Marsh Preservation and Mitigation Plan for Pantages Bays was prepared by Gibson & Skordal, LLC (dated November 15, 2006). Alternative long-term mitigation monitoring acceptable to permitting agencies may also be considered. A 5-year monitoring program will be established to monitor the progress of the wetland mitigation toward an established goal. At the end of each monitoring year, an annual report will be submitted to the Corps, RWQCB and Contra Costa County. This report will document the hydrological and vegetative condition of the mitigation wetlands, and will recommend remedial measures as necessary to correct deficiencies. Aside from the minimum replacement ratio and in perpetuity protection, various regulatory agencies may provide additional conditions and stipulations for permits. Permits for impacts to waters of the U.S. will be required by the Corps. Similarly, permits for impacts to waters of the state will be required by both the RWQCB and CDFG prior to the impacts occurring. These agencies will likely impose their own	

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Biological Resources (continued)			
Impact BIO-12, continued.		mitigation requirements. Any other conditions that are stipulated for impacts to waters of the U.S. or state by the Corps, RWQCB, and/or CDFG shall also become conditions of project approval.	
Impact CUM BIO-1: Cumulative Impacts to Vegetation and Wildlife Resources	S	The mitigation measures prescribed above would offset cumulative impacts to special-status species, wetlands, trees, and plant communities/wildlife habitats to levels regarded as less than significant. Mitigation that includes creation and enhancement of impacted "waters of the U.S.," stream channels, and bank habitat would offset this cumulative impact to levels regarded as less than significant.	LTS
Cultural Resources			
Impact CUL-1: Construction of the project could potentially cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5.	S	Mitigation Measure CUL-1: Pursuant to CEQA Guidelines Section 15064.5, in the event that any prehistoric, historic, archaeological or paleontological resources are discovered during ground-disturbing activities, all work within 100 feet of the resources shall be halted and the applicant shall consult with the County and a qualified professional (historian, archaeologist and/or paleontologist as determined appropriate and approved by the County) to assess the significance of the find.	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Cultural Resources (continued)			
Impact CUL-1, continued.		If any find is determined to be significant, representatives of the County and the consulting professional shall determine the appropriate avoidance measures or other appropriate mitigation. In considering any suggested mitigation proposed by the consulting professional to mitigate impacts to cultural resources, the County shall determine whether avoidance is feasible in light of factors such as the nature of the find, project design, costs, and other considerations. If avoidance is infeasible, other appropriate measures, such as data recovery, shall be instituted. Work may proceed on other parts of the project site while mitigation for cultural resources is carried out. All significant cultural materials recovered shall, at the discretion of the consulting professional, be subject to scientific analysis, professional museum curation, and documentation according to current professional standards. At the County's discretion, all work performed by the consulting professional shall be paid for by the applicant and at the County's discretion, the professional may work under contract with the County.	

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Cultural Resources (continued)			
Impact CUL-2: Construction of the project could potentially cause a substantial adverse change in the significance of an unknown archaeological resource pursuant to Section 15064.5.	S	Mitigation Measure CUL-2: Implementation of Mitigation Measure CUL-1 would reduce impacts from changes in the significance of an archaeological resource to a less-than-significant level.	LTS
Impact CUL-3: Construction of the project potentially could directly or indirectly destroy a unique paleontological resource on site or unique geologic feature.	S	Mitigation Measure CUL-3: Implementation of Mitigation Measure CUL-1 would reduce impacts to paleontological resources or a unique geologic feature to a less-than-significant level.	LTS
Impact CUL-4: Construction of the project could potentially disturb human remains, including those interred outside of formal cemeteries.	S	Mitigation Measure CUL-4: In the event of the accidental discovery or recognition of any human remains in any location other than a dedicated cemetery, the following steps shall be taken: 1. There shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until: ▪ The coroner of the county in which the remains are discovered must be contacted to determine that no investigation of the cause of death is required, and ▪ If the coroner determines the remains to be Native American: • The coroner shall contact the Native American Heritage Commission within 24 hours;	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Cultural Resources (continued)			
Impact CUL-4, continued.		• The Native American Heritage Commission shall identify the person or persons it believes to be the most likely descended from the deceased Native American; • The most likely descendent may make recommendations to the landowner or the person responsible for the excavation work for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in Public Resources Code Section 5097.98; or 2. Where the following conditions occur, the landowner or his authorized representative shall rebury the Native American human remains and associated grave goods with appropriate dignity on the property in a location not subject to further subsurface disturbance: ▪ The Native American Heritage Commission is unable to identify a most likely descendent or the most likely descendent failed to make a recommendation within 24 hours after being notified by the Commission; ▪ The identified descendant fails to make a recommendation; or	

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Cultural Resources (continued)			
Impact CUL-4, continued.		▪ The landowner or his authorized representative rejects the recommendation of the descendant, and the mediation by the Native American Heritage Commission fails to provide measures acceptable to the landowner.	
Energy			
There are no significant impacts to energy.			
Geology and Soils			
Impact GEO-1: Implementation of the project could expose people and developments to adverse effects from strong seismic ground shaking and seismic related ground failure including liquefaction and lateral spreading.	S	Mitigation Measure GEO-1a: The project applicant shall design structures and foundations to withstand expected seismic sources in accordance with the current version of the California Building Code, as adopted by the County. Mitigation GEO-1b: At least 60 days prior to recording the Final Map the applicant shall submit updated improvement plans for the project for review by the County's Peer Review Geologist and review and approval by the Zoning Administrator. For the purposes of geologic review, the plans shall provide detailed information on the bank stabilization wall system being proposed along the waterfront residential lots.	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Geology and Soils (continued)			
Impact GEO-1, continued.		Mitigation GEO-1c: Prior to the issuance of building permits, the applicant shall submit an updated geology, soils and foundation report meeting the requirements of the Subdivision Ordinance, Section 944.420 for review by the Peer Review Geologist and review and approval of the Zoning Administrator. The report shall address the specific approach to grading and development indicated by the Final Subdivision Map and Improvement Plans, and shall provide technical data and engineering analysis that addresses the stability of the residential lots. ▪ The project geotechnical engineer shall use the following performance criteria: ▪ Factor of Safety of a minimum of 1.5 for static conditions, ▪ Factor of Safety of 1.25 for pseudo-static conditions, and which takes into account the potential for a seismic source in the site vicinity (Great Valley seismic zone) and ▪ Factor of Safety of 1.3 for rapid draw down. Mitigation GEO-1d: During the construction of subdivision improvements, the project geotechnical engineer shall provide observation and testing services and issue a grading/shoring wall completion report. The report shall provide documentation on the bank stabilization wall depths and appropriate testing of fill compaction to determine the	

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Geology and Soils (continued)			
Impact GEO-1, continued.		effectiveness of the bank stabilization measures in preventing lateral spreading failures toward the Kellogg Creek channel.	
Impact GEO-2: Development of the project site could result in substantial soil erosion or the loss of topsoil.	S	Mitigation GEO-2: The applicant shall submit a Storm Water Pollution Prevention Plan (SWPPP) for review and approval by the Building Inspection Division of the Department of Conservation and Development. The SWPPP shall be consistent with the terms of the State Construction Storm Water General Permit, the manual of Standards for Erosion and Sedimentation Control Measures by the Association of Bay Area Governments, policies and recommendations of the County and the RWQCB. The County has SWPPP resources available on its website: http://www.co.contra-costa.ca.us/depart/pw/design/swppp/. With regard to long-term control of sedimentation and protection of water quality, a Storm Water Control Plan (SWCP) C.3 Report (dk Consulting 2006) was prepared for the project and submitted to the County's Public Works Department in order to comply with County water quality requirements. Engineered linear bioretention facilities (dry swales) are the selected stormwater runoff treatment for this project, which are area based storm water treatment facilities.	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Geology and Soils (continued)			
Impact GEO-3: The project could expose structures to substantial adverse effects related to expansive and corrosive soils on the project site.	S	Mitigation GEO-3: At least 30 days prior to recordation of the final map, the project applicant shall submit a plan for monitoring corrosivity of pads and road beds. The plan shall demonstrate how the results of the study will guide design of concrete and ferrous materials that are in contact with the ground.	LTS
Global Climate Change			
Impact CUM GCC-1: The project would generate GHG emissions in excess of the BAAQMD threshold of 4.6 metric tons of CO_2e per service population per year and would have a considerable contribution on global climate change.	S	Mitigation Measure CUM GCC-1a: The County shall ensure that the project applicant(s) employs green building techniques in the design of proposed structures within the Pantages Bays project. Specifically, structures shall conform at a minimum to the California Green Building Code or equivalent green building standards. Mitigation Measure CUM-GCC-1b: The applicant has agreed to incorporate the following measures within the proposed project: ▪ Project landscaping shall include water-efficient native and adaptive plants in combination with high-efficiency irrigation equipment; ▪ Recycled content shall be included in project building materials, including the use of pre-consumer fly-ash in the concrete for project walkways, driveways, roadways, and non-plant landscape elements;	SU

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Global Climate Change (continued)			
Impact CUM GCC-1, continued.		▪ To protect regional and indoor air quality, interior paints, carpets, adhesives, sealants, and coatings selected for the project shall have a low concentration of volatile organic chemicals (VOCs); ▪ The heating, ventilation, and air conditions (HVAC) systems within each single family home shall use environmentally responsible refrigerants (i.e. non CFC-based refrigerants); Indoor ventilation systems in each home shall include high-efficiency systems to provide enhanced indoor air quality as potential pollutants would be ventilated through the building at a faster rate; ▪ The project shall install high efficiency restroom fixtures including low-flow or dual flush toilets to reduce potable water use; ▪ Wood from sustainably harvested forests (as certified by the Forest Stewardship Council) shall be used in wood materials for the single family homes, including flooring, cabinets, trim, shelving, doors, and countertops; and ▪ The project shall install water and energy efficient appliances and lighting fixtures, including *EnergyStar* dishwashing and refrigeration equipment.	

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Hazards and Hazardous Materials			
Impact HAZ-1: The project could potentially cause the release of hazardous materials into the environment during demolition, grading, and construction activities.	S	Mitigation Measure HAZ-1: Prior to issuance of grading permits, soil samples shall be collected from the paint disposal area and analyzed for metals, petroleum hydrocarbons, and volatile organic compounds. Soil samples shall be compared to the Environmental Screening Levels (ESLs) as determined by the California Regional Water Quality Control Board San Francisco Bay Region. If soil samples exceed ESLs, the soil shall be investigated and remediated under the oversight of the Contra Costa Environmental Health Division (CCEHD). Additionally, the site shall be inspected by an environmental professional, appointed by the County, during demolition and preliminary grading activities. In the event that previously unidentified contaminants are discovered, the contamination shall be reported to CCEHD and investigated and remediated under the oversight of CCEHD in accordance with existing regulatory programs.	LTS
Impact HAZ-2 The project could potentially release hazardous materials during demolition of the existing residence.		Mitigation Measure HAZ-2a: Prior to the issuance of a demolition permit, the applicant shall submit proof to the County that all asbestos-containing materials have been removed at the existing residence located to the south of Point of Timber Road, in compliance with state regulations.	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Hazards and Hazardous Materials (continued)			
Impact HAZ-2, continued.		Mitigation Measure HAZ-2b: Prior to the issuance of a demolition permit, the applicant shall submit proof to the County that all lead-based paint (LBP) has been removed at each of the existing former residences on the project site, in compliance with state regulations.	
Impact HAZ-3: Project demolition and construction activities could expose individuals at the Timber Point Elementary School to hazardous emissions or materials.	S	Implementation of Mitigation Measure HAZ-1, HAZ-2a, and HAZ-2b would ensure that all potentially hazardous materials, including lead-based paint, asbestos containing materials, and soil contamination from prior use of the site is properly removed and disposed of by a licensed hazardous waste contractor in accordance with state regulations.	LTS
Hydrology and Water Quality			
Impact HYD-1: Construction activities would alter the existing drainage patterns resulting in erosion, sedimentation, and contamination of storm water runoff which could degrade water quality in adjacent water bodies.	S	Mitigation Measure HYD-1a: A qualified hydrologist on the project team shall perform, at minimum, weekly monitoring of the water quality in Kellogg Creek adjacent to the turbidity barriers to determine whether adjustments to their position or depth are required. Monitoring shall be more frequent, as needed, to accurately assess water quality degradation. Mitigation Measure HYD-1b: The applicant shall submit a Storm Water Pollution Prevention Plan (SWPPP) for review and approval by the Building Inspection Division of the Department of Conservation and Development. The SWPPP shall be	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Hydrology and Water Quality (continued)			
Impact HYD-1, continued.		consistent with the terms of the State Construction Storm Water General Permit, the manual of Standards for Erosion and Sedimentation Control Measures by the Association of Bay Area Governments, policies and recommendations of the County and the RWQCB. The County has SWPPP resources available on its website: http://www.co.contra-costa.ca.us/depart/pw/design/swppp/. Mitigation Measure HYD -1c: To prevent pollution of receiving waters due to equipment fueling, storage, and maintenance, the contractor shall develop a detailed set of guidelines to follow. Final plan notes, and contractor bid documents shall include the following specifications: 1. Space in the staging area shall be reserved for storage of maintenance materials, and refueling purposes. 2. The staging area shall be graded to prevent any runoff so that any contaminants such as spilled fuel, oil, or grease will not reach the receiving waters. 3. If heavy-duty construction machinery is left overnight in an area that is not protected from direct runoff to receiving waters, drip pans shall be placed beneath the engine block and hydraulic systems.	

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Hydrology and Water Quality (continued)			
Impact HYD-2: Abandoned groundwater wells on the project site could act as direct conduits to groundwater for hazardous waste.	S	Mitigation Measure HYD-2: Prior to the issuance of grading permits, the project applicant shall coordinate with Contra Costa Environmental Health Division (CCEHD) to identify and survey the existing and abandoned groundwater wells on the project site. The identified groundwater wells shall be properly decommissioned and/or retrofitted under permit from CCEHD. CCEHD shall inspect the decommissioned wells for approval.	LTS
Impact HYD-3: The project site is located within areas of projected tidal inundation due to sea level rise, which would place people and structures within a flood hazard associated with long-term sea level rise.	S	Mitigation Measure HYD-3a: The final map and improvement plans, including grading plans shall include, at minimum, a finished floor elevation of residential units at 14.1 feet. Mitigation Measure HYD-3b: The final map and improvement plans, including grading plans shall include, at minimum, a finished street level elevation of 12.1 feet.	LTS
Land Use and Planning			
There are no significant impacts to land use and planning.			
Mineral Resources			
There are no significant impacts to mineral resources.			

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Noise			
Impact NOI-1: Project construction would cause a substantial temporary increase in ambient noise levels.	S	Mitigation Measure NOI-1a: All noise generating construction activities shall be limited to the hours of 7:30 AM to 5:30 PM, Monday through Friday, and shall be prohibited on state and federal holidays on the calendar dates that these holidays are observed by the state or federal government as listed below: ▪ New Year's Day (State and Federal) ▪ Birthday of Martin Luther King, Jr. (State and Federal) ▪ Washington's Birthday/Presidents' Day (State and Federal) ▪ Lincoln's Birthday (State) ▪ Cesar Chavez Day (State) ▪ Memorial Day (State and Federal) ▪ Independence Day (State and Federal) ▪ Labor Day (State and Federal) ▪ Columbus Day (State and Federal) ▪ Veterans Day (State and Federal) ▪ Thanksgiving Day (State and Federal) ▪ Day after Thanksgiving (State) ▪ Christmas Day (State and Federal) For specific details on the actual day the state and federal holidays occur, please visit the following websites: ▪ Federal Holidays: http://www.opm.gov/fedhol/2006.asp	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Noise (continued)			
Impact NOI-1, continued.		▪ California Holidays: http://www.edd.ca.gov/eddsthol.htm Signs shall be posted at the construction site that include permitted construction days and hours, a day and evening contact number for the job site, and a day and evening contact number for the County in the event of problems. An on-site complaint and enforcement manager shall be available to respond to and track complaints. The manager will be responsible for responding to any complaints regarding construction noise and for coordinating with the adjacent land uses. The manager will determine the cause of any complaints and coordinate with the construction team to implement effective measures (considered technically and economically feasible) warranted to correct the problem. The telephone number of the coordinator shall be posted at the construction site and provided to neighbors in a notification letter. The manager will be trained to use a sound level meter and should be available during all construction hours to respond to complaints. At least one week prior to commencement of grading or construction activities for each major phase of construction the applicant shall prepare a notice that grading or construction work will commence. The notice shall be posted at the site and mailed to all the	

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Noise (continued)			
Impact NOI-1, continued.		owners and occupants of property within 300 feet of the exterior boundary of the project site as shown on the latest equalized assessment roll. The notice shall include a list of contact persons with name, title, phone number and area of responsibility. The person responsible for maintaining the list shall be included. The list shall be kept current at all times and shall consist of persons with authority to indicate and implement corrective action in their area of responsibility. The names of individuals responsible for noise and litter control, tree protection, construction traffic and vehicles, erosion control, and the 24-hour emergency number, shall be expressly identified in the notice. The notice shall be re-issued with each phase of the project and a copy shall be mailed to the Contra Costa County Department of Conservation and Development. Mitigation Measure NOI-1b: The project applicant shall prepare a detailed construction noise mitigation plan for review and approval by the County. The goal of the plan is to provide a framework for notifying neighbors of the extent of the noise that can be expected during particular phases of the project grading, what mitigation will be applied, and who to call if there are noise-related complaints. Submission of this construction noise mitigation plan shall be required as part the building permit application. The construction noise mitigation plan shall use the	

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Noise (continued)			
Impact NOI-1, continued.		California Model Community Noise Ordinance limits of 75 dBA for mobile equipment and 60 dBA for stationary equipment as the primary noise mitigation goals. Information in the plan shall include but not be limited to the following: ▪ Construction schedule showing dates and location of activities. ▪ List of equipment to be used during each major construction phase and sound level estimates for each phase. ▪ Height, length, and location of any recommended noise barriers. The barriers can be constructed out of wood or other materials as long as they have a minimum surface weight of approximately 2.5 pounds per square foot. Possible materials include 1-1/8-inch-thick plywood or fully overlapping 1x redwood boards (1-1/2-inch-thick total). The barriers would likely be 6 to 8 feet tall but this would be refined as part of the construction noise control plan. Issues to consider when determining the ultimate height, length, and location of the barriers are the actual construction practices, including equipment to be used and the location and duration of noisier activities. The topography will also need to be considered in the final determination of barrier heights and effectiveness.	

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Noise (continued)			
Impact NOI-1, continued.		▪ Truck routing to minimize noise at existing noise sensitive locations. The project applicant shall limit trucks to routes, hours, and days of the week set by Contra Costa County. ▪ Location of stationary equipment as far from residents as is practicable and/or enclose noise sources. ▪ The project applicant shall require the contractor to use electric or hydraulically powered rather than diesel or pneumatically powered equipment and construction tools as feasible. ▪ Provide intake silencers and "resident-type" exhaust mufflers on vehicles and equipment and/or acoustically shroud or shield impact tools as feasible. Mitigation Measure NOI-1c: The project applicant shall construct temporary noise barriers along the western property line neighboring the existing residences at the Ravenswood and Discovery Bay West subdivisions. Noise barriers shall provide noise reductions in the range of 5 to 10 dBA.	
Population and Housing			
There are no significant impacts to population and housing.			

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Public Services and Recreation			
Impact PS-1: The project would be required to provide 2.6 acres of parkland to meet the County's parkland dedication requirement.	S	Mitigation Measure PS-1: The project applicant shall, concurrent with the recording of the map, dedicate to the County or other public agency approximately 2.6 acres of public trails and two passive recreation locations with tables and seating next to the open water, including the eight foot side walk leading from Point of Timber Road to the public trails through the preserved open space. The public trail through the open space area also serves as an EVA and must comply with Fire Department standards. In combination with the dedication of the public trail the project shall pay a park dedication fee of $1351 per dwelling unit upon issuance of building permits. The future residence of Pantages would pay for the maintenance of the public trails and passive recreation areas for their use and that of the public.	LTS
Public Utilities			
Impact UTIL-1: Per the requirements of Title 22 of the California Waterworks Standards, the Town of Discovery Bay Community Services District does not currently have sufficient legal water supply capacity to serve the project.	S	Mitigation Measure UTIL-1: Prior to final map recordation, the applicant shall provide documentation to the County (i.e., Can & Will Serve letter), demonstrating to the satisfaction of the Zoning Administrator that the TDBCSD has identified and secured sufficient financing for the construction of any required improvements outlined in the Water MP to ensure sufficient capacity exists to serve the project.	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Public Utilities (continued)			
Impact UTIL-1, continued.		Prior to the issuance of the first occupancy permit, the Applicant shall provide documentation to the County Zoning Administrator that said improvements needed to serve the project are constructed and operational.	
Impact UTIL-2: Town of Discovery Bay Community Services District does not currently have sufficient wastewater treatment capacity to serve the project.	S	Mitigation Measure UTIL-2: Prior to final map recordation, the applicant shall provide documentation to the County (i.e., Can & Will Serve letter), demonstrating to the satisfaction of the Zoning Administrator that the TDBCSD has identified and secured sufficient funding for the construction of any capacity or treatment improvements outlined in the Wastewater MP and necessary so that serving the project does not exceed the requirements of the RWQCB. Prior to the issuance of the first occupancy permit, the Applicant shall provide documentation to the County Zoning Administrator that said improvements needed to serve the project are constructed and operational, and that any source control measures are being implemented consistent with the requirements of the RWQCB.	LTS
Impact CUM UTIL-1: The project, in combination with other reasonably foreseeable projects, would have a considerable contribution to long-term water supplies within the project area.	S	Mitigation Measure CUM UTIL-1: The project applicant shall implement Mitigation Measure UTIL-1.	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Public Utilities (continued)			
Impact CUM UTIL-1: The project, in combination with other reasonably foreseeable projects, would have a considerable contribution to long-term wastewater treatment within the project area.	S	Mitigation Measure CUM UTIL-2: The project applicant shall implement Mitigation Measure UTIL-2.	LTS
Transportation and Circulation			
Impact TRA-1: Implementation of the project would increase traffic volumes and worsen LOS conditions at the SR4/Byron Highway (south intersection) signalized intersection.	S	Mitigation Measure TRA-1: Mitigation of the unacceptable traffic conditions at the SR4/Byron Highway (south) can be achieved by adding a second northbound to westbound left-turn lane from Byron Highway onto SR4 and its associated receiving lane. This improvement is currently identified in the 2007 Contra Costa County Capital Road Improvement & Preservation Program, although funding has not been identified. If this improvement is not included in a County fee program or other funding program at the time of project approvals, the project applicant shall be responsible for their fair share of the improvement prior to the issuance of building permits.	LTS
Impact TRA-2: Implementation of the project would increase traffic volumes and worsen LOS conditions on Vasco Road.	S	Mitigation Measure TRA -2: The project applicant shall pay regional roadway fees to the East Contra Costa Regional Fee and Financing Authority (ECCRFFA) fee program to upgrade existing roadways.	SU
Impact TRA-3: Implementation of the project would increase traffic volumes on nearby rural roads, and create conflicts with the farm equipment that share these roads during the peak summer months.	S	Implementation of Mitigation Measure TRA -2 would require the project applicant to pay regional roadway fees to upgrade existing roadways and/or construct new facilities in the project area.	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Transportation and Circulation (continued)			
Impact CUM TRA-1: Implementation of the project would increase traffic volumes and worsen LOS conditions at the unsignalized intersection of Byer Road/Byron Highway (No. 6).	S	Mitigation Measure CUM TRA-1: Mitigation of the unacceptable traffic conditions at the Byer Road/Byron Highway intersection can be achieved by installing a traffic signal and a southbound left turn lane. This improvement is not identified in any funding program. If this improvement is not included in a County fee program at the time of project approvals, the project applicant shall pay its fair share towards the cost of this improvement to the County's Road Trust account (Fund #8192) prior to the issuance of building permits. This trust fund shall fund improvements to intersections identified as operating unacceptably under cumulative conditions and not identified in a fee program. As indicated in Table 4.16-15, the project applicant would be required to contribute 12 percent of the total costs for this improvement.	LTS
Impact CUM TRA-2: Implementation of the project would increase traffic volumes and worsen LOS conditions at the unsignalized intersections of Holway Drive/Byron Highway (No. 7) and Camino Diablo Road/Byron Highway (No. 23).	S	Mitigation Measure CUM TRA-2 (Option 1): Mitigation of the unacceptable traffic conditions at the Holway Drive/Byron Highway and Camino Diablo Road/Byron Highway intersections can be achieved by installing a traffic signal at the Camino Diablo Road/Byron Highway and providing left-turn pockets on all approaches. Traffic turning left from eastbound Camino Diablo Road to northbound Holway Drive and	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Transportation and Circulation (continued)			
Impact CUM TRA-2, continued.		left again from Holway Drive to Byron Highway would instead turn left at the signalized Camino Diablo Road/Byron Highway intersection. This mitigation would require modifications to the adjacent railroad crossing west of the intersection to provide the required left turn pocket on the eastbound approach. This improvement is included in the Draft East County Regional AOB Transportation Mitigation Fee Update project list. The project applicant shall pay the required AOB fee. Mitigation Measure CUM TRA-2 (Option 2): As an alternative to Mitigation Measure CUM TRA-2 (Option 1), mitigation of the unacceptable traffic conditions at the Holway Drive/Byron Highway and Camino Diablo Road/Byron Highway intersections can be achieved by installing traffic signals at both intersections, in addition to adding a northbound left-turn lane pocket at the Holway Drive/Byron Highway intersection. Traffic would not be shifted under this mitigation, and a left turn pocket across the railroad crossing at the Camino Diablo Road/Byron Highway intersection would not be needed. A signal at the Holway Drive/Byron Highway intersection is not identified in any funding program. Similarly, the installation of a signal at Camino Diablo Road/Byron Highway is not identified in any funding program.	

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Transportation and Circulation (continued)			
Impact CUM TRA-2, continued.		If these improvements are not included in a County fee program at the time of project approvals, the project applicant shall pay its fair share towards the cost of these improvements to the County's Road Trust account (Fund #8192) prior to the issuance of building permits. This trust fund shall fund improvements to intersections identified as operating unacceptably under cumulative conditions and not identified in a fee program. As indicated in Table 4.16-15, the project applicant would be required to contribute between 2 percent and 14 percent of the total costs for this improvement.	
Impact CUM TRA-3: Implementation of the project would increase traffic volumes and worsen LOS conditions at the unsignalized intersection of Sellers Avenue/Balfour Road (No. 9).	S	Mitigation Measure CUM TRA-3: Mitigation of the unacceptable traffic conditions at the Sellers Avenue/Balfour Road intersection can be achieved by installing a traffic signal and providing left turn lanes at all four intersection approaches. This improvement is included in the Draft East County AOB Transportation Mitigation Fee Update project list. The project applicant shall pay the required AOB fee. Implementation of this mitigation measure would reduce this impact to less-than-significant.	LTS
Impact CUM TRA-4: Implementation of the project would increase traffic volumes and worsen LOS conditions at the unsignalized intersection of Point of Timber Road/Byron Highway (No. 12).	S	Mitigation Measure CUM TRA-4: Mitigation of the unacceptable traffic conditions at the Point of Timber Road/Byron Highway intersection can be achieved by installing a traffic signal. This improvement is included in the Draft East County AOB Transportation Mitigation Fee Update project list. The project applicant shall pay the required AOB fee.	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Transportation and Circulation (continued)			
Impact CUM TRA-5: Implementation of the project would increase traffic volumes and worsen LOS conditions at the unsignalized intersection of Point of Timber Road/Bixler Road (No. 13).	S	Mitigation Measure CUM TRA-5: Mitigation of the unacceptable traffic conditions at the Point of Timber Road/Bixler Road intersection can be achieved by installing a traffic signal and adding left turn lanes at all four intersection approaches. This improvement is not identified in any funding program. If this improvement is not included in a County fee program at the time of project approvals, the project applicant shall pay its fair share towards the cost of this improvement to the County's Road Trust account (Fund #8192) prior to the issuance of building permits. This trust fund shall fund improvements to intersections identified as operating unacceptably under cumulative conditions and not identified in a fee program. As indicated in Table 4.16-15, the project applicant would be required to contribute between 30 and 39 percent of the total costs for this improvement.	LTS
Impact CUM TRA-6: Implementation of the project would increase traffic volumes and worsen LOS conditions at the unsignalized intersection of Point of Marsh Creek Road/Sellers Avenue (No. 16).	S	Mitigation Measure CUM TRA-6: Mitigation of the unacceptable traffic conditions at the Marsh Creek Road/Sellers Avenue intersection can be achieved by installing a traffic signal. This improvement is included in the Draft East County AOB Transportation Mitigation Fee Update project list. The project applicant shall pay the required AOB fee.	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Transportation and Circulation (continued)			
Impact CUM TRA-7: Implementation of the project would increase traffic volumes and worsen LOS conditions at the unsignalized intersection of Point of Marsh Creek Road/Bixler Road (No. 18).	S	Mitigation Measure CUM TRA-7: Mitigation of the unacceptable traffic conditions at the Marsh Creek Road/Bixler Road intersection can be achieved by installing a traffic signal. This improvement is not identified in any funding program. If this improvement is not included in a County fee program at the time of project approvals, the project applicant shall pay its fair share towards the cost of this improvement to the County's Road Trust account (Fund #8192) prior to the issuance of building permits. This trust fund shall fund improvements to intersections identified as operating unacceptably under cumulative conditions and not identified in a fee program. As indicated in Table 4.16-15, the project applicant would be required to contribute between 10 and 11 percent of the total costs for this improvement.	LTS
Impact CUM TRA-8 Implementation of the project would increase traffic volumes and worsen LOS conditions at the signalized intersection of SR4/Byron Highway (south) (No. 19).	S	Mitigation Measure CUM TRA-8: Mitigation of the unacceptable traffic conditions at the SR4/Byron Highway (south) intersection can be achieved by adding a second left-turn lane on the Byron Highway approach and a second through lane on the southeast-bound SR4 approach. The second left-turn lane on the Byron Highway approach improvement is currently identified in the 2007 Contra Costa County Capital Road Improvement & Preservation Program, although funding has not	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Transportation and Circulation (continued)			
Impact CUM TRA-8, continued.		been identified. The second through lane on the southeast-bound SR4 approach is not identified in any funding program. If this improvement is not included in a County fee program at the time of project approvals, the project applicant shall pay its fair share towards the cost of this improvement to the County's Road Trust account (Fund #8192) prior to the issuance of building permits. This trust fund shall fund improvements to intersections identified as operating unacceptably under cumulative conditions and not identified in a fee program. As indicated in Table 4.16-17, the project applicant would be required to contribute between 9 and 11 percent of the total costs for this improvement.	
Impact CUM TRA-9: Implementation of the project would increase traffic volumes and worsen LOS conditions at the unsignalized intersection of SR4/Newport Drive (No. 21).	S	Mitigation Measure CUM TRA-9: Mitigation of the unacceptable traffic conditions at the SR4/Newport Drive intersection can be achieved by installing a traffic signal. This improvement is not identified in any funding program. If this improvement is not included in a County fee program at the time of project approvals, the project applicant shall pay its fair share towards the cost of this improvement to the County's Road Trust account (Fund #8192) prior to the issuance of building permits. This trust fund shall fund improvements to	LTS

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Transportation and Circulation (continued)			
Impact CUM TRA-9, continued.		intersections identified as operating unacceptably under cumulative conditions and not identified in a fee program. As indicated in Table 4.16-15, the project applicant would be required to contribute between 4 and 6 percent of the total costs for this improvement.	
Impact CUM TRA-10: Implementation of the project would increase traffic volumes and worsen LOS conditions at the signalized intersection of Camino Diablo Road/Vasco Road (No. 22).	S	Mitigation Measure CUM TRA-10: Mitigation of the unacceptable traffic conditions at the Camino Diablo Road/Vasco Road intersection can be achieved by adding a northbound right turn lane. This improvement is included as one of several improvements at this intersection in the Draft East County AOB Transportation Mitigation Fee Update project list. The project applicant shall pay the required AOB fee.	LTS
Impact CUM TRA-11: Implementation of the project would increase traffic volumes and worsen LOS conditions along Vasco Road.	S	Mitigation Measure CUM TRA-11: The project applicant shall pay regional roadway fees to the East Contra Costa Regional Fee and Financing Authority (ECCRFFA) fee program to upgrade existing roadways.	SU
Impact CUM TRA-12: Implementation of the project would increase traffic volumes and worsen LOS conditions along Marsh Creek Road.	S	Implementation of Mitigation Measure TRA -2 would require the project applicant to pay regional roadway fees to upgrade existing roadways and/or construct new facilities in the project area. However, as there are no specific plans to provide additional capacity on this segment of Marsh Creek Road, the impact would remain significant and unavoidable.	SU

Environmental Impacts	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Visual Resources and Aesthetics			
Impact VIS-1: The project would create new sources of light and glare which could adversely affect day or nighttime views in the area.	S	Mitigation Measure VIS-1: The project applicant shall prepare a lighting plan for the review and approval by the Zoning Administrator. Exterior lighting shall be low mounted, downward casting, shielded, and shall utilize motion detection systems where applicable. In general, the light footprint of individual units shall not extend beyond the periphery of each property. Implementation of exterior lighting fixtures on all buildings shall also comply with the standard California Building Code (Title 24, Building Energy Efficiency Standards) to reduce the lateral spreading of light to surrounding uses.	LTS

Notes: LTS = Less than significant
S = Significant
SU = Significant and unavoidable
Source: Circlepoint, 2012.

3.0 PROJECT DESCRIPTION

3.1 INTRODUCTION

The Pantages Bays Project (project) is a proposed 292 single-family residential development that would form part of the Discovery Bay community in eastern Contra Costa County (County). The project applicant, Pantages at Discovery Bay, LLC, is proposing the development of 116 waterfront lots with individual or shared docks and deep water access, and 176 interior residential lots.

As part of the project, the portion of Kellogg Creek immediately east of the project site would be widened. Reclamation District No. 800[1] (RD 800) is co-sponsoring the proposed widening, which would reduce water velocities in that section of Kellogg Creek, thereby improving public safety. The widening would also reduce bank erosion and sedimentation, and would limit the need for dredging.[2]

The project would preserve approximately 16 acres of existing emergent marsh in the northern portion of the property, and also includes the creation of new seasonal wetlands and enhanced creek bank aquatic habitat. These project components are described in more detail in **Section 3.4, Project Components,** of this chapter.

3.2 PROJECT LOCATION

The project site is located in unincorporated eastern Contra Costa County, within the Contra Costa County Urban Limit Line (ULL) (see **Figure 3-1**). The closest incorporated city is Brentwood, located approximately 4.5 miles to the northwest.

The site is surrounded by residential development, both existing and planned:

- The existing town of Discovery Bay is located to the east and south, comprising approximately 3,700 residences, a golf course, marina and harbor, commercial uses, a church, and Discovery Bay Elementary School.

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[1] RD 800 controls and is responsible for the waterways in Discovery Bay.

[2] RD 800 is a co-applicant in the U.S. Army Corp of Engineers 404 permit process and related resource agencies applications, per personal communication with Jeff Conway, District Manager and as described in the Cost-Sharing Agreement dated September 2003.

- The existing Centex Development to the southwest at Bixler Road and State Route 4 is comprised of approximately 378 residences.
- The following recently developed subdivisions are located west and north of the project site:
  - The Ravenswood development includes 181 single-family residential units and 22 duplexes.
  - Discovery Bay West includes five "Villages" that will total 1,999 units when fully constructed. Village I includes Timber Point Elementary School and Regatta Park. Village II is commonly referred to as the Lakeshore subdivision. Villages III, IV, and V make up the Lakes at Discovery Bay community.

Other non-residential development in the vicinity of the project site includes:

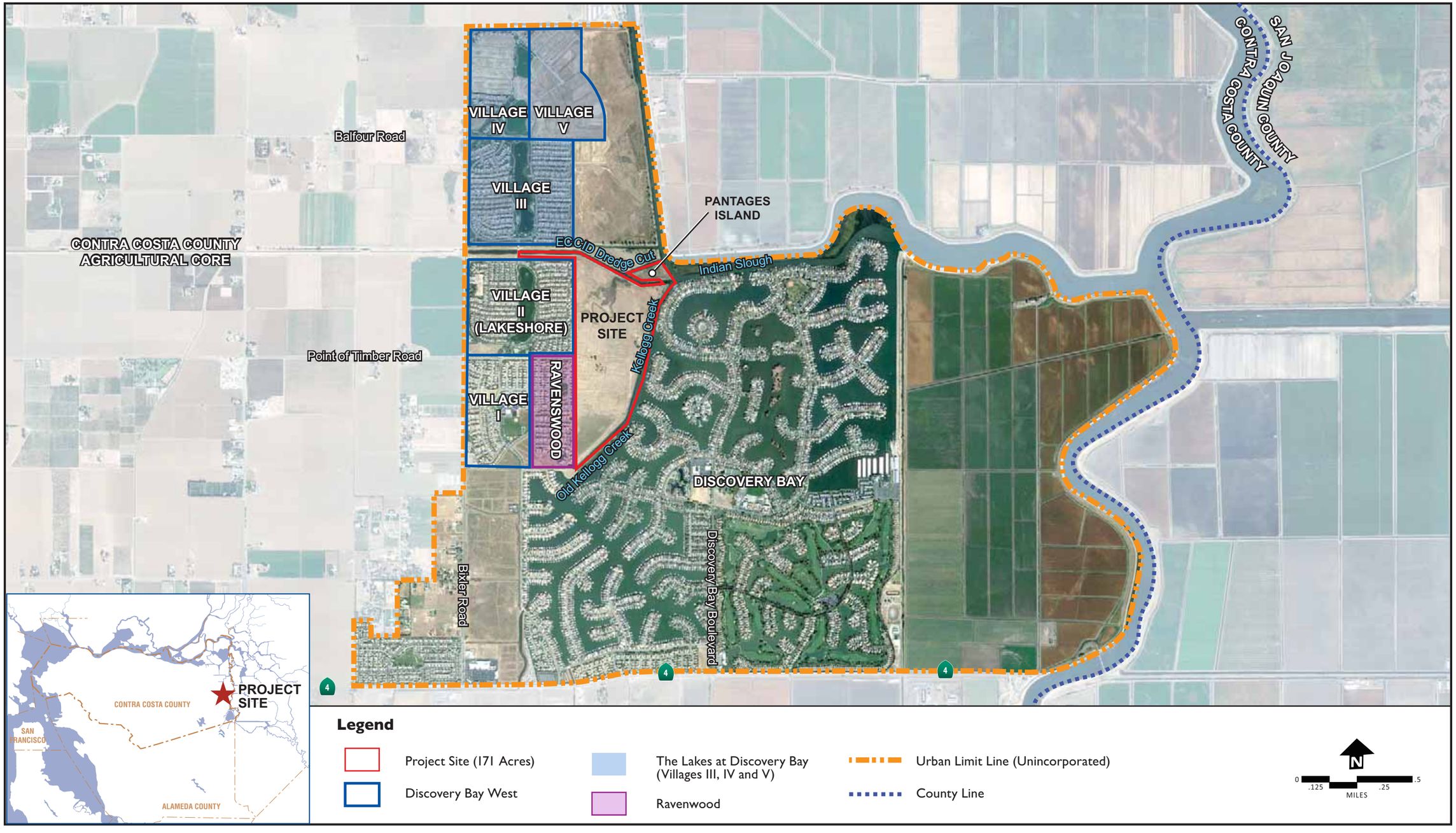
- The East Contra Costa County Irrigation District Dredge Cut/Intake Channel (ECCID Dredge Cut) along the northern project boundary.
- Agricultural production northeast of the project site, north of Kellogg Creek and the Town of Discovery Bay.

3.3 PROJECT SETTING

Figure 3-2 depicts information related to the environmental setting. The approximately 171-acre project site consists of 162 acres of land owned by the project applicant, and 9.2 acres of land owned by the ECCID, including Pantages Island and land along the ECCID Dredge Cut. The project site is comprised of 10 assessor parcels that are designated Agricultural Lands (AL), Delta Recreation (DR) and Water (WA) by the Contra Costa General Plan and are zoned General Agricultural District (A-2) and Heavy Agricultural District (A-3).

The project site is vegetated with 80 trees and low-lying non-native annual grasslands. The site contains three abandoned homesites, including one residence and associated outbuildings near the center of the site, and one barn on the eastern portion of the site.

The elevation of the project site ranges from approximately 2 to 8 feet. The entire project site falls within Special Flood Hazard Zone A on the Flood Insurance Map for the County (FEMA 2009), which indicates that the area is subject to flooding during a 100-year storm event in the Delta. Approximately 8 acres of the project site, mainly along the site perimeter, is currently subject to tidal variations.



Regional Location and Project Site Figure 3-1

Source: DK Consulting, 2009.

Figure 3-1 Regional Location and Project Site (back)

A large emergent marsh and three seasonal wetlands are located throughout the site. The site was used for grazing until approximately 1981. Between 1981 and 1992, the site—excluding the emergent marsh—was planted with oats, wheat, and rye grass. Several shallow irrigation ditches associated with this prior use still exist. Since 1992, the site has been disked annually and seeded with a grass mixture, and a small herd of cattle (approximately 10) currently graze the site.

Over the past decade RD 800 has used the site as part of its dredging program to improve navigation functions along Kellogg Creek. RD 800 created six siltation ponds in the central portion of the site to decant and store dredge spoils (See **Figure 3-2**). The siltation ponds, created in 2003, consisted of large earthen berms approximately 20 feet tall. Dredged material from Kellogg Creek was pumped in and allowed to settle. Once the sediments had precipitated, the remaining water was pumped back into Kellogg Creek.

3.4 PROJECT COMPONENTS

The project applicant is concurrently seeking approval from the County of the following four applications:

GENERAL PLAN AMENDMENT (COUNTY FILE NO. GP99-0008)

The project applicant is seeking a general plan amendment to change the general plan designations of the project site from Agricultural Lands (AL), Delta Recreation (DR) and Water (WA) to the following designations (see **Figure 3-3**):

- Single-Family Residential-Medium Density (SM)
- Single-Family Residential-High Density (SH)
- Water (WA)
- Public/Semi-Public (PS)
- Open Space (OS)

Under the amended land use designations, approximately 80 acres of the project site would be developed with 292 residential homes, and associated streets and infrastructure. The remaining 91 acres would contain the open-water areas, emergent marsh, wetlands, open space areas, and a marine patrol substation. These components are discussed in detail below. Project construction activities and sequencing are described in **Section 3.5, Project Construction,** of this chapter.

REZONING (COUNTY FILE NO. RZ04-3146)

The project applicant is seeking a rezoning of the project site from General Agricultural (A-2) and Heavy Agricultural (A-3) to Planned Unit District (P-1) (see **Figure 3-4**).

SUBDIVISION/TENTATIVE MAP APPROVAL (COUNTY FILE NO. SD06-9010)

A subdivision/tentative map approval has been requested by the project applicant to subdivide the approximately 171-acre project site into 292 single-family residential lots, private streets, bays and coves, open space and a marine patrol substation.

DEVELOPMENT PLAN (COUNTY FILE NO. DP04-3062)

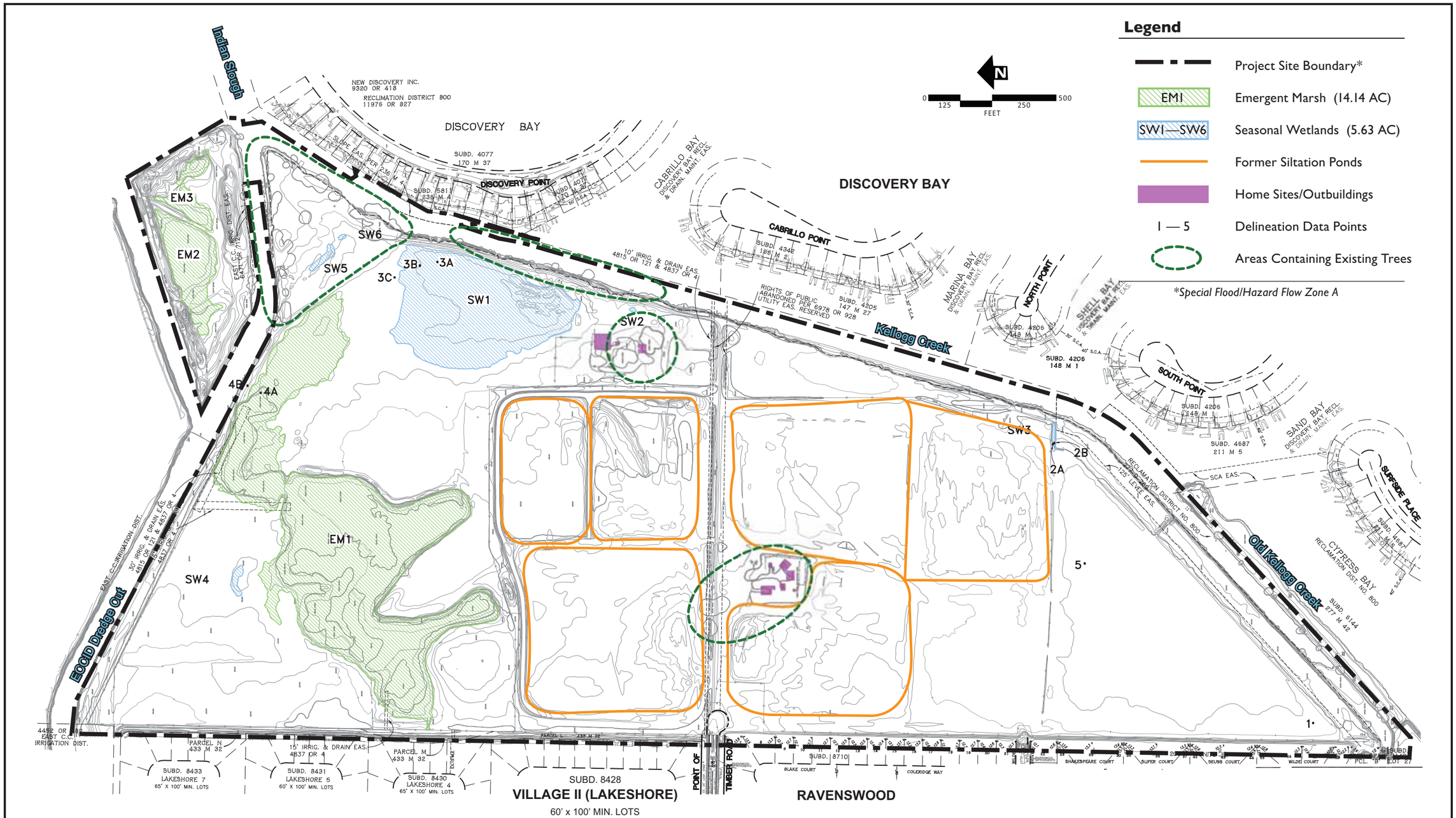
Figure 3-5 depicts the Proposed Final Development Plan, which includes 292 single-family one and two-story residential units with associated streets and infrastructure. Of the 292 units, 116 units would have direct deep water access. **Table 3-1** provides a breakdown of the lots by type.

Table 3-1 Breakdown of Lots by Type

Type of Residential Lot	No. of Units	Lot Sizes (feet)
Deep water access via private dock	100	90x140, 80x140
Deep water access via shared dock	16	80x140
Interior Lots (no water access)	176	60x100, 100x110

Notes:
Lot sizes range from 6,000 to 21,320 square feet.
Source: dk Consulting, Project Plans, October, 2009.

The development plan also includes a description of the landscaping, bays and coves, the widening of Kellogg Creek, open space with a public trail and emergency vehicle access (EVA), marine patrol substation with 2 docks, wetland preservation area, and wetland mitigation area. **Table 3-2** illustrates the breakdown of acreage by type of use.



Environmental Setting Figure 3-2

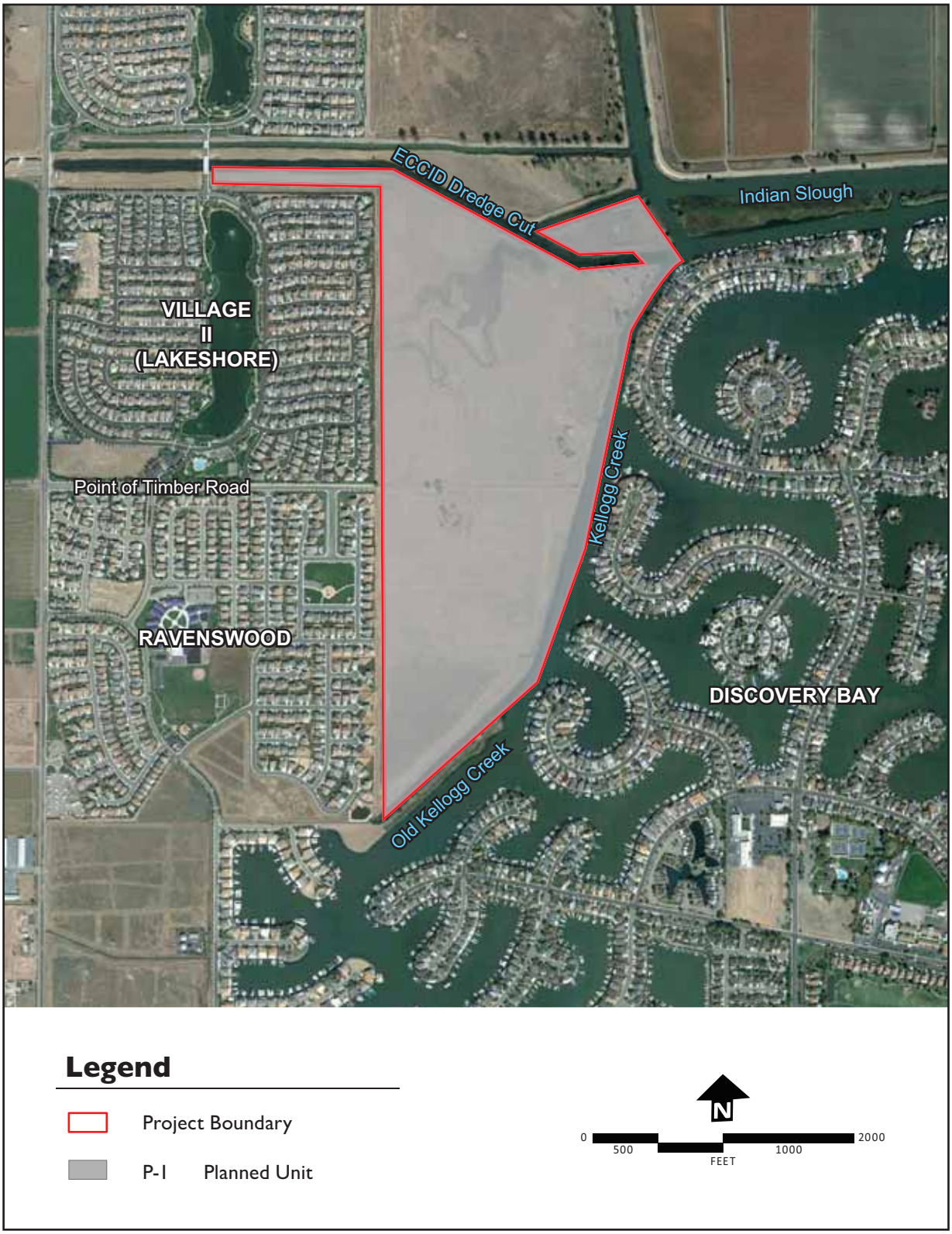
Source: DK Consulting, 2009.

Figure 3-2 Environmental Setting (back)

Proposed Land Use Designations Figure 3-3

Source: DK Consulting, 2009.

Figure 3-3 Land Use Designations (back)



Proposed Zoning Figure **3-4**

Source: CirclePoint, 2011.

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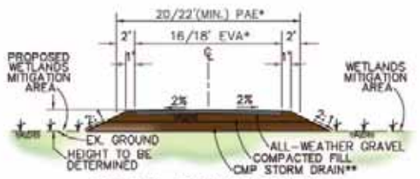
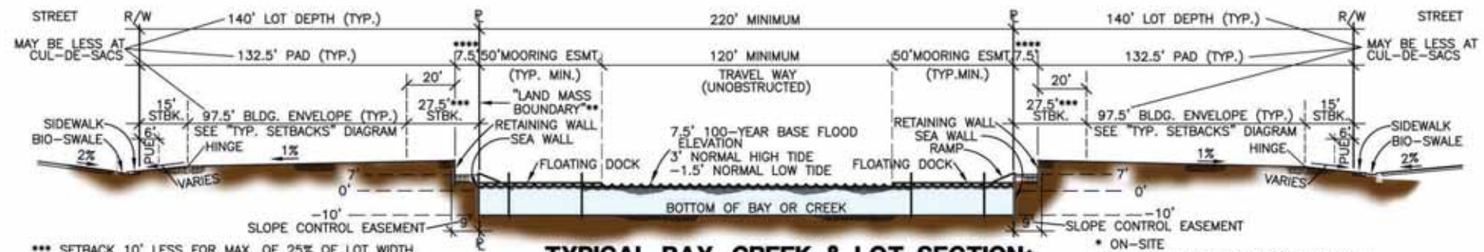


PAE & EVA SECTION

NOT TO SCALE

* PAE = PUBLIC ACCESS EASEMENT
EVA = EMERGENCY ACCESS EASEMENT
** DIAMETER, NUMBER & LOCATION TO BE DETERMINED



*** SETBACK 10' LESS FOR MAX. OF 25% OF LOT WIDTH.
MOORING EASEMENT: DEDICATED TO ADJACENT LOT.
SHARED-DOCK LOTS HAVE A MOORING ESMT. IN COMMON.

TYPICAL BAY, CREEK & LOT SECTION*

NOT TO SCALE

* ON-SITE
** 300' MIN. BETWEEN DISCOVERY BAY & PANTAGES LAND MASS BOUNDARIES.
**** 7.5' TYPICAL, 5.0' MINIMUM.

Proposed Final Development Plan Figure 3-5

Source: DK Consulting, 2009.

Figure 3-5 Proposed Final Development Plan (back)

Table 3-2 Breakdown of Acreage by Type of Use

Type of Use	Acreage
Residential Lots (includes Public Utilities Easement)	63
Streets (includes linear bioretention facilities)	17
Open-water (includes bays and coves)	47
Open Space Areas (includes wetland and marsh)	44
Landscaping (common area at end of Point of Timber Road)	<1
Sheriff's Marine Patrol Substation	0.51
TOTAL	171

Source: dk Consulting, Project Plans, October, 2009.

Base Flood Elevations for Project Development

The project as currently designed greatly exceeds the County requirements for protection from the 100-year flood. As described below the County imposes two standards for flood protection: interior lots are subject to one standard, while a higher standard is imposed upon areas subject to tidal variation (such as the land along Kellogg Creek).

The Base Flood Elevation (BFE) for the 100-year storm event, as defined by FEMA and the County,[3] is the elevation that has a 1 percent chance of being equaled or exceeded by floodwaters in any one year. The 100-year BFE for the project site is 7.5 feet National Geodetic Vertical Datum (NGVD)[4] . In locations subject to tidal variations, the County's flood design standard requires a minimum of 2 feet of freeboard[5] between the finished floor elevation of a home and the BFE of the 100-year flood event. Lots along Kellogg Creek would therefore require a finished floor elevation of at least 9.5 feet NGVD.[6]

As shown in **Table 3-3**, the finish floor elevation of all lots would exceed the County's standard by more than 3 feet. The following section provides information on the additional design standards related to predictions for sea level rise.

[3] As defined in the Contra Costa County Code, Section 82-28.486 – One Hundred –year flood.

[4] NGVD is a vertical (elevation) unit of measurement similar to mean sea level (msl) that takes into account the local gravitational forces due to astronomical phenomenon, as well as local wind patterns, river stages, and storms. NGVD addresses the fact that local msl is not always equal to zero in all places.

[5] Freeboard is a factor of safety expressed in feet above a known flood level

[6] Contra Costa County Code Section 82-28.1002, 3A.

Table 3-3 Base Flood Elevations for Project Development

Lot Type	County's Design Standard	Proposed Finished Floor Elevations	Additional Feet of Freeboard Above County's Design Standard
Interior Lots	7.5	10.9	3.4*
Waterfront Lots	9.5	12.7	3.2
Lots Exposed to Tidal Variation	9.5	12.7	3.2

*Interior lots are not subject to tidal variations and therefore are not required to have 2 feet of freeboard between the finished floor elevation and the 100-year BFE.

Note: All measurements in approximate feet NGVD. The proposed finished floor elevations demonstrate the lowest residential lots on the current project site plans.

Source: dk Consulting, Project Plans, October, 2009.

Project Design — Sea Level Rise Elevations

CEQA documents now include analysis of potential impacts related to the predicted rise in sea level.

The California State Governor's Executive Order S-13-08 (signed November, 14, 2008), directs state agencies planning development projects in areas vulnerable to future sea-level rise to assess risk and, where feasible, reduce that risk. The Order calls for the development of planning guidelines by the state over the next several years to address the complex issue of sea level rise.

Executive Order S-13-08 notes that if a project has filed a Notice of Preparation (NOP) prior to the date the Executive Order was issued (November 2008), the project proponents may, but are not required to, account for these planning guidelines. The project applicant filed a NOP prior to November 2008 and thus would be exempt from these planning guidelines. However, due to the location of the project and the adjoining Delta tidal waterways, the project applicant has proactively designed the project to comply with predicted future elevations related to sea level rise.

There have been a number of recent projections on the future magnitude of sea level rise in the San Francisco Bay Area (Bay Area). The State of California Resources Agency recommends the consideration of the following sea level rise scenarios for planning purposes in the Delta region and California as a whole:

- Year 2050 – 16-inch rise (equivalent to 1.3 feet or 0.4 meters)
- Year 2100 – 55-inch rise (equivalent to 4.6 feet or 1.4 meters)

These scenarios have been adopted as policy by the California State Coastal Conservancy and are used by the San Francisco Bay Conservation and Development Commission (BCDC) and other state agencies for planning purposes. As such, the project applicant used these scenarios to address sea level rise on the project site.

As shown in **Table 3-4**, the current design of the project meets the design standards for the Year 2050 scenario for sea level rise, but does not meet the design standard for the Year 2100 scenario.

In order to satisfy the 2100 sea-level rise scenario, the minimum finished floor elevation with a concrete slab foundation would have to be 14.1 feet. The project applicant is proposing to account for the Year 2100 scenario for sea level rise by redistributing the finished grades as part of the final grading plans. Mitigation is included in **Section 4.9, Hydrology and Water Quality** to ensure that these proposed changes to the grading plan are implemented.

Table 3-4 Base Flood Elevations for Project Development

	BFE (County Design Standard for Project Site)	Currently Proposed Finished Floor Elevation	Finished Floor Elevations Proposed for Final Map
Interior Lots			
100 year BFE	7.5	10.9	14.1
100 year BFE in 2050	8.8	10.9	14.1
100 year BFE in 2100	12.1	10.9	14.1
Water front Lots (must be designed with an additional 2 feet of free board)			
100 year BFE	9.5	12.7	14.1
100 year BFE in 2050	10.8	12.7	14.1
100 year BFE in 2100	14.1	12.7	14.1

Source: Pantages at Discovery Bay, LLC, 2010.

OPEN-WATER AREAS

As shown in **Figure 3-5**, the open-water areas created by the project would include the widening of Kellogg Creek (17.05 acres), the North Cove (3.16 acres), North Bay (11.97 acres), South Cove (5.01 acres), and South Bay (9.54 acres).[7] Consistent with

[7] 17.05 + 3.16 + 5.01 +11.97 + 9.54 = 46.73 acres, personal communication with Catherine Ginn at dk Consulting Inc., December 4, 2009

RD 800 standards, constructed bays and coves would be excavated to a depth of at least 10 feet below msl to allow for safe boat passage at low tide.[8] The project would require approval from the Contra Costa LAFCO for annexation to the RD 800 sphere of influence and corresponding service boundary.

As required by RD 800 standards, Kellogg Creek would be widened to 300 feet at the elevation of 3 feet above msl to provide adequate access for docks on both sides of the channel.[9] At the northern end of the project site, the widening would require the removal of the northeastern tip of Pantages Island. At the southern end of the project site, Old Kellogg Creek would be widened from its current width of 60 feet to a maximum of 200 feet to provide adequate access, per RD 800 requirements, to areas with docks on one side. Old Kellogg creek would also be excavated to a depth of 5 to 10 feet below msl.[10]

ACQUISITION OF PANTAGES ISLAND AND LANDS OWNED BY ECCID

On December 12, 2006, Pantages at Discovery Bay, LLC and the ECCID entered into a Property Transfer Agreement whereby the project applicant will acquire approximately 9 acres of land owned by the ECCID, commonly known as Pantages Island. This land would be used for creek bank restoration and as open space.

The project applicant is also working with the RD 800 and ECCID to secure conservation easements over RD 800 properties in the vicinity of the project site. These properties include Parcel “C” and “D” near the project’s northern boundary, and the west and east banks of Kellogg Creek between Newport Drive and State Route 4 (SR4). The conveyance of this ECCID property (i.e., Pantages Island) and the RD 800 conservation easements would take place prior to final map approval.

The project would preserve the majority of Pantages Island, with the exception of a small portion of the northeasterly tip that would be removed as part of the widening of Kellogg Creek. As part of the mitigation included in **Section 4.3, Biological Resources,** the project applicant would be required to enhance 11,060 linear feet of creek bank habitat on Pantages Island and along the ECCID dredge cut to provide high and moderate quality shaded riverine aquatic habitat. The west and east banks of Kellogg Creek between Newport Pointe and State Route 4 would also be enhanced to establish high quality bank restoration.

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[8] Personal communication with Jeff Conway, RD 800 District Manager.

[9] RD 800 minimum standards per Jeff Conway.

[10] Old Kellogg Creek would be widened to 200 feet at the opening to the main Kellogg Creek, and would be widened to 60 feet at the westernmost portion.

SITE ACCESS

Roadways, Parking, and Water Access

Access to the site would be via Point of Timber Road. A public turnaround and gated entry would be constructed at the Point of Timber Road entrance, and vehicular access would be limited to residents and guests. Wilde Drive would be designated as an emergency vehicle access and would be used for emergency evacuation only, although a gate would be provided for day-to-day use by bicyclists and pedestrians. The project streets and cul-de-sacs would be privately owned and maintained by a homeowners association. Internal circulation is depicted in **Figure 3-5**.

All deep waterways would be owned by RD 800 and would be open to the public as navigable water. Use of any individual docks within the project site would be limited to the homeowners and their guests.

The project would create approximately 1,995 parking spaces, including 1,420 off-street spaces (garage and driveway spaces) and up to 575 on-street parking spaces.[11] Streets would be designed in compliance with County private road standards and requirements of emergency service providers. With two exceptions, streets would include a 56-foot right-of-way (36 feet measured from each edge of pavement), with room for parking on both sides and 10 feet on each side of the street for separated sidewalks and a landscaped linear bioretention facility (swale).[12]

- Exception #1: The extension of Point of Timber Road from its current terminus to the site's internal circulation roadway would be 40-feet wide within a 70-foot right-of-way.
- Exception #2: 'C' Court is a short cul-de-sac with homes fronting on one side only. Therefore, it is designed within a 43-foot right-of-way and has a 28-foot road measured from each edge of pavement, a 5-foot swale on both sides, and parking and a 5-foot sidewalk on only one side. As such, it meets County private road standards and East Contra Costa Fire Protection District (ECCFPD) requirements. Cul-de-sac bulbs would be designed to meet ECCFPD turning-radius requirements.

[11] The estimate for off-street parking spaces is based on a mix of lots with two and three-car garages. It assumes that approximately half the lots will have a three car garage (i.e., six off-street spaces), while the remaining lots will have two car garages (i.e., four off-street spaces).

[12] Linear bioretention facilities (swales) are landscaped elements designed to remove silt and pollution from surface runoff water.

Open Space and Emergency Vehicle Access

Public pedestrian and bicycle access would be provided to the open space areas via a public trail/emergency vehicle access (EVA) road to be constructed through the emergent marsh and proposed wetland mitigation/open space area. In compliance with ECCFPD standards, the public trail/EVA would be constructed as an all-weather, permeable surface that would provide access to the edge of Kellogg Creek, as illustrated in **Figure 3-6**.

The public trail/EVA road would be 3,840-feet-long and 20-feet wide, with an 8-foot paved trail in the middle and a 6-foot compacted aggregate shoulder on each side. The applicant also proposes a 16-foot-wide bridge across the emergent marsh. Pedestrian and bicycle public access to the trail would be provided at the Point of Timber Road entrance to the project site as shown in **Figure 3-7**.

The public trail/EVA road would include interpretive signage, kiosks, and a seating area at the end of the trail to enhance the public's use and enjoyment. The cost of maintaining the public trail/EVA road would be borne by the homeowners as part of a landscaping and lighting district. The public trail/EVA land would be dedicated to the County as part of the Final Map.

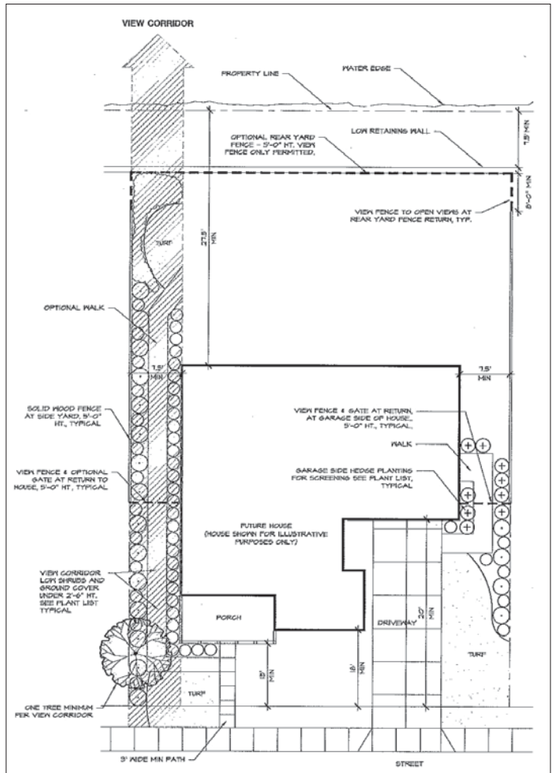
UTILITIES AND SERVICE SYSTEMS

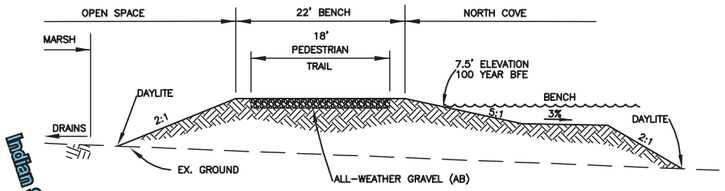
The project would require approval from the Contra Costa LAFCO for annexation to the Discovery Bay Community Services District (TDBCSD) sphere of influence and corresponding service area for water and wastewater service. As shown in **Figure 3-8**, a portion of the site is located within the service district boundary; the project includes annexation of the rest of the site into the TDBCSD service area.

The existing electrical, gas, and utilities that serve Discovery Bay are located within a joint trench in a public utility easement that crosses the site under the private extension of Point of Timber Road and continues under Kellogg Creek and into the Discovery Bay community. The utility lines would be relocated as part of the project to run under 'C' Street and 'D' Street, where they would reconnect to the existing lines at Kellogg Creek.

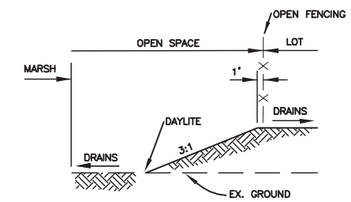
Stormwater Facilities

A Storm Water Control Plan C.3 Report, dated July 14, 2006, was determined to be preliminarily complete by the Public Works Department. It should be noted that a Final Storm Water Control Plan, modified to match any changes made during the preparation of improvement plans will be required to be submitted and approved prior to recordation of the Final Map.





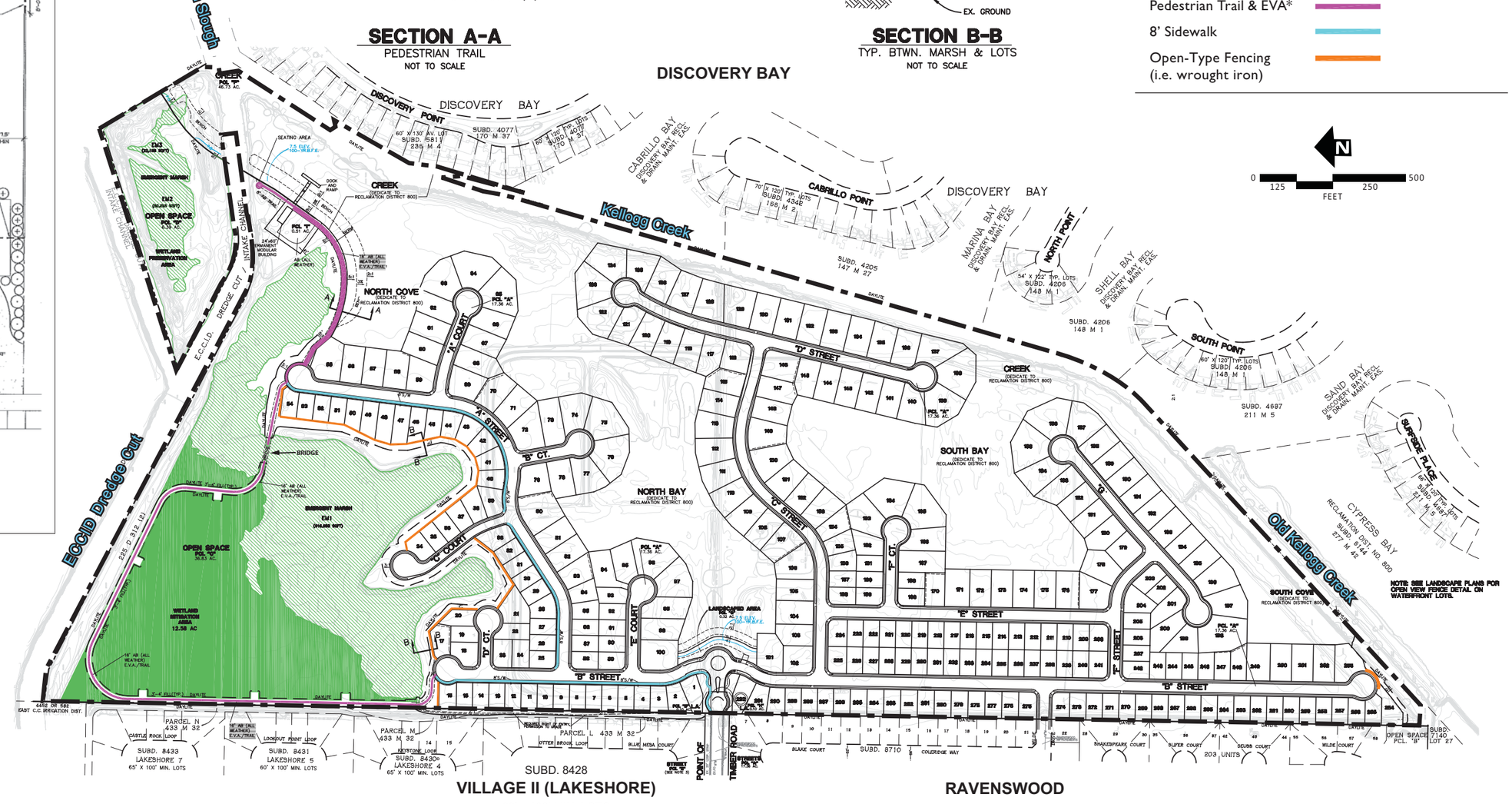
SECTION A-A
PEDESTRIAN TRAIL
NOT TO SCALE



SECTION B-B
TYP. BTWN. MARSH & LOTS
NOT TO SCALE

Legend

Description	Proposed	Existing
Project Site Boundary		
Retaining Wall	2'RW	
Emergent Marsh	NA	
Wetland Mitigation Area		
Pedestrian Trail & EVA*		
8' Sidewalk		
Open-Type Fencing (i.e. wrought iron)		

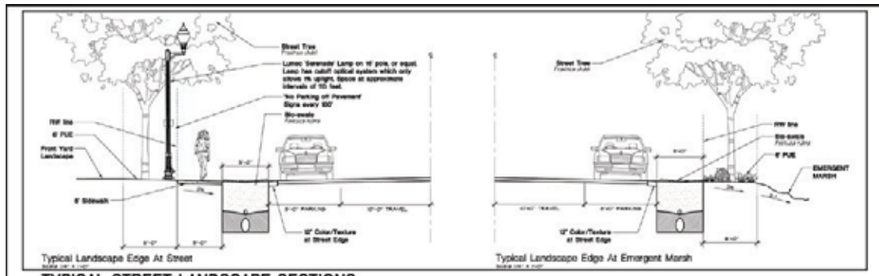


Public Access and Open Fence Plan

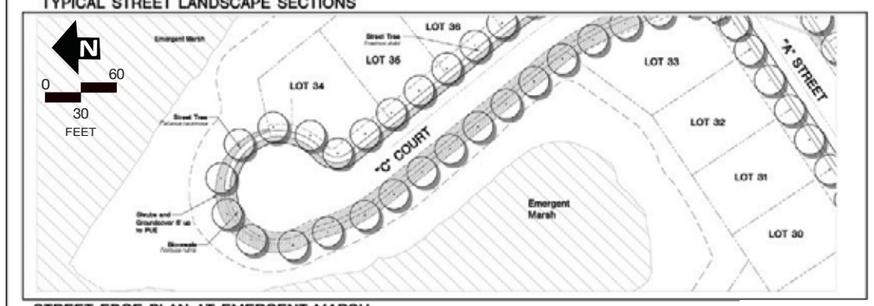
Figure 3-6

Source: DK Consulting, 2009.

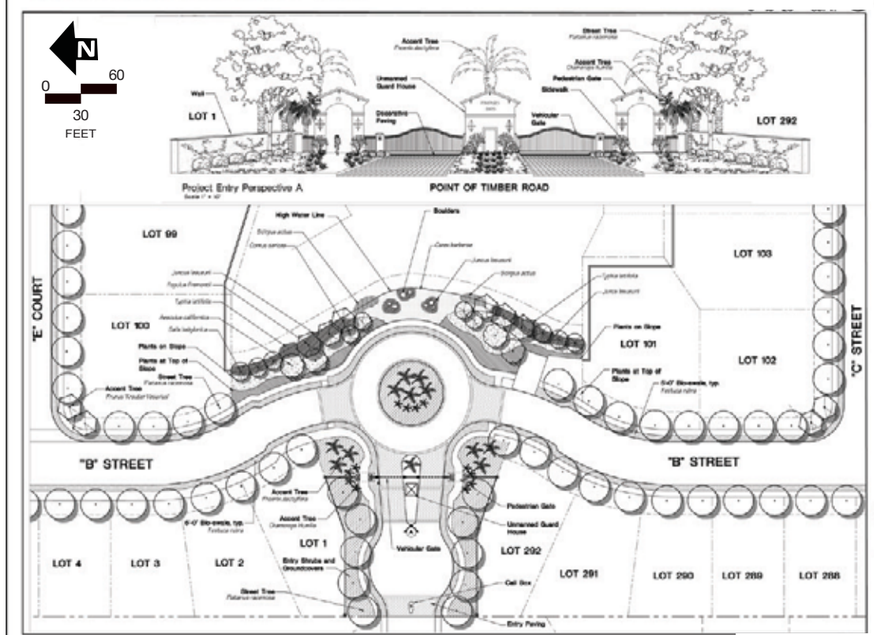
Figure 3-6 Public Access and Open Fence Plan (back)



TYPICAL STREET LANDSCAPE SECTIONS



STREET EDGE PLAN AT EMERGENT MARSH

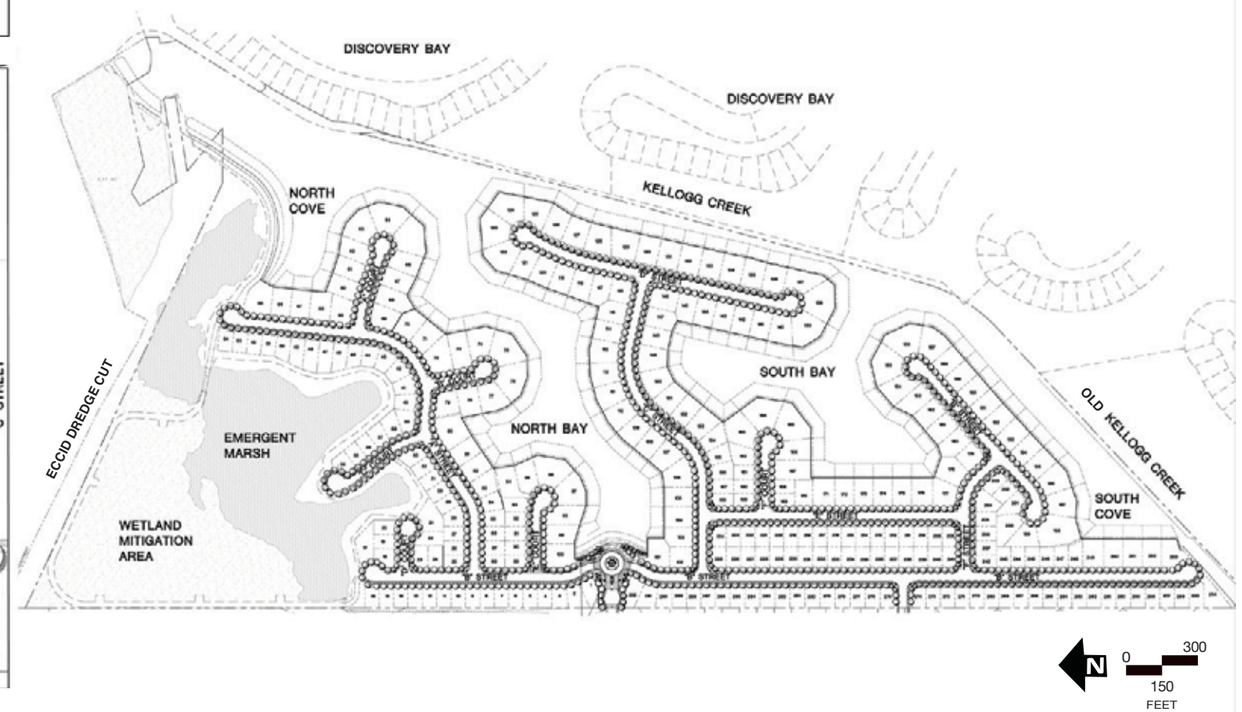


OPEN SPACE AT G & K

PLANT MATERIAL KEY

BOTANICAL NAME	COMMON NAME	SIZE
STREET TREES		
Fraxinus uhdei	Evergreen Ash	24" BOX
Schinus molle	California Pepper	24" BOX
Platanus racemosa	California Sycamore	24" BOX
ACCENT TREES		
Chamerops humilis - 3 trunks, min.	Mediterranean Fan Palm	24" BOX
Phoenix dactylifera	Date Palm	12' Ht., BTF
Prunus 'Krauter Vesuvius'	Flowering Plum	24" BOX
TREES ALONG WATER		
Aesculus californica	California Buckeye	24" BOX
Cornus sericea	Creek Dogwood	24" BOX
Populus fremontii	Cottonwood	24" BOX
Salix babylonica	Weeping Willow	24" BOX
BELOW HIGH WATER LINE		
Scirpus actus	Bulrush	PLUGS
Typha latifolia	Cattail	PLUGS
NEAR HIGH WATER LINE		
Carex barberae	Santa Barbara Sedge	PLUGS
Juncus lesueurii	Salt Rush	PLUGS
Elymus glauca	Blue Wild Rye	PLUGS
PLANTS ON SLOPE		
Salvia sonomensis	Creeping Sage	1 GAL
Artemisia douglasiana	Mugwort	1 GAL
Mimulus aurantiacus	Sticky Monkeyflower	1 GAL
Penstemon spectabilis	Royal Penstemon	1 GAL

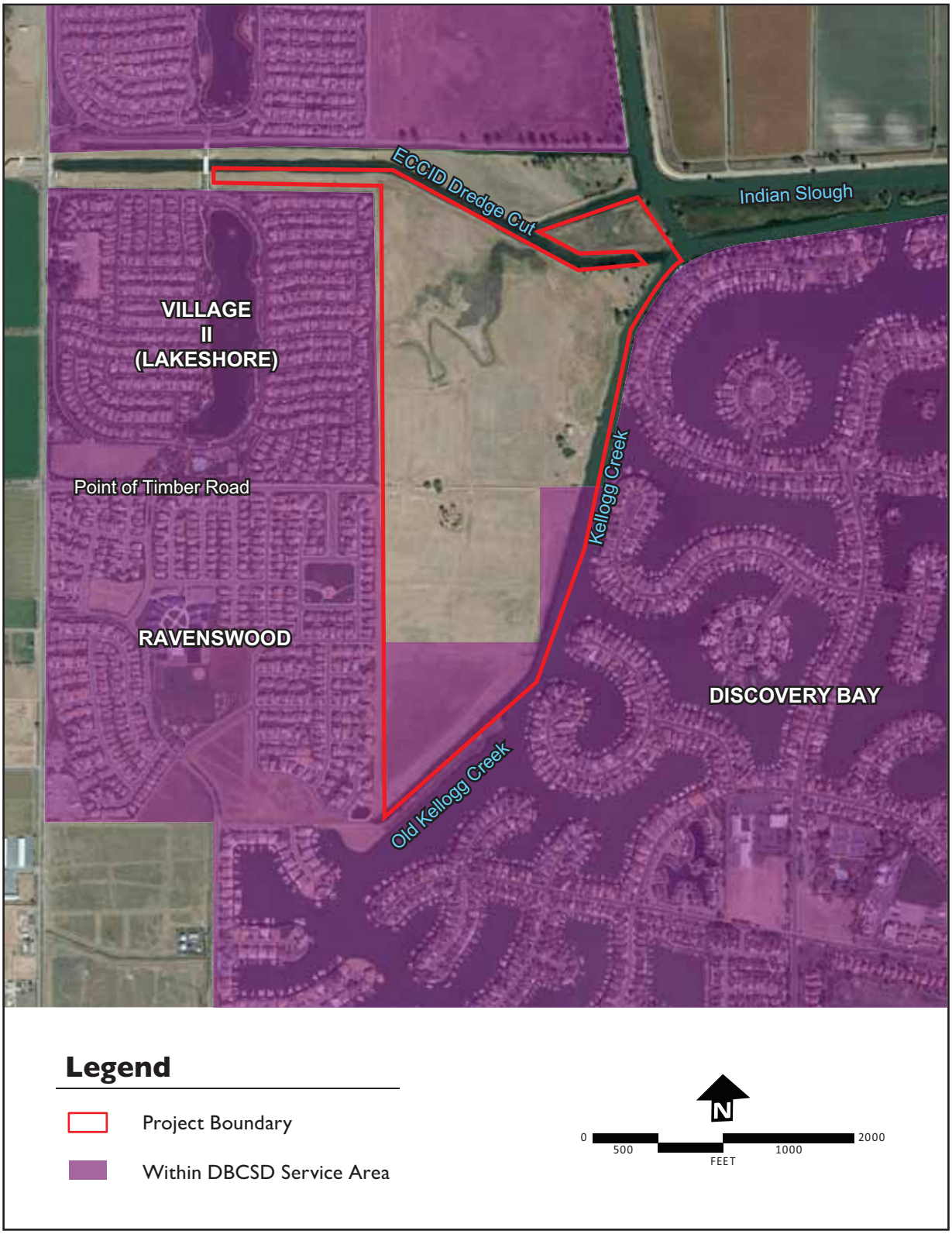
BOTANICAL NAME	COMMON NAME	SIZE
PLANTS AT TOP OF SLOPE		
Sisyrinchium Bellum	Blue-Eyed Grass	1 GAL
Erigeron glaucus	Seaside Daisy	1 GAL
Calamagrostis foliosa	Cape Mendicino reedgrass	1 GAL
ENTRY SHRUBS		
Agapanthus 'Peter Pan'	Dwarf Lily of the Nile - Blue	1 GAL
Canna 'Red King Humbert'	Canna	5 GAL
Cotoneaster Lacteus	Parneyl Cotoneaster	5 GAL
Dietes vegata	Fortnight Lily	5 GAL
Escallonia 'Fraseri'	Fraser Escallonia	5 GAL
Hemerocallis 'Stella D'Oro'	Stella D'Oro' Daylily	1 GAL
Nerium o. 'Casablanca'	White Oleander, med. ht.	5 GAL
Nerium o. 'Petite Salmon'	Dwarf Oleander	5 GAL
Rhaphiolepis 'Ballerina'	Ballerina India Hawthorn	5 GAL
Rosmarinus 'Tuscan Blue'	Tall Upright Rosemary	5 GAL
Rosa californica	California wild rose	5 GAL
Ribes sanguineum var glutinosum	Pink Flowering Currant	1 GAL
Lupinus aLbifrons	Lupine	1 GAL
Zauscheneria Species	Fuchsia	1 GAL
Leymus triticoides	Creeping wild rye	1 GAL
VINES		
Campsis x. tagliabuana 'Mme. Galen'	Mme Galen Campsis	5 GAL
GROUNDCOVERS		
Verbena 'Tiapan Blue'	Tiapan Blue Verbena	4" Pots 12" OC
Lantan montevidensis	Trailing Lantana	1 gal. @ 18"o.c.
Gazania 'Mitsuna White'	Clumping Gazania	Flat grown
Acacia redolens	Groundcover Acacia	1 gal. @ 60"o.c.
Coprosma p. 'Verde Vista'	Coprosma Reptans White	1 GAL 24"o.c.
Fragaria chiloensis	Wild Strawberry	Flat grown @ 10" o.c.



Landscaping Plan Figure 3-7

Source: Rose Associates, 2006.

Figure 3-7 Landscape Plan (back)



Discovery Bay Community Services District Service Area Boundary

Figure 3-8

Source: CirclePoint, 2011.

No storm water runoff would be discharged into the emergent marsh or wetland mitigation areas or over the creek bank enhancement areas. These open areas of the project site would remain in their natural state and would be self-retaining and self-treating.

To accommodate runoff from the roofs, driveways, roadways, and sidewalks of the project, linear bioretention facilities (swales) would be provided along each side of internal streets in order to comply with County C.3 water quality requirements. The approximately 5-foot-wide swales would provide soil filtration for storm water runoff prior to its release into the bays and coves. As designed, the swales would accommodate all calculated runoff from these proposed impervious surface areas.[13] The TDBCSD would maintain the swales through the creation of a landscaping and lighting district.

The storm drain outlets would be protected with flap gates to prevent water from back-flowing into the streets during very large storm events. During large storm events, water would flow overland into the bays. All overland flow outlets into the bays are 2 feet above the 100-year BFE and 1.5 feet above the 300-year BFE at high tide. The overland releases would be set at elevations below the adjacent finished floor elevations. The effects of this project design element are more fully discussed in **Section 4.9, Hydrology and Water Quality,** of this EIR.

LANDSCAPING, LIGHTING, AND FENCING

Landscaping

The project would provide landscaping, including approximately 770 trees to be planted along project roadways and at the project entrance. **Figure 3-7** illustrates the proposed landscaping plan. As a preliminary design, the project landscape architects have proposed the species types and approximate counts, as listed in **Table 3-5**. Additional trees would be planted along enhanced and created creek banks to provide shaded riverine aquatic (SRA) habitat[14] consistent with the recommendations of Stillwater Sciences, the applicant's fisheries biologist. Eighty trees were surveyed on the existing project site including Modesto ash, Fremont cottonwood, and manna gum. All 80 trees are proposed for removal during project construction.

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[13] See **Section 4.9, Hydrology and Water Quality**.

[14] SRA habitat is defined by the US Fish and Wildlife Services as the near-shore aquatic area occurring at the interface between a river and adjacent woody riparian habitat. Attributes of SRA habitat include providing temperature-reducing shade and nutrient cycling for aquatic life.

Table 3-5 Proposed Tree Landscaping Palette

Quantity	Botanical Name	Common Name
Street Trees		
302	*Fraxinus o. 'Raywood'*	Raywood ash
351	*Fraxinus uhdei*	Evergreen ash
Accent Trees		
58	*Prunus 'Krauter Vesuvius'*	Flowering plum
Entry Trees		
4	*Aesculus californica*	California buckeye
12	*Chamerops humilis*	Mediterranean fan palm
4	*Cornus sericea*	Creek dogwood
11	*Phoenix dactylifera*	Date palm
10	*Platanus racemosa*	California sycamore
6	*Populus fremontii*	Cottonwood
6	*Salix babylonica*	Weeping willow
12	*Schinus molle*	California pepper tree

Notes:
For street trees, there would be an estimated two trees per lot (typical), and five trees at corner lots.
Source: Rose Associates, 2006.

Lighting

The project includes installation of low-glare neighborhood street lights on all streets and courts and at the main entry. Street lights would be approximately 115 feet apart on 16 foot poles, and would be designed to minimize sky glow and to prevent light from penetrating adjacent open space and water areas.[15] Similar restrictions on residential outside lighting are also proposed.

Fencing

The project would include 6-foot-high fencing, typically associated with single-family development. The backyard fencing for lots along the emergent marsh would be open, consistent with the recommendation of the applicant's wetland consultant.

[15] Street light fixture submittal information by the landscape architect, dated June 21, 2007.

On the waterfront lots, side-yard fencing facing the street would be open-type fencing (i.e. wrought iron) and one side yard of each waterfront house would be conditioned to minimize obstructions along the entire length of the side yard in order to provide pedestrians, bicyclists, and drivers with views of the water. (Side yard fences running from the street to the back of the lots do not need to be open). See the Public Access and Open Fence Plan on **Figure 3-6**.

Marine Patrol Substation

The proposed Sheriff's marine patrol substation would be located on the northeast portion of the project site adjacent to an area of high boat traffic (see **Figure 3-5**). The substation would be a primary point of deployment for the Sheriff's marine patrol, and would enhance marine patrol enforcement in the Discovery Bay area by allowing the sheriff to more efficiently respond to calls. Currently, the Sheriff's marine patrol is dispatched either from a mobile location or the substation located near the Antioch Bridge in Oakley. The Sheriff's Department currently keeps two patrol vessels in the marina at Discovery Bay to patrol the area and respond to calls.

The project applicant has consulted with the Office of the Sheriff-Coroner on the design of the substation, which would include an approximately 1,450 square-foot permanent modular building with 2 boat docks.[16] The building would have electricity, a restroom and a small office. There is no holding facility planned for the structure.

The approximately 0.5 acre site would be accessible via a 20-foot EVA and would contain a 100-foot x 100-foot Medivac helicopter landing area to provide emergency air-lift services on the rare occasion when boating accident victims need to be airlifted to a hospital. Landing a Medivac helicopter at this location is within federal aviation regulations[17] and is preferred by responders over landing on the nearby levees. Based on discussions with the Office of the Sheriff-Coroner, the project applicant proposes that property owners would fund the cost of one deputy who would perform either marine patrol or limited land services within the Pantages development and surrounding area, depending on the need.

In keeping with the management of existing waterways within Discovery Bay, boat traffic would be controlled through designation of a no wake zone (5 miles per hour). The speed requirements would be clearly specified in the homeowner association's covenants, conditions and restrictions (CC&Rs).

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[16] Letter from Mark Armstrong to Lt. Will Duke, dated March 25, 2008, and response letter from Sheriff Warren Rupf, dated May 21, 2008.

[17] Personal communication with Capt. Will Duke on October 15, 2010.

A separate parcel comprised of the substation and associated facilities would be dedicated to the County or their designee at the time of recordation of the final map. The access road to the substation will also serve as a public trail.

3.5 PROJECT CONSTRUCTION

The project would be developed in overlapping phases, including project clearing, mass grading, excavation of soils, wetland creation, habitat enhancement, installation of underground and surface improvements, and construction of the marine patrol station and homes.

The project applicant expects to complete the construction of all finished lots and homes within a seven or eight year period. To accommodate this schedule, the project applicant would undertake some of the grading construction work between October 15 and April 15 during the rainy season. For the purposes of this EIR, it is assumed that earthmoving activities (i.e., grading and utility installation) would start in 2013 and end in 2015. The construction of homes would begin immediately following completion of earthmoving activities, and the project is assumed to be fully developed by 2020. Ultimately, market conditions would shorten or increase this anticipated schedule.

Soils would be balanced on the site, meaning the soil excavated to create the open-water area and waterfront lots would be used as fill for elevated roads and lots. No import or export of soils is anticipated.

CONSTRUCTION SEQUENCE

The sequence of construction is described below:

- Removal of trees, demolish existing abandoned homes and associated structures, and clear the project site
- Partially grade streets “C” and “D” to allow for relocation of the subsurface joint trench/utilities transmission lines and installation of new utility lines serving the Town of Discovery Bay
- Excavate soil material from the site and construct a 50-foot-wide pad on engineered fill behind water front lots for use by the operators of shoring equipment that would install and form the permanent shoring wall
- Install permanent shoring wall at the rear of the proposed waterfront lots through the use of a technique referred to as “cement deep soil mixing”. The cement deep soil mixing wall would be installed through drilling linear holes and

back filling with a mix of cement and soil. The holes would also be reinforced with steel I-beams that would be placed within the cement and soil mixture. No pile driving or deep compaction would be necessary to construct the walls

- Install turbidity barriers along Kellogg Creek and Old Kellogg Creek banks that will be excavated in sections of approximately 1,500 to 2,000 linear feet and install turbidity barriers (work to be completed only between August 1 and November 30 to avoid impacts to threatened and endangered species of fish)
- Excavate the proposed South Bay, North Bay, and North Cove (leaving a plug of soil to separate work zone from Kellogg Creek)
- Create building pads, roadways, and EVA with excavated material
- Allow water levels to stabilize in South Bay, North Bay and North Cove
- Install turbidity barriers in Kellogg Creek, and excavate the South Bay and North Bay soil plugs to protect Kellogg Creek (work to be completed only between August 1 and November 30 to avoid impacts to threatened and endangered species of fish)
- Construct bridge over emergent marsh for EVA. Create new seasonal wetlands/emergent marsh expansion and enhance existing creek bank habitat along ECCID Dredge Cut and Pantages Island. The new creek bank would be enhanced as it is constructed (e.g., new bank habitat created in Old Kellogg Creek and to widen Kellogg Creek channel)
- Complete marine patrol substation facilities and construction of homes

3.6 PROJECT OBJECTIVES

The project has the following two main objectives:

- Build an economically viable residential community with bays, coves, and a proportionately significant number of waterfront residences with deep-water access and individual docks; and
- Widen a portion of Kellogg Creek on the northern end of the project site to reduce water velocities and improve public safety in that section of Kellogg Creek.[18]

[18] The existing channel is narrower than is the width generally required by RD 800.

Other key project objectives include:

- Construct market-rate housing to meet the needs of present and future residents of eastern Contra Costa County;
- Develop a project consistent with the character of existing neighborhoods (i.e., 6,000- to 21,320-square-foot lots) to the east and west of the project site and that creates an improved link between the original Discovery Bay and Discovery Bay West;
- Provide for flood protection in a conservative manner that exceeds current County minimum standards for finished floor elevations above the 100-year storm BFE;
- Reduce the need for dredging by RD 800 and improve water quality in Kellogg Creek and Indian Slough through appropriate bank stabilization and habitat restoration along the project shoreline, further reducing the amount of scour and associated sedimentation;
- Create new high- and moderate-quality bank habitat in and near the project site and enhance existing banks from low-quality to high-quality SRA habitat to benefit native fish species;
- Preserve the majority of the emergent marsh in the northwestern portion of the site and all of the emergent marsh on Pantages Island;
- Provide public pedestrian/bicycle access to and through the preserved open space areas on the north side of the project site, with open views of the Delta water, and provide seating areas and kiosks with educational signage; and
- Provide improved safety for project residents and within Discovery Bay by constructing a marine patrol substation with a two-boat dock at the northeasterly point on the project site, and provide funding by future property owners through a police service district tax for an extra deputy sheriff who could operate out of the substation on an as-needed basis.

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4.0 SETTINGS, IMPACTS, AND MITIGATION MEASURES

This chapter describes the existing conditions and evaluates the potential environmental impacts that would occur with development of the Pantages Bays project (project). **Sections 4.1, Agricultural and Forestry Resources,** through **4.17, Visual Resources and Aesthetics,** of this chapter analyze each resource topic that could be affected by the project. Each subsection describes the environmental setting as it relates to the specific resource topic; the impacts that could result from implementation of the project; and mitigation measures that would avoid, reduce, or compensate for any significant impacts of the project.

ISSUES ADDRESSED IN THE DRAFT EIR

The following topics are addressed in this chapter:

- Agricultural and Forest Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Energy
- Geology and Soils
- Global Climate Change
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Mineral Resources
- Noise
- Population and Housing
- Public Services and Recreation
- Public Utilities
- Transportation and Circulation
- Visual Resources and Aesthetics

FORMAT OF ISSUE SECTIONS

In general, the analysis of each environmental issue consists of five subsections: Existing Conditions, Regulatory Setting, Analysis of Potential Impacts, Cumulative Impacts, and References. An overview of the information included in these sections is provided below.

EXISTING CONDITIONS

According to Section 15125(a) of the CEQA Guidelines, existing conditions are the physical environmental conditions in the vicinity of the project at the time the Notice of Preparation (NOP) is published. The NOP for the project was published in 2007. While the baseline condition for the project is the condition of the site at the time the NOP was issued (e.g., existing land uses, existing soil conditions, existing traffic conditions), given the amount of time that has passed since the publication of the NOP some of these descriptions have been updated where recent site visits identified altered conditions and where new relevant information was available.

REGULATORY SETTING

The regulatory setting section provides a description of the relevant regulations and guidelines that pertain to the issue area. This setting section may contain information from a variety of sources, such as the Contra Costa County General Plan, or other local, regional, state, or federal agency guidelines or regulations. A policy consistency analysis is also provided for each regulation. This analysis provides a brief evaluation of the project's conformity with the applicable policies and regulations.

ANALYSIS OF POTENTIAL IMPACTS

The analysis of potential impacts begins with a listing of the applicable significance criteria, followed by an evaluation of impacts that would result from implementation of the project.

Significance Criteria

Under the California Environmental Quality Act (CEQA Section 21068), a significant effect is defined as a substantial, or potentially substantial, adverse change in the environment. The CEQA guidelines direct that this determination be based on scientific and factual data. The significance criteria have been developed using Appendix G of the CEQA Guidelines (March 2010) as a foundation, with some refining of the criteria based on local regulations and other applicable federal, state, and local agencies' guidelines and regulations.

Evaluation of Impacts

The evaluation of impacts considers the significance criteria, the level of environmental impact, and makes a determination as to whether there is: "no impact," a "less-than-significant impact," or a "significant impact." Therefore, this subsection is divided into three categories: Discussion of No Impacts, Discussion of Less-than-Significant Impacts, and Discussion of Significant Impacts.

A "no impact" designation is used for an issue that would not be affected by project implementation. For example, since the project site is not located on an area designated to have mineral resources, the project would not result in the loss of any known mineral resources. "Less-than-significant" impacts are those project related effects that would not reach a level of significance. For example, for a sensitive biological species, project impacts would be significant if there was a potential to harm members of the species, or to reduce their habitat. Conversely, impacts would usually be considered less than significant if the habitats and species affected were common and widespread in the region and in the state, and ample habitat remained. A "significant" designation is used under circumstances where the environmental impacts would meet or exceed one of the significance criteria identified in Appendix G.

Any identified impacts are numbered and shown in bold type. For significant impacts, mitigation measures are provided that would reduce the effects of these impacts. Following the discussion of mitigation measures, there is an evaluation of the "Significance after Mitigation."

CUMULATIVE IMPACTS

The California Environmental Quality Act (CEQA) requires an evaluation of a project's contribution to cumulative environmental impacts. According to Section 15355 of the CEQA Guidelines, cumulative impacts are defined as "two or more individual effects which, when taken together, are considerable, or which can compound or increase other environmental impacts." As stated in the Guidelines, an individual project may not have significant impacts; however, in combination with other related projects, these cumulative effects may be considerable. When evaluating cumulative impacts, CEQA recommends one of two methods:

1. Projects to consider in the cumulative analysis include any past, present, and probable future projects producing related or cumulative impacts, including projects outside the control of the lead agency, or

2. The cumulative analysis would consider projections contained in an adopted local, regional, or statewide plan, or would use a prior environmental document which has been adopted or certified for such a plan.

For the majority of this analysis the second method was used, based on the County General Plan and associated EIR. Where indicated, the cumulative analysis is enhanced through the consideration of specific individual projects identified from a list compiled from both the City of Brentwood and Contra Costa County. The list of projects is provided in **Table 4-1.** The location of each project is shown in **Figure 4-1**. The cumulative projects list incorporates reasonably foreseeable, relevant projects and focuses on those that, when combined with the Pantages Bays project, could contribute to cumulative impacts.

Table 4-1 Development Projects in the Vicinity of the Project Site

Project No.	Name/Owner	Project Scale	Status	General Plan Amendment
Discovery Bay/Unincorporated Contra Costa County				
N/A	Discovery Bay West/Hoffman Company	700 residential units	1,999 residential units approved in the early 2000s, approximately 65% constructed and occupied. 700 lots remain to be developed.	No
SD10-9282	The Villages at Discovery Bay/Hoffman Company	80 Townhomes / Commercial/Community Center	Application being processed.	Yes
LP07-2025	Orwood Resort and RV Park/John Caprio	Addition to existing restaurant and adding RV & camping sites	Application being processed	No
SD09-9278	Newport Pointe/ Disco Bay Partners, LLC	67 lots, residential units	Application being processed	Yes
City of Brentwood[1]				
8627	Garin Corners/Signature Properties	168 residential units	Under Construction	No
9154	Mission Grove/Discovery Builders	132 residential units	Application being processed	No
8548,9095 to 9098	Barrington/Standard Pacific	494 residential units	Approved	No

Project No.	Name/Owner	Project Scale	Status	General Plan Amendment
City of Brentwood, continued.				
8534 8825	The Parc at Cedarwood/Signature Properties	177 residential units	Under Construction	No
DR 06-14	Delta Fence/Frank Martin	25,916 square feet – industrial	Permit Issued	No
DR 08-11	Neighborhood Church/Neal Doty	27,017 square feet – other	Approved	Yes
DR 07-08	The Plaza at Balfour II/Pacific/Bowie Martin	20,000 square feet – office	Approved	No
DR 03-10	Garin Commercial/The Festival Companies	44,300 square feet – retail 55,500 square feet – office	Permit Issued	No
DR 05-30	Brentwood Plaza II/Nazanin Parvizi	7,430 square feet – retail 1,301 square feet – industrial	Approved	No
TSM 9152	Sciortino Ranch/New Urban Com. Ptns.	N/A	Approved	Yes
DR 07-16	Civic Center/City of Brentwood	94,200 square feet – office	Permit Issued	Yes
DR 08-01	Kendall Plaza/Brentwood 2010 LLC	4,400 square feet – retail 7,110 square feet- office 17,592 square feet – industrial	Permit Issued	No
DR 03-09	Best Western Motel	28,260 square feet – hotel	Permit Issued	No

Notes:
[1] Projects east of Brentwood Boulevard and south of Lone Tree Way.
Source: Contra Costa County and the City of Brentwood February 12, 2010 Project Status Report.

The closest active projects to the project site include Discovery Bay West, located immediately west of the project site, the Villages at Discovery Bay, the Orwood Resort, and Newport Pointe. Other projects considered in this cumulative analysis are at least ¼-mile or more from the project site.

The spatial boundary for the study of a project's cumulative impacts varies depending on the resource of concern. For example, impacts related to geology and archeological resources are generally site specific, while air and noise impacts can encompass larger areas. Most of the project's impacts are site-specific and limited

in terms of geography, and do not have the ability to compound impacts from past, existing or future projects beyond the project area. In these circumstances, CEQA directs that it is not necessary to address in detail the impacts from other projects:

> "[w]here a lead agency is examining a project with an incremental effect that is not 'cumulatively considerable,' a lead agency need not consider that effect significant, but shall briefly describe its basis for concluding that the incremental effect is not cumulatively considerable" (CEQA Guidelines, §§ 15130, subd. (a); and
>
> "[a]n EIR should not discuss impacts which do not result in part from the project evaluated in the EIR". (CEQA Guidelines, §§ 15130, subd. (a)(1).

REFERENCES

This subsection list the references used to prepare the environmental setting and impact analysis for each section of the EIR.

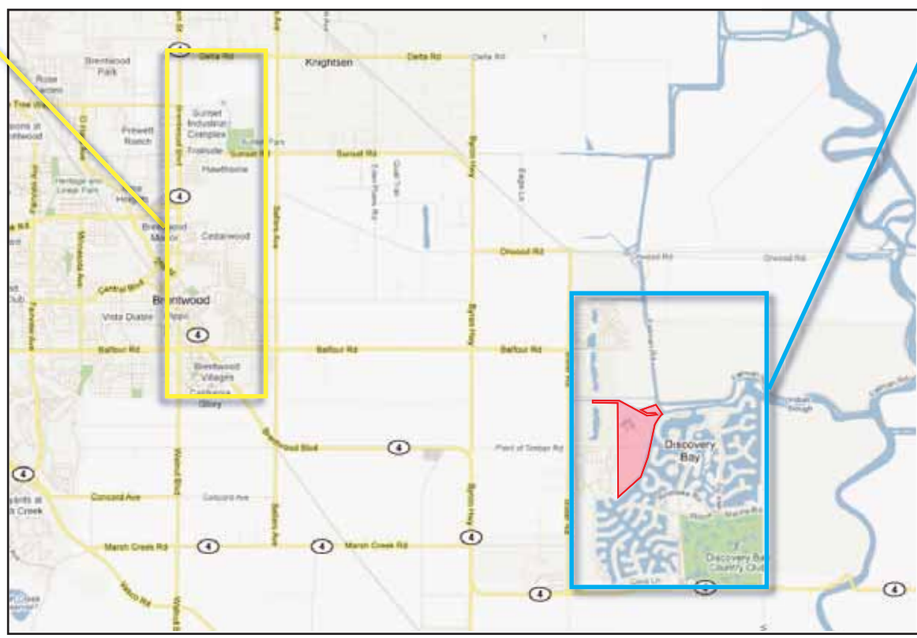
BRENTWOOD PROJECTS

1. Garin Corners (R)
2. Mission Grove (R)
3. Barrington (R)
4. The Parc at Cedarwood (R)
5. Delta Fence (C)
6. Neighborhood Church (R)
7. The Plaza at Balfour II (C)
8. Garin Commercial (C)
9. Brentwood Plaza II (C)
10. Sciortino Ranch (C)
11. Civic Center (C)
12. Kendall Plaza (C)
13. Best Western Motel (C)

KEY

- Project Area
- General Plan Amendments
- (R) Residential
- (C) Commercial

N
NOT TO SCALE



DISCOVERY BAY PROJECTS

1. Discovery Bay West (R)
2. Villages at Discovery Bay (R)
3. Orwood Resort and RV Park (C) *(Approved in August 2001)*
4. Newport Pointe (R)

Cumulative Projects Figure **4-1**

Source: Contra Costa County City of Brentwood, 2010.

Figure 4-1 Cumulative Projects (back)

4.1 AGRICULTURAL AND FORESTRY RESOURCES

This section describes the existing agricultural and forest resources on and in the vicinity of the project site. Applicable legislation relating to these resources is summarized in **Subsection 4.1.2**, **Regulatory Setting**. The analysis in this section is based on project site plans, the Contra Costa County General Plan, the Contra Costa County Important Farmlands Map, and agricultural soil classifications, as reported by the U.S. Natural Resources Conservation Service (NRCS).

The project would require approval from the Contra Costa Local Agency Formation Commission (LAFCO) for annexation to the Discovery Bay Community Services District sphere of influence and corresponding service area for water and wastewater service.

In response to the Notice of Preparation (NOP) for this draft EIR, LAFCO submitted a comment letter requesting that the impacts to agricultural land be addressed pursuant to Section 56064 of the California Government Code. This scoping comment is addressed below in **Subsection 4.1.2**.

4.1.1 EXISTING CONDITIONS

Regional Agricultural Uses

The project site is located in unincorporated eastern Contra Costa County (County) in the community of Discovery Bay, within the Contra Costa County Urban Limit Line (ULL). The closest incorporated city is Brentwood, which lies approximately 4.5 miles to the northwest of the project site. The unincorporated land that lies between the project site and the City of Brentwood is designated as the Agricultural Core of the County (see **Figure 3-1**). Much of the land in this designation is under active cultivation of row crops, primarily orchards. Lands within this designation contain soils that are considered the most favorable for farming a wide variety of crops. Agricultural land uses within the Agricultural Core are protected by the County, in accordance with Measure C. Although Contra Costa has been one of the fastest-growing counties in the San Francisco Bay Area, in 2007 approximately 72 percent of the County was dedicated to non-urban uses (Roche 2008).

Local Agricultural Resources

Although the project site has been used for agriculture production in the past, this use was discontinued in 1992, and the site has remained vacant since that time. The current owner leases the property to a tenant that runs a small herd of 10 cattle as a hobby.

In 2003, the site was used by Reclamation District 800 (RD 800) for detention of dredge spoils as part of a channel dredging program in Discovery Bay. Preliminary geotechnical exploration correlates with this recent activity, indicating that near-surface soils consist of irregularly dispersed artificial fill that includes poorly-consolidated deposits of clay, silt, and sand.

Subsurface soils at the project site include fine-grained alluvium deposits consisting of Marcuse Clay, Pescadero Clay Loam, Sacramento Clay, and Brentwood Clay Loam, all of which are typically used for irrigated and dryland pasture and the cultivation of fruit, vegetables, and grains (see **Figure 4.1-1**) (Monk and Associates 2010). These types of soils are included in the NRCS Land Capability Class IV, and are not considered significant agricultural resources (NCRS 2009).

Forest Land Resources

In accordance with the definition under California Public Resources Code Section 12220(g), "Forest land" is land that can support, under natural conditions, 10 percent native tree cover of any species, including hardwoods, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits.

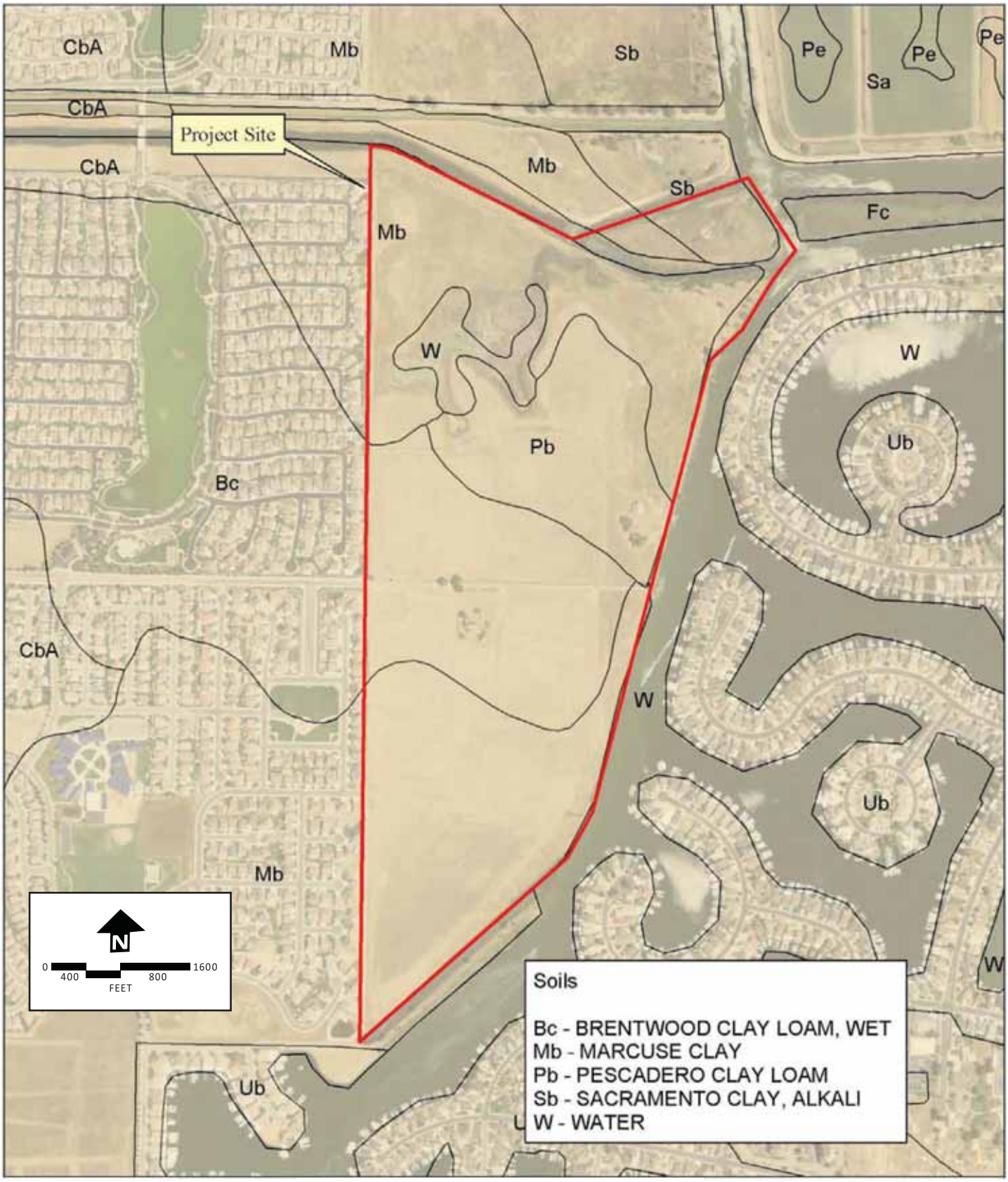
The project site is vegetated with 80 trees dispersed throughout the site, constituting less than 10 percent native tree cover. Furthermore, none of the lands within the project site—or the County at large—are used for timber harvesting (Contra Costa County General Plan, Land Use Element 2005).

4.1.2 REGULATORY SETTING

Williamson Act

The California Land Conservation Act, also known as the Williamson Act, was adopted in 1965 to encourage the preservation of the state's agricultural lands and to prevent their premature conversion to urban uses. The Williamson Act established an agricultural preserve contract procedure by which any county or city within the state may tax a landowner at a lower rate, using a scale based on the actual use of the land for agricultural purposes, as opposed to its unrestricted market value. In return for a reduced tax rate, the owner guarantees that the property remains under agricultural production for a 10-year period. The contract is automatically renewed on an annual basis until the property owner indicates a desire to terminate the contract.

The project site is not covered by a Williamson Act contract (Luzano 2007).



Soils on the Project Site

Figure **4.1-1**

Source: Monk & Associates, 2009.

Farmland Mapping and Monitoring Program

In 1982 the Farmland Mapping and Monitoring Program (FMMP) was established by the California Department of Conservation, Division of Land Resources Protection. The FMMP provides a consistent and impartial analysis of agricultural land use and land use changes throughout California, and produces Important Farmland Maps by county every two years.

The 2010 Important Farmland Map for Contra Costa County designates the northern half of the project site as “Urban and Built-up Land,” the southern half of the site as “Farmland of Local Importance.” Two small areas in the northwest and northeast corners of the site as “Other Land.” The FMMP defines these lands as follows:

Urban and Built-up Land - Land that is occupied by structures with a building density of at least 1 unit to 1.5 acres, or approximately 6 structures to a 10-acre parcel. Common examples include residential, industrial, commercial, institutional facilities, cemeteries, airports, golf courses, sanitary landfills, sewage treatment, and water control structures.

Farmland of Local Importance - Land of importance to the local economy, as defined by each county's local advisory committee and adopted by its Board of Supervisors. Contra Costa County defines Farmlands of Local Importance as lands typically used for livestock grazing. These lands are also defined as capable of producing dryland grain on a two-year summer fallow or longer rotation with volunteer hay and pasture. The farmlands in this category are included in the NCRS Land Capability Classes I, II, III, and IV, and lack some irrigation water.

Other Land - Land not included in any other mapping category. Common examples include low-density rural developments, brush, timber, wetland and riparian areas not suitable for livestock grazing, confined livestock, poultry, or aquaculture facilities, strip mines, borrow pits, and water bodies smaller than 40 acres.

California Government Code Section 56064

LAFCO uses Government Code Section 56064 of the California Government Code to evaluate potential impacts to farmland resulting from proposed requests for annexation. Section 56064 considers "prime agricultural land" as an area of land, whether it is a single parcel or a contiguous parcel, that has not been developed for a use other than an agricultural use. These lands must meet any of the following qualifications:

- Land that qualifies, if irrigated, for rating as Class I or Class II in the USDA Natural Resources Conservation Service land use capability classification, whether or not land is actually irrigated, provided that irrigation is feasible.

- Land that qualifies for rating 80 through 100 Storie Index Rating.
- Land that supports livestock used for the production of food and fiber and that has an annual carrying capacity equivalent to at least one animal unit per acre as defined by the United States Department of Agriculture in the National Handbook on Range and Related Grazing Lands, July, 1967, developed pursuant to Public Law 46, December 1935.
- Land planted with fruit or nut-bearing trees, vines, bushes, or crops that have a nonbearing period of less than five years and that will return during the commercial bearing period on an annual basis from the production of unprocessed agricultural plant production not less than four hundred dollars ($400) per acre.
- Land that has returned from the production of unprocessed agricultural plant products an annual gross value of not less than four hundred dollars ($400) per acre for three of the previous five calendar years.

Project Consistency Analysis

The project does not meet the definition of prime agricultural land as set forth by Government Code section 56064.

According to the NRCS online Web Soil Survey, the soils identified on the project site are classified as Class IV soils, and are rated as grade 2 through 5, scoring less than 80 in the Storie Index. Therefore, the soils at the project site would not be considered “prime agricultural land” under Section 56064(a) or (b).

The land is not currently used to support live stock for the production of food and fiber. The current tenant runs a small herd of cattle (10 units) and does not meet the livestock support criteria under Section 56064(c).

The land is not planted with fruit or nut bearing trees, vines, bushes, or crops; and would not therefore meet the minimum return requirements for unprocessed agricultural plant products under Section 56064(d).

The land has not been cultivated during the past five years (and hasn’t been since 1992) and therefore does not meet the minimum annual gross value of $400 per acre for three of the past five years under Section 56064(e).

Contra Costa County General Plan

The Land Use and Conservation Elements of the General Plan contain the following relevant policies related to agricultural land uses.

Land Use Element

3-11: Urban uses shall be expanded only inside the Urban Limit Line where conflicts with the agricultural economy will be minimal.

3-12: Preservation and buffering of agricultural land should be encouraged as it is critical to maintaining a healthy and competitive agricultural economy and assuring a balance of land uses. Preservation and conservation of open space, wetlands, parks, hillsides, and ridgelines should be encouraged as it is crucial to preserve the continued availability of unique habitats for wildlife and plants, to protect unique scenery, and provide a wide range of recreational opportunities for County residents.

3-14: Protect prime productive agricultural land from inappropriate subdivisions.

Conservation Element

8-29: Large continuous areas of the County should be encouraged to remain in agricultural production, as long as economically viable.

8-30: In order to reduce adverse impacts on agricultural and environmental values, and to reduce urban costs to taxpayers, the County shall not designate land located outside of the ULL [Urban Limit Line] for an urban land use.

8-31: Urban development in the future shall take place within the Urban Limit Line and areas designated by this plan for urban growth.

8-32: Agriculture shall be protected to assure a balance in land use. The policies of Measure C-1990 shall be enforced.

8-33: The County shall encourage agriculture to continue operating adjacent to developing urban areas.

8-38: Agricultural operations shall be protected and enhanced through encouragement of Williamson Act contracts to retain designated areas in agricultural use.

In addition to the above-mentioned policies, the County enacted the 65/35 Land Preservation Standard as part of Measure C-1990, which calls for the preservation of at least 65 percent of the land in the County for agriculture, open space, wetlands, parks, and other non-urban uses. Measure C-1990 also established the Urban Limit

Line (ULL), which was extended to 2026 by the passage of Measure L in 2006. Inside the ULL there are approximately 15,930 acres, including the Pantages property, designated as agricultural land (Contra Costa County 2010).

Contra Costa County General Plan and Zoning Designations

The Contra Costa General Plan designates the 10 parcels that comprise the project site as Agricultural Lands (AL), Delta Recreation (DR) and Water (WA). The current zoning of the site is General Agricultural District (A-2) and Heavy Agricultural District (A-3).

The project is seeking approval of a general plan amendment that changes the land use designations to the following; Single Family Residential High Density (SH) which has a density range of 5.0 to 7.2 units per net acre, Single Family Medium Density (SM), which has a density range of 3.0 to 4.9 units per net acre, Open Space (OS), Public Semi-Public (PS), and Water (WA). The project is also requesting to rezone the project site to Planned Unit Development (P-1)

Project Consistency Analysis

The project would be consistent with the General Plan policies related to agricultural resources. The project area is within the County ULL and therefore in compliance with policies 3-11, 8-30 and 8-31. The project lands are not held in Williamson Act contract, and are not considered prime farmland, and so the project would not conflict with policy 3-14 or 8-38. In reference to policies 8-29, 8-32, and 8-33, the project site is surrounded by existing or planned residential development, and is not part of a larger agricultural production area that would be subdivided by the project. Analysis of the consistency of the project with the land use planning and policies is included in **Section 4.10, Land Use and Planning**.

4.1.3 ANALYSIS OF POTENTIAL IMPACTS

CEQA Significance Criteria

Appendix G of the CEQA Guidelines identifies environmental issues to be considered when determining whether a project could have a significant effect on the environment. As identified in Appendix G, the project would have a significant impact on agricultural resources if it would:

a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use;

b) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g));

c) Result in the loss of forest land or conversion of forest land to non-forest use;

d) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of farmland to non-agricultural use or conversion of forest land to non-forest use; or

e) Conflict with existing zoning for agricultural use, or a Williamson Act contract.

Discussion of No Impacts

Analysis of the project plans and site characteristics in the context of the significance criteria stated above shows that there would be no impacts related to prime farmland or forest resources. The following discussion presents the evidence in support of this conclusion.

a) Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

The project site does not contain farmland designated “Prime,” “Unique,” or of “Statewide Importance.” Furthermore, the project site does not contain “prime agricultural land” as defined in Section 56064 of the California Government Code.

Construction of the project would therefore not result in any impacts related to the conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to a non-agricultural use.

b) Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

<u>and</u>

c) Would the project result in the loss of forest land or conversion of forest land to non-forest use?

While the project site is vegetated with 80 trees, these trees are dispersed throughout the site, and are not considered forest land as defined by California Public Resources Code Section 12220(g). Furthermore, none of the land within the County is used for timber harvesting. Construction of the project would therefore not result in the conversion or loss of forest resources.

d) Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?

The project site is not currently used for agricultural production and does not contain any forest resources. Development of the project would not therefore involve changes to the existing environment, which due to their location or nature, would result in conversion of Farmland to non-agricultural use. Furthermore, the project site is generally surrounded by development, including the Ravenswood, Discovery Bay West, and Discovery Bay communities; and development of the project would not contribute indirectly to the conversion of adjacent lands.

e) Would the project conflict with a Williamson Act contract?

The site is not under Williamson Act contract and so the project would not result in any conflicts with this Act.

Discussion of Less-than-Significant Impacts

Analysis of the project plans and site characteristics shows that there would be a less-than-significant impact for one of the five significance criteria. The following discussion presents the evidence in support of this conclusion.

e) Would the project conflict with existing zoning for agricultural use?

The project site is currently zoned General Agricultural District (A-2) and Heavy Agricultural District (A-3) and the project would conflict with this zoning. As noted above, the ULL includes the project site and surrounding area within the urban limit, and the surrounding properties have already been approved for residential development and are actively being developed.

The project site is no longer used for agricultural production, and the project includes a request for rezoning to Planned Unit District (P-1). The requested zoning designation would reflect the intent of the ULL and would be consistent with the residential developments on surrounding properties.

4.1.4 CUMULATIVE IMPACTS

The cumulative setting for agricultural and forest resources is Contra Costa County.

Forest Resources

None of the land within the County is used for timber harvesting; therefore, the project in combination with the other development within the County would not result in cumulative impacts to forest resources (Contra Costa County General Plan, Land Use Element 2005).

Agricultural Resources

The 2005 General Plan update identified a cumulatively significant trend of conversion of agricultural land uses to urban development. The EIR noted that build-out of the General Plan would result in the loss in East Contra Costa County of 3,895 acres of prime agricultural land (Class I and II) and 4,904 acres of non-prime agricultural land. The General Plan update concluded that the conversion of these agricultural lands to urban uses is a significant cumulative impact. The County adopted overriding considerations as part of the adoption of the General Plan, and the General Plan EIR notes the following two reasons as a basis for this consideration:

1. the County is required by State Law to provide for its fair share of the regional housing need, as determined by ABAG, and to do so, the County must designate a certain amount of land for residential uses; and
2. the economic welfare of the County, and its continued ability to provide for the employment needs of its residents, would allow this conversion to occur.

As discussed in this section, the project site is currently designated for agricultural uses (AL), and the project would therefore result in the conversion of approximately 171 acres from an agricultural designation to non-agricultural uses.

Because the site was not formally reclassified in 1990 for residential use, it was not included in the General Plan EIR analysis of the conversion of 4,904 acres of non-prime agricultural land noted above. The conversion of the site from agricultural use to non-agricultural use represents a considerable contribution towards this cumulative impact that is unavoidable.

4.1.5 REFERENCES

Contra Costa County General Plan, Conservation Element, Table 8-3. January 2005.

Contra Costa County General Plan 2005-2020. Land Use Element. 2005.

Contra Costa County General Plan 2005-2020. Land Use Element, Table 3-3. Updated 2010.

Contra Costa County (2000). Methods and results for the 65/35 land preservation standard inventory. Available at: http://www.co.contra-costa.ca.us/depart/cd/current/advance/6535_staffreport.htm; Last accessed: July 7, 2010.

Luzano, Al, Contra Costa County Assessor's Office. Personal Communication, April 25, 2007.

Monk and Associates, Biological Resources Analysis. 2010.

Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at: http://websoilsurvey.nrcs.usda.gov/. Last accessed December 3, 2009.

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4.2 AIR QUALITY

This section describes and evaluates the effects the project would have on local and regional air quality. The analysis includes a discussion of existing air quality, construction-related impacts, and emissions associated with the project operation, and identifies mitigation measures that would reduce or eliminate any potentially significant impacts.

The methodologies and assumptions used in the preparation of this section follow the California Environmental Quality Act (CEQA) Guidelines of the Bay Area Air Quality Management District (BAAQMD), as adopted in June 2010. Information on existing conditions, federal and state ambient air quality standards, and pollutants of concern was obtained from the U.S. Environmental Protection Agency (U.S. EPA), California Air Resources Board (ARB), and BAAQMD. Quantitative analysis was conducted by Don Ballanti (2010) using URBEMIS2007. The URBEMIS2007 output can be found in **Appendix A** of this draft EIR and is available for review at Contra Costa County, Department of Conservation and Development, Community Development Division, 651 Pine Street, Martinez, California.

There were no public or agency comments related to air quality received in response to the Notice of Preparation (NOP) for this draft EIR. However, please note that the NOP was distributed prior to the recently adopted 2010 BAAQMD guidelines.

4.2.1 EXISTING CONDITIONS

Physical Setting

The project site is located south of the Sacramento-San Joaquin Delta (Delta), at the eastern boundary of the nine-county San Francisco Bay Area (Bay Area) Air Basin. San Joaquin County, located approximately 2 miles east, is part of the San Joaquin Valley Air Basin.

The potential for high pollutant concentrations developing at a given location depends on the quantity of pollutants emitted into the atmosphere in the surrounding area or upwind, and the ability of the atmosphere to disperse the contaminated air. The atmospheric pollution potential, as the term is used here, is independent of the location of emission sources and is instead a function of factors such as topography and meteorology.

The climate of the Bay Area, including Discovery Bay, is a Mediterranean-type climate characterized by warm, dry summers and mild, wet winters. The climate is determined largely by a high-pressure system that is often present over the eastern Pacific Ocean off the West Coast of North America. In winter, the Pacific high-pressure system shifts southward, allowing storms to pass through the region. During the fall and winter months, the high pressure condition over the interior regions of the United States (known as the Great Basin High) can produce extended periods of light winds and low-level temperature inversions. This condition is frequently characterized by poor atmospheric mixing resulting in degraded regional air quality. Ozone (O_3) pollution typically occurs when this condition occurs during the warmer months of the year.

The air pollution potential is lowest in regions closest to the bay, due largely to good ventilation and less influx of pollutants from upwind sources. Light winds in the evenings and early mornings occasionally results in elevated pollutant levels. Wind flow patterns are controlled by air circulation in the atmosphere, which is affected by air pressure and the variable topography of the coastal areas adjacent to the Carquinez Strait, which is the only sea-level gap between San Francisco Bay and the Central Valley. During the summer and fall months, high pressure offshore coupled with low pressure in the Central Valley causes marine air to flow eastward through the Carquinez Strait.

The air flowing from the coast to the Central Valley, called the sea breeze, begins developing at or near ground level along the coast in late morning or early afternoon. As the day progresses, the sea breeze layer deepens and increases in velocity while spreading inland. The depth of the sea breeze depends in large part upon the height and strength of the inversion. If the inversion is low and strong, and hence stable, the flow of the sea breeze will be inhibited and stagnant conditions are likely to result. Low wind speed contributes to the buildup of air pollution. Light winds occur most frequently during periods of low sun (i.e., fall and winter, and early morning) and at night.

The Delta has a relatively low potential for air pollution given the persistent and strong winds typical of the area. Wind records from the closest wind-measuring sites show a strong predominance of westerly winds. Average wind speed is relatively high and the frequency of calm winds is quite low. These winds dilute pollutants and transport them away from the area, so that emissions released in the project area have more influence on air quality in the Sacramento and San Joaquin valleys than they do locally. There are, however, several major stationary sources in

upwind cities that can influence local air quality, and the project's location downwind of the greater Bay Area also means that pollutants from other areas are transported to the area.

Criteria Air Pollutants and Effects

Air quality studies generally focus on five pollutants that are most commonly measured and regulated: carbon monoxide (CO), ground level O_3, nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and suspended particulate matter, specifically, PM_{10} and $PM_{2.5}$, as listed in **Table 4.2-1**. In Contra Costa County (County), O_3 and particulate matter are the pollutants of greatest concern, as measured air pollution levels show high concentrations of these pollutants at times.

Toxic Air Contaminants

Toxic Air Contaminants (TACs) are a broad class of compounds known to cause morbidity or mortality, usually because they cause cancer. TACs include, but are not limited to, the criteria air pollutants listed in **Table 4.2-1**. TACs are found in ambient air, especially in urban areas, and are caused by industry, agriculture, fuel combustion, and commercial operations (e.g., dry cleaners). TACs are typically found in low concentrations, even near their source, but because chronic exposure can result in adverse health effects, TACs are regulated at the regional, state, and federal level.

Diesel exhaust is the predominant TAC in urban air, and is estimated to represent about two-thirds of the cancer risk from TACs based on the statewide average. Diesel exhaust is a complex mixture of gases, vapors, and fine particles, which makes the evaluation of its health effects a complex scientific issue. The ARB previously identified some of the chemicals in diesel exhaust (e.g., benzene, formaldehyde) as TACs; they are listed as carcinogens either under Proposition 65 or under the Federal Hazardous Air Pollutants program. To reduce diesel particulates, California has adopted a comprehensive diesel risk-reduction program. In 2006, the U.S. EPA also enacted low-sulfur diesel fuel standards for delivery and transport trucks that will reduce diesel particulate matter substantially.

Smoke from residential wood combustion can also be a source of TACs. Wood smoke is an irritant and is implicated in worsening asthma and other chronic lung problems. It is typically emitted during the winter months when dispersion conditions are poor, and localized concentrations can result when cold stagnant air traps smoke near the ground and there is no wind. The pollution can persist for many hours, especially in sheltered valleys during winter. Wood smoke also contains a significant amount of PM_{10} and $PM_{2.5}$.

Table 4.2-1 Major Criteria Pollutants

Pollutant	Characteristics	Health Effects	Major Sources
Carbon Monoxide (CO)	Carbon monoxide is an odorless, colorless gas that is highly toxic; it is formed by the incomplete combustion of fuels.	▪ Impairment of oxygen transport in the bloodstream ▪ Aggravation of cardiovascular disease ▪ Fatigue, headache, confusion, dizziness ▪ Can be fatal in the case of very high concentrations	Automobile exhaust, combustion of fuels, combustion of wood in woodstoves and fireplaces.
Ozone (O_3)	A highly reactive photochemical pollutant created by the action of sunshine on ozone precursors (primarily reactive hydrocarbons and oxides of nitrogen); often called photochemical smog.	▪ Eye Irritation ▪ Respiratory function impairment	The major sources ozone precursors are combustion sources such as factories and automobiles, and evaporation of solvents and fuels.
Nitrogen Dioxide (NO_2)	Reddish-brown gas that discolors the air; formed during combustion.	▪ Increased risk of acute and chronic respiratory disease	Automobile and diesel truck exhaust, industrial processes, fossil-fueled power plants.
Sulfur Dioxide (SO_2)	Sulfur dioxide is a colorless gas with a pungent, irritating odor.	▪ Aggravation of chronic obstructive lung disease ▪ Increased risk of acute and chronic respiratory disease	Diesel vehicle exhaust, oil- and coal-burning power plants, industrial processes.
Particulate Matter ($PM_{2.5}$ / PM_{10})	Solid and liquid particles of dust, soot, aerosols and other matter which are small enough to remain suspended in the air for a long period of time.	▪ Aggravation of chronic disease and heart/lung disease symptoms	Combustion, factories, construction, grading, demolition agricultural activities, woodstoves and fireplaces, and automobiles.

Source: Don Ballanti, 2010.

Carbon Monoxide

CO is a non-reactive pollutant that is a product of incomplete combustion and is mostly associated with motor vehicle traffic. High CO concentrations develop primarily during winter when periods of light winds combine with the formation of ground-level temperature inversions (typically from the evening through early morning). These conditions result in reduced dispersion of vehicle emissions. Motor vehicles also exhibit increased CO emission rates at low air temperatures. When inhaled at high concentrations, CO combines with hemoglobin in the blood and reduces the oxygen-carrying capacity of the blood, resulting in reduced levels of oxygen reaching the brain, heart, and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease or anemia.

Ozone

Ozone is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections, and can also cause substantial damage to vegetation and other materials. Ozone is not emitted directly into the atmosphere, but is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG) and NO_x. ROG and NO_x are known as precursor compounds for ozone. Significant ozone production generally requires ozone precursors to be present in a stable atmosphere with strong sunlight for approximately three hours.

Ozone is a regional air pollutant because it is not emitted directly by sources, but is formed downwind of sources of ROG and NO_x under the influence of wind and sunlight. Ozone concentrations tend to be higher in the late spring, summer, and fall, when long sunny days combine with regional subsidence inversions to create conditions conducive to the formation and accumulation of secondary photochemical compounds.

Nitrogen Dioxide

NO_2 is a lung irritant and high concentrations can make breathing difficult. Levels of NO_2 are relatively low in the Bay Area.

NO_2 is formed through a reaction between nitrogen oxide (NO) and atmospheric oxygen. NO is generally emitted from vehicle exhaust, industrial processes, and fossil-fuel power plants. NO and NO_2 are collectively referred to as NO_x and are major contributors to the formation of ozone. NO_2 also contributes to the formation of PM_{10}.

Sulfur Dioxide

SO_2 is a combustion product of sulfur or sulfur-containing fuels such as coal, which are restricted in the Bay Area. SO_2 is also a precursor to the formation of atmospheric sulfate and particulate matter (PM_{10} and $PM_{2.5}$), and contributes to the formation of atmospheric sulfuric acid that could precipitate downwind as acid rain. The maximum SO_2 concentrations recorded in the project area were well below federal and state standards.

Particulate Matter

Particulate matter consists of airborne particulates that are 10 microns or less in diameter (PM_{10}) and 2.5 microns or less in diameter ($PM_{2.5}$). PM_{10} and $PM_{2.5}$ represent fractions of particulate matter that can be inhaled into the air passages and the lungs and can cause adverse health effects.

Particulate matter in the atmosphere results from many kinds of dust- and fume-producing industrial and agricultural operations, fuel combustion, and atmospheric photochemical reactions. Some sources of particulate matter, such as demolition and construction activities, are more local in nature, while others, such as vehicular traffic, have a more regional effect. Very small particles of certain substances (e.g., sulfates and nitrates) can cause lung damage directly, or can contain adsorbed gases (e.g., chlorides or ammonium) that may be injurious to health. Particulates also can damage materials and reduce visibility.

Lead

Lead has a range of adverse neurotoxin health effects. Prior to 1996, lead was released into the atmosphere via leaded gasoline. The phase-out of leaded gasoline in California resulted in decreasing levels of atmospheric lead. As the project would not introduce any new sources of lead emissions, lead emissions are not required by the BAAQMD to be quantified and are not further evaluated in this analysis.

Hydrogen Sulfide

Hydrogen sulfide (H_2S) is found in nature around some hot springs, geothermal sources, and oil fields (sour gas). It is also produced by anaerobic decomposition, and is sometimes called swamp gas. The human nose can detect H_2S at concentrations well below toxic levels. Heavier than air, this gas is considered obnoxious and unpleasant. At higher levels it desensitizes the nose, and can be fatal because it blocks oxygen uptake by the blood. Mainly a health threat to industrial workers, H_2S is usually regulated to eliminate nuisance for nearby residents or property owners.

National and State Ambient Air Quality Standards

Air quality is described by the concentration of various pollutants in the atmosphere. The ambient air quality in a given area depends on the quantities of pollutants emitted within the area, transport of pollutants to and from surrounding areas, local and regional meteorological conditions, and the topography of the air basin. Units of concentration are generally expressed in parts per million (ppm) or micrograms per cubic meter ($\mu g/m^3$).

As required by the Federal Clean Air Act (CAA), National Ambient Air Quality Standards (NAAQS or federal standards) have been established for seven major air pollutants: CO, NO_x, O_3, PM_{10}, $PM_{2.5}$, SO_x, and lead. California Ambient Air Quality Standards (CAAQS or state standards) are generally more stringent than the corresponding federal standards.

Both state and federal standards are summarized in **Table 4.2-2**. The "primary" standards have been established to protect the public health. The "secondary" standards are intended to protect the nation's welfare and account for adverse air pollutant effects on soil, water, visibility, materials, vegetation and other aspects of the general welfare.

Air Monitoring Data

The BAAQMD is primarily responsible for assuring that the national and state standards are attained and maintained in the Bay Area. BAAQMD is also responsible for adopting and enforcing rules and regulations concerning air pollutant sources, issuing permits for stationary sources of air pollutants, inspecting stationary sources of air pollutants, responding to citizen complaints, monitoring ambient air quality and meteorological conditions, awarding grants to reduce motor vehicle emissions, conducting public education campaigns, as well as many other activities. BAAQMD has jurisdiction over much of the nine-county Bay Area counties.

The BAAQMD monitors air quality conditions at more than 30 locations throughout the Bay Area. The closest monitoring station to the project site is in Bethel Island, approximately 7 miles north of the project site.

Table 4.2-2 Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	Federal Standards		California Standards
		Primary[1]	Secondary[2]	
Ozone	1-hour	--	Same as Primary	0.09 ppm
	8-hour	0.075 ppm		0.07 ppm
Carbon Monoxide	1-hour	35.0 ppm	None	20.0 ppm
	8-hour	9.0 ppm		9.0 ppm
Nitrogen Dioxide	Annual	0.053 ppm	Same as Primary	0.03 ppm
	1-hour	0.100 ppm	0.053 ppm	0.18 ppm
Sulfur Dioxide	Annual	0.03 ppm	--	--
	24-hour	0.14 ppm	--	0.04 ppm
	3-hour	--	0.5 ppm	--
	1-hour	--	--	0.25 ppm
PM_{10}	Annual	--	Same as Primary	20 µg/m^3
	24-hour	150 µg/m^3		50 µg/m^3
$PM_{2.5}$	Annual	15 µg/m^3	Same as Primary	12 µg/m^3
	24-hour	35 µg/m^3		--
Lead	30-Day Average	n/a	--	1.5 µg/m^3
	Calendar Quarter	1.5 µg/m^3	Same as Primary	--
	Rolling 3-month average	0.15 µg/m^3		--
Sulfates	24-hour	n/a	n/a	25 µg/m^3
Hydrogen Sulfide	1-hour	n/a	n/a	0.03 ppm
Vinyl Chloride (chloroethene)	24-hour	n/a	n/a	0.01 ppm
Visibility Reducing Particles	8-hour	n/a	n/a	Extinction coefficient of 0.23 per kilometer – visibility of 10 miles or more due to particles when relative humidity is less than 70 percent

Notes:

Notes regarding terms and definitions used in this table are available at the link below and incorporated herein by reference.

[1] Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

[2] Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant

ppm = parts per million

µg/m^3= micrograms per cubic meter

n/a = not applicable

Source: Air Resources Board, 2010. (http://www.arb.ca.gov/research/aaqs/aaqs2.pdf)

Attainment Status

Areas that violate standards are considered to be in "nonattainment." Areas that do not violate standards are considered to be in "attainment." Federal regulations also include a designation known as "unclassified," which identifies areas where data are incomplete and do not support a designation of attainment or non-attainment.

Ozone (O_3): The Bay Area as a whole is in nonattainment for ground level O_3, according to state and federal standards. The Bay Area also is classified as marginally nonattainment according to the federal 1997 8-hour O_3 standard.

U.S. EPA is considering new 8-hour ozone standard that would become effective in 2011. The range of standards under consideration would be a significant change, which would undoubtedly result in a nonattainment designation for the Bay Area and much of California.

Carbon Monoxide (CO): The Bay Area has met the CO standards for over a decade and is classified as being in attainment by the U.S. EPA.

PM_{10} and $PM_{2.5}$: The Bay Area is classified as nonattainment for PM_{10} and $PM_{2.5}$ according to state standards, which are more stringent. The U.S. EPA grades the region unclassified PM_{10} and $PM_{2.5}$; however, the U.S. EPA has recently proposed designating the region as nonattainment for the new 2006 $PM_{2.5}$ standard due to recent monitoring data in Vallejo and San Jose that indicate levels slightly above the standard. The EPA designation will be effective 90 days after publication of the regulation in the Federal Register. President Obama has ordered a freeze on all pending federal rules; therefore, the effective date of the designation is unknown at this time.

The U.S. EPA and the state grade the region "in attainment" or "unclassified" for all other air pollutants.

The BAAQMD has for many years operated a multi-pollutant monitoring site approximately 7 miles north of the project site in Bethel Island. **Table 4.2-3** shows the number of days per year that air pollutant levels exceeded state or nation standards from 2006 to 2008. As discussed above, **Table 4.2-3** shows that all federal ambient air quality standards were met in the project area with the exception of the 8-hour ozone standard. The state ambient standards of ozone and PM_{10} were exceeded in 2006 and 2008, with nine exceedances of the 1-hour ozone standard in 2006 and four exceedances in 2008.

Table 4.2-3 Annual Number of Days Exceeding Ambient Air Quality Standards

Pollutant	Standard	Days Standard Exceeded During:		
		2006	2007	2008
Ozone	1-Hour State	9	0	4
	1-Hour Federal	0	0	0
	8-Hour Federal	13	1	4
Carbon Monoxide	8-Hour Federal	0	0	0
	8-Hour State	0	0	0
	1-Hour State	0	0	0
Nitrogen Dioxide	1-Hour State	0	0	0
Sulfur Dioxide	1-Hour State	0	0	0
	24-Hour State	0	0	0
PM_{10}	24-Hour State	1	0	3
	24-Hour Federal	0	0	0

Source: Air Resources Board, 2010. http://www.arb.ca.gov/adam/php_files/aqdphp/topfour1.php.

Sensitive Receptors

Sensitive receptors are generally defined as land uses with population concentrations that would be particularly susceptible to disturbance from dust, noise, vibration, air pollutant concentrations, or other disruptions associated with project construction and/or operation. Residences, schools, childcare centers, hospitals, residential care facilities, retirement homes, convalescent homes, libraries, parks, and churches are generally considered sensitive receptors.

The closest sensitive land uses to the project site are the residents of Discovery Bay, located across Kellogg Creek, and the residents of the Ravenswood and Lakeshore subdivision, located west.

Odors

Offensive odors can be very unpleasant, leading to considerable distress among the public and often generating citizen complaints to local governments and the BAAQMD. Offensive odors are typically associated with wastewater treatment plants, sanitary landfills, feedlots and dairies, and industrial facilities. The occurrence and severity of odor problems depends on numerous factors, including the nature, frequency and intensity of the source, wind speed and direction, and the sensitivity of the receptor(s). BAAQMD Regulation 7 places general limitations on

odorous substances, and specific emission limitations on certain odorous compounds. The regulation applies when and if the BAAQMD receives validated odor complaints from 10 or more complainants in a 90-day period.

4.2.2 REGULATORY SETTING

United States Environmental Protection Agency

The U.S. EPA is responsible for enforcing the Federal CAA. The U.S. EPA is also responsible for establishing the NAAQS. The U.S. EPA regulates emission sources that are under the exclusive authority of the federal government, such as aircraft, ships, and certain types of locomotives. The agency establishes various emission standards, including those for vehicles sold in states other than California. Automobiles sold in California must meet the stricter emission standards established by ARB.

Policy Consistency

The project would be required to comply with federal regulations and standards set by the U.S. EPA.

California Air Resources Board (ARB)

ARB, part of the California Environmental Protection Agency, is responsible for meeting the state requirements of the Federal CAA, administering the California CAA, and establishing the CAAQS. The California CAA requires all air districts in the state to endeavor to achieve and maintain CAAQS. ARB regulates mobile air pollution sources, such as motor vehicles, and is responsible for setting emission standards for vehicles sold in California for other emission sources, such as consumer products, and for certain off-road equipment. ARB has established passenger vehicle fuel specifications and oversees the functions of local air pollution control districts and air quality management districts, which in turn prepare air quality attainment plans at the regional level. ARB also conducts or supports research into the effects of air pollution on the public and develops innovative approaches to reduce air pollutant emissions.

ARB Regulations of Construction Vehicles

On July 26, 2007, ARB adopted new regulations intended to reduce emissions of PM_{10} and $PM_{2.5}$ and NOx from certain diesel-powered vehicles by requiring businesses to retrofit or "turnover" their fleets over time (13 CCR SEC. 2449). The

regulations apply to any person, business or government agency that owns or operates any diesel-powered off-road vehicle in California with 25 or greater horsepower, including vehicles used in construction (i.e., backhoes, tractors).

The emission requirements are intended to require fleets to apply exhaust retrofits that capture pollutants before they are emitted, and to accelerate turnover of fleets to newer, less-polluting engines. "Turnover" means retrofitting an engine to capture pollutants, replacing a dirty engine with a clean engine, retiring a dirty vehicle, replacing a vehicle with a new or used piece, or re-designating a vehicle as "low-use." "Low-use" vehicles (which operate for less than 100 hours per year) are exempt from emission requirements, but still must be properly labeled and reported to ARB.

The requirements and deadlines for compliance vary depending on fleet size. For small fleets, which include small businesses or municipalities with a combined horsepower of 2,500 or less, implementation does not begin until 2015. Medium fleets, with 2,501 to 5,000 horsepower, have until 2013, while large fleets, with over 5,000 horsepower, must begin complying in 2010. State and federally owned fleets are considered "large fleets" without regard to total horsepower. Affected vehicles include bulldozers, loaders, backhoes and forklifts, as well as many other self-propelled off-road diesel vehicles. The regulations also include standards regarding the use of gasoline-powered vehicles to replace diesel vehicles.

ARB expects the new regulations will result in a 92 percent reduction of diesel PM and a 32 percent reduction of NOx from 2000 emissions by 2020.

Project Consistency

The project would be required to comply with state regulations pertaining to emissions of air pollutant during construction and operation of the project.

Bay Area Air Quality Management District

The BAAQMD is primarily responsible for assuring that the national and state ambient air quality standards are attained and maintained in the Bay Area. BAAQMD is also responsible for adopting and enforcing rules and regulations concerning air pollutant sources, issuing permits for stationary sources of air pollutants, inspecting stationary sources of air pollutants, responding to citizen complaints, monitoring ambient air quality and meteorological conditions, awarding grants to reduce motor vehicle emissions, conducting public education campaigns, as well as many other activities. BAAQMD has jurisdiction over much of the nine-county Bay Area counties, including Contra Costa County, in which the project is located.

Clean Air Plans

To achieve the CAAQS, the BAAQMD develops air quality plans addressing the California CAA and updates them approximately every three years. On September 15, 2010, the BAAQMD adopted the Bay Area 2010 Clean Air Plan (2010 CAP). The 2010 CAP became effective immediately and includes 55 measures for reducing pollution. In general the 2010 CAP furthers the goals of the Bay Area 2005 Ozone Strategy and serves to:

- Update the current Bay Area 2005 Ozone Strategy in accordance with the requirements of the California CAA to implement "all feasible measures" to reduce ozone;
- Provide a control strategy to reduce ozone, particulate matter, TACs, and greenhouse gases in a single, integrated plan;
- Review progress in improving air quality in recent years; and
- Establish emission control measures to be adopted or implemented between the 2010 to 2012 timeframe.

BAAQMD adopts and enforces rules to reduce particulate matter emissions and develops public outreach programs to educate the public to reduce PM_{10} and $PM_{2.5}$ emissions (e.g., Spare the Night Program). BAAQMD Regulation 6, Rule 3 restricts operation of any indoor or outdoor fireplace, fire pit, wood or pellet stove, masonry heater or fireplace insert on specific days during the winter when air quality conditions are forecasted to exceed the NAAQS for $PM_{2.5}$. Rule 3 also limits excess visible emissions from wood burning devices and requires clean burning technology for wood burning devices sold (or resold) or installed in the Bay Area.

BAAQMD CEQA Guidelines

In April 1996, the BAAQMD prepared its BAAQMD CEQA Guidelines as a guidance document to provide government agencies, consultants, and project proponents with uniform procedures for assessing air quality impacts and preparing the air quality sections of environmental documents for projects subject to CEQA.

The BAAQMD CEQA Guidelines were revised by the BAAQMD in December 2009, and adopted on June 2, 2010. This document describes the criteria that the BAAQMD uses when reviewing and commenting on the adequacy of environmental documents, such as this draft EIR. The BAAQMD CEQA Guidelines recommend thresholds for use in determining whether projects would have significant adverse environmental impacts, identify methodologies for predicting project emissions and impacts, and identify measures that can be used to avoid or reduce air quality impacts.

Project Consistency

The project would be required to comply with BAAQMD standards and regulations regarding air pollutant emissions during project construction and operation. This draft EIR section was prepared following BAAQMD CEQA Guidelines. A discussion of project consistency with the BAAQMD Air Quality Plans and regulations is provided in **Subsection 4.2.3**, **Analysis of Potential Impacts** under **Impact AQ-1**.

Contra Costa County

Contra Costa County has no direct responsibility or authority to regulate air quality. However, as the CEQA Lead Agency, the County is responsible for assessing the air quality impacts of proposed developments, and when necessary, adopting measures to mitigate those impacts to less-than-significant levels.

Contra Costa County General Plan

The Conservation Element of the Contra Costa County General Plan contains the following relevant policies related air quality.

Conservation Element

8-99: The free flow of vehicular traffic shall be facilitated on major arterials.

8-100: Vehicular emissions shall be reduced throughout the County.

8-101: A safe, convenient and effective bicycle and trail system shall be created and maintained to encourage increased bicycle use and walking as alternatives to driving.

8-102: A safe and convenient pedestrian system shall be created and maintained in order to encourage walking as an alternative to driving.

8-103: When there is a finding that a proposed project might significantly affect air quality, appropriate mitigation measures shall be imposed.

8-104: Proposed projects shall be reviewed for their potential to generate hazardous air pollutants.

8-105: Land uses which are sensitive to air pollution shall be separated from sources of air pollution.

8-106: Air quality planning efforts shall be coordinated with other local, regional, and State agencies.

8-107: New housing in infill and peripheral areas which are adjacent to existing residential development shall be encouraged.

General Plan Policy Consistency Analysis

As part of the environmental review period, and in compliance with policies 8-103, 8-104, and 8-106, the project would be required to comply with state and federal air quality plans, incorporating mitigation measures where applicable. Although the project would result in an increase in local roadways, the project would not impede or congest the roadways to the extent that it would substantially increase vehicular traffic, in compliance with policies 8-99 and 8-100. Refer to **Section 4.16, Transportation and Circulation,** for a discussion of project generated-traffic.

In response to policies 8-101 and 8-102, roadways and sidewalks would be constructed to provide public and private pedestrian and trail access. In addition, the Emergency Vehicle Access (EVA) would serve as a pedestrian/bike trail, equipped with signage, seating areas, and kiosks.

The project site is surrounded by residential development. In particular, the Ravenswood development to the west, including 181 single-family units and 22 duplexes, was constructed over the past few years. As such, the project is in compliance with policy 8-107 as it is an infill site that is adjacent to existing residential development, and is also in compliance with policy 8-105 as it is not located near a land use identified as a significant source of air pollution.

4.2.3 ANALYSIS OF POTENTIAL IMPACTS

CEQA Significance Criteria

Appendix G of the CEQA Guidelines identifies environmental issues to be considered when determining whether a project could have significant effects on the environment. As identified in Appendix G, the project would have a significant air quality impact if it would:

a) Result in a community risk due to an increased cancer risk of greater than 10 people in a million, an increased non-cancer risk of greater than 1.0 Hazard Index, or increased $PM_{2.5}$ of greater than 0.3 micrograms per cubic meter ($\mu g/m^3$) if the project is within 1,000 feet from a TAC source.

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation.

c) Create objectionable odors affecting a substantial number of people.

d) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is classified as non-attainment under an applicable

federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).

e) Conflict with or obstruct implementation of the applicable air quality plan.

f) Expose sensitive receptors to substantial pollutant concentrations.

The BAAQMD CEQA Guidelines, adopted June 2, 2010, were used to evaluate the environmental air quality impacts of the project as follows (see **Table 4.2-5**):

- The operational thresholds of significance for ROG and NOx are 54 pounds per day and 10 tons per year.
- The PM_{10} operational threshold is 82 pounds per day or 15 tons per year, considering only exhaust emissions.
- The $PM_{2.5}$ operational threshold is 54 pounds per day or 10 tons per year (exhaust emissions).
- The construction thresholds of significance are equivalent to the operational thresholds and are based on averaged daily emissions.

Construction dust impacts would be determined by whether the following Best Management Practices (BMPs) are to be utilized:

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
- All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
- All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph).
- All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.

- All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
- Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations.

Discussion of No Impacts

Analysis of the project plans and site characteristics in the context of the significance criteria stated above shows that no impacts would result for one of the criterion. The following discussion presents the evidence in support of this conclusion.

a) Would the project result in a community risk due to an increased cancer risk of greater than 10 people in a million, an increased non-cancer risk of greater than 1.0 Hazard Index, or increased $PM_{2.5}$ of greater than 0.3 micrograms per cubic meter ($\mu g/m^3$) if the project is within 1,000 feet from a source?

The most recent BAAQMD guidance requires local community risk and hazards associated with TACs and $PM_{2.5}$ emissions to be identified because emissions of these pollutants can have significant health impacts. The discussion below refers to community risk related to project operation. Refer to discussion of significant impacts below for a description of construction TAC impacts.

Operational

The BAAQMD CEQA Air Quality Guidelines describe the potential for significant community risk impacts to occur when sensitive receptors are located near sources of TAC and/or $PM_{2.5}$ emissions. Common sources include high-volume roadways such as freeways, stationary combustions sources permitted by BAAQMD, and gasoline stations. BAAQMD recommends that these types of sources within 1,000 feet of a project with sensitive receptors be assessed to evaluate potential impacts. These types of TAC or $PM_{2.5}$ emission sources have not been identified within 1,000 feet of the site. The closest TAC or $PM_{2.5}$ emission source is State Route 4 (SR4) and is located approximately 1 mile from the project site. Therefore, this issue is not discussed further in this draft EIR.

Discussion of Less-than-Significant Impacts

Analysis of the project details and site characteristics in the context of the significance criteria stated above shows that less-than-significant impacts would result for three of the criteria. The following discussion presents the evidence in support of this conclusion.

b) Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Congested intersections with a large volume of traffic have the greatest potential to cause high localized concentrations of CO, and CO emitted from project traffic is the only localized air pollutant of concern associated with the project. Emissions of other air pollutants, such as PM, are spread out over a large enough area so that they are not a concern locally.

Measured CO levels have been at healthy levels (i.e., below state and federal standards) in the Bay Area since the early 1990s. As a result, the region has been designated as attainment for the standard. Highest measured 8-hour CO levels over the last 3 years are 1 part per million (ppm) in Bethel Island,[1] which are well below ambient air quality standards of 9.0 ppm (see **Table 4.2-3**).

The contribution of project-generated traffic to levels of CO emissions was predicted following the screening criteria recommended by BAAQMD. A review of intersection traffic volumes and level of service was conducted to identify intersections with the potential for the highest CO levels based on project-generated traffic. Two intersections—the Marsh Creek Road/Walnut Boulevard intersection and the Byron Highway/ SR4 intersection—were considered the worst intersections in terms of potentially elevated CO levels from project-generated traffic.

Predicted CO concentrations associated with the project are shown in **Table 4.2-4**. Screening calculations are also provided in **Appendix A** of this draft EIR.

[1] Bethel Island is the air quality monitoring station closest to the project site.

Table 4.2-4 Predicted Roadside Carbon Monoxide Concentrations.

Intersection	Existing (2010)	Existing Plus Project (2010)	Cumulative Plus Project (2030)	BAAQMD Threshold	Exceed Threshold?
			Concentrations (ppm)		
Marsh Creek Rd./ Walnut Avenue	3.0	3.0	2.1	9.0	NO
SR 4/Byron Hwy	3.5	3.6	2.6	9.0	NO

Source: Don Ballanti, 2010.

The highest 8-hour concentration with project implementation (2010) is predicted to be 3.6 ppm over an 8-hour period. In 2030, localized CO levels would be even lower. The results of this screening analysis indicate that project levels would be below the California ambient air quality standard of 9.0 ppm. Therefore, the project would have a less-than-significant impact to air quality standards.

c) Would the project create objectionable odors affecting a substantial number of people?

The project would result in the construction of 292 residential units. Activities associated with a residential housing development do not typically result in the creation of objectionable odors affecting a substantial number of people. Facilities such as wastewater treatment plants, sanitary landfills, petroleum refineries, and chemical manufacturing plants are the typical types of land uses that emit objectionable odors. The offensiveness and degree of odor ultimately depends on the sensitivity of the receptors exposed to the odor. The only potential source of odor associated with the project would be the garbage or waste associated with land uses proposed onsite. Any garbage or waste generated by the residential uses would be collected and disposed of according to policies found in the Contra Costa County Code Chapter 418: Refuse. Proper collection and disposal of generated waste would avoid the creation of objectionable odors affecting residents of the proposed project or surrounding neighborhoods.

Odors could potentially be generated during short-term architectural coating activities. Architectural coatings contain Volatile Organic Compounds (VOCs) that may include odiferous compounds. However, any architectural coatings used for the project must comply with the low-VOC requirements of BAAQMD Regulation 8, Rule 3 (Architectural Coatings), which limits the quantity of VOCs contained in architectural coatings sold, used, or manufactured within the BAAQMD. Compliance with Regulation 8, Rule 3, would minimize any odor impacts from architectural

coating operations. Additionally, any odors associated with architectural coatings would cease following completion of construction, except for minor periodic maintenance painting. Because the impact would be intermittent and temporary, the project's impact with respect to odors would be considered less than significant.

The land uses surrounding the project area are residential and farmlands, and would not constitute a significant odor source. Therefore, residents of the proposed project would not be exposed to objectionable odors from adjacent land uses and the impact with respect to this criterion would be less than significant.

d) Would the project conflict with or obstruct implementation of the applicable air quality plan.

A key element in air quality planning is to make reasonably accurate projections of future human activities, particularly vehicle activities that are related to air pollutant emissions. BAAQMD uses population projections made by the Association of Bay Area Governments (ABAG) and vehicle use trends made by the Metropolitan Transportation Commission to formulate future air pollutant emission inventories.

The 2010 CAP was adopted by BAAQMD in 2010. This 2010 CAP is based on regional population, housing, and employment projections through 2020 compiled by ABAG. As such, a project would conflict with or obstruct implementation of a regional air quality plan if it is inconsistent with the regional growth assumptions for population and/or employment.

Section 4.13 Population and Housing, of this draft EIR, found that for the years 2010 to 2020, the 2009 ABAG projections report an anticipated population increase Countywide of 87,100 and an increase in population in Rural East County of approximately 1,300. The ABAG projections reflect a trend of continued development in Rural East County, and the project is included in the population projections for the next 10 years. Population generated by the project represents approximately 67 percent of the projected growth in Rural East County and 1 percent of the projected growth estimated for the County as a whole for the same period.

The project and surrounding properties were included within the Urban Limit Line (ULL) to indicate an intention for future conversion to urban uses. The timing for development of these areas is speculative and regional population projections have attempted to project a reasonable rate of growth based on market conditions. **Section 4.13 Population and Housing** concludes that direct and indirect population increase associated with the project would be within the ABAG population forecasts.

Additionally, the 2010 CAP includes 17 TCMs. TCMs that would apply to this project would reduce motor vehicle travel by encouraging use of alternative transportation modes, including transit, bicycle, and pedestrian modes of transportation. The project addresses the following TCMs by providing pedestrian and bicycle access through the emergent marsh area:

- TCM D-1: Improve Bicycle Access and Facilities
- TCM D-2: Improve Pedestrian Access and Facilities
- TCM D-3: Support Local Land Use Strategies

For the reasons stated above, the project is consistent with the regional growth predications and would result in a less-than-significant impact with implementation of the 2010 CAP.

Discussion of Significant Impacts

Analysis of the project plans and site characteristics in the context of the significance criteria stated above shows that some degree of impact would result for two of the criteria. The following discussion presents the evidence in support of this conclusion.

e) Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is classified as non-attainment under an applicable federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

Impact AQ-1: Project development that includes wood burning stoves would result in a net increase of Reactive Organic Gases (ROG), a criteria pollutant for which the project region is non-attainment in an applicable federal or state ambient air quality standard. (Significant)

Wood burning stoves and other area sources such as emissions associated with project traffic would result in new air pollutant emissions within the air basin. Regional emissions generated by the project have been calculated using the URBEMIS2007 emission model. The program was used to estimate the vehicular and area source emissions from the development of 292 single-family residences.

As a worst-case scenario for the purposes of this analysis, the project was assumed to be built out by the year 2013.[2] The URBEMIS2007 output is included in **Appendix A**.

The incremental daily emission increase associated with project build out is identified in **Table 4.2-5** for ROG, NOx (two precursors of ozone), PM_{10} and $PM_{2.5}$. Daily emissions are from either summer or winter months, depending on which season results in the greatest emission. Also shown are BAAQMD daily and annual thresholds of significance.

Project emissions shown in **Table 4.2-5** would exceed the BAAQMD daily threshold of significance for ROG. This is considered a significant impact on regional air quality.

Table 4.2-5 Average daily and Annual Operational Emissions

Pollutant							
ROG		NOx		PM_{10}		$PM_{2.5}$	
Daily Emission (Lbs/day)	Annual Emission (Tons)	Daily Emission (Lbs/day)	Annual Emission (Tons)	Daily Emission (Lbs/day)	Annual Emission (Tons)	Daily Emission (Lbs/day)	Annual Emission (Tons)
Project Operational Emissions (Unmitigated)							
78	8	38	5	65	8	31	2
BAAQMD Quantitative Threshold of Significance							
54	10	54	10	82	15	54	10
Impact							
Yes	*No*	*No*	*No*	*No*	*No*	*No*	*No*

Source: Don Ballanti ,2010.

[2] Earthmoving construction activities, which generate the highest amount of air pollutants during construction, are expected to be completed by 2013. Framing of the residential homes is expected to continue between 2013 through 2018; however, for the purposes of this air quality analysis, and as a worst-case scenario, air pollutants associated with the construction of the homes is considered to be complete in 2013.

Mitigation Measure AQ-1: Wood burning fireplaces or stoves shall not be permitted. Only natural gas fireplaces or stoves shall be permitted. Project plans shall not include wood burning fireplaces or stoves and shall clearly indicate the prohibition against such use.

Significance after Mitigation: Less than significant.

As shown in **Table 4.2-6**, **Mitigation Measure AQ-1** would reduce ROG emissions associated with project development to 36 pounds per day, which is below the BAAQMD significance threshold of 54 pounds per day. Therefore, the impact would be reduced to a less-than-significant level.

Table 4.2-6 Daily Project ROG Emissions

Scenario	ROG (lbs/day)
Total Project Emissions	78
Total Project Emissions after Mitigation Measure AQ-1	36
Percent Reduction	53%
BAAGMD Significance Thresholds	54
Impact	No

Source: Don Ballanti, 2010.

f) Would the project expose sensitive receptors to substantial pollutant concentrations?

Impact AQ-2: The project would not expose sensitive receptors to criteria air pollutants during project construction but could expose sensitive receptors to toxic air contaminants. (Significant)

Construction Emissions

Project emissions of air pollutants would be highest during project construction. Project construction would result in temporary emissions of dust and diesel exhaust that could adversely affect nearby sensitive receptors.

During project construction, the operation of equipment and combustion of vehicle fuel would emit regional pollutants such as ROG, NO_x, PM_{10} and $PM_{2.5}$. Clearing, excavation, grading, foundation, and other ground-disturbing construction activity would affect air quality. Sources would include on- and off-site equipment and vehicles, worker trips, and the evaporation of paints and solvents. Construction emissions would be at a maximum during the roughly 1.5-year period for earthwork

and grading of the site, which involves the creation of two bays, two coves, shoring walls, creek bank restoration and the widening of Kellogg Creek. After completion of this period of relatively intense activity, construction of production and custom homes is expected to occur over a 5-year period.

Worst case emissions from construction were estimated using the URBEMIS2007 program and assumed that project grading and site improvements would be completed within a 12-month period (April 1, 2012 to March 31, 2013). Equipment usage was estimated by the project applicant for site preparation works. The URBEMIS2007 program output is included in **Appendix A**.

Table 4.2-7 shows worst-case average daily construction emissions, in pounds per day, and maximum annual emissions in tons per year. As shown in the table, average daily and annual maximum construction emissions do not approach the proposed BAAQMD significance thresholds, so this impact would be less than significant.

Table 4.2-7 Average Daily and Annual Construction Emissions

Pollutant							
ROG		NOx		PM_{10}		$PM_{2.5}$	
Daily Average (Lbs/day)	Annual (Tons)	Daily Average (Lbs/day)	Annual (Tons)	Daily Average (Lbs/day)	Annual (Tons)	Daily Average (Lbs/day)	Annual (Tons)
Project Construction Emissions							
5.9	1.1	50.3	9.2	2.1	0.4	2.0	0.4
BAAQMD Quantitative Threshold of Significance for Construction							
54	10	54	10	82	15	54	10
Impact							
No	No	No	No	No	No	No	No

Source: Don Ballanti, 2010.

Cancer risk from Toxic Air Contaminants

Diesel-powered vehicles and equipment result in temporary emissions of dust and diesel particulates that could adversely affect nearby sensitive receptors.

In 1998 ARB identified PM from diesel fueled engines as a TAC. ARB has completed a risk management process that identified potential cancer risks for a range of activities using diesel-fueled engines. High volume freeways, stationary diesel engines, and facilities attracting heavy and constant diesel vehicle traffic (i.e., distribution centers or truck stops) were identified as having the highest associated risk.

Health risks from TACs are a function of both concentration and duration of exposure. Unlike the above types of sources, construction diesel emissions are temporary and transient in nature, affecting an area for a period of days to years. The BAAQMD has not developed quantitative thresholds or guidelines for identifying impacts related to temporary construction activities where emissions are mobile and transient in nature. However, BAAQMD has recommended the measures listed under **Mitigation Measures AQ-2a** and **AQ-2b** to help reduce the impacts of diesel exhaust emissions associated with grading and new construction:

Mitigation Measure AQ-2a*:* To reduce the air quality impacts of PM associated with grading and new construction, the project applicant shall incorporate the following mitigation measures for all phases of construction:

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
- All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
- All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph).
- All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.

- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.
- All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
- Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations.

Mitigation Measure AQ-2b: To reduce health risks from TACs during project construction, the project applicant shall incorporate the following mitigation measures into the project:

- Minimize the idling time of diesel powered construction equipment to two minutes;
- Develop a plan demonstrating that the off-road equipment (more than 50 horsepower) to be used in the construction of the project (i.e., owned, leased, and subcontractor vehicles) would achieve a project wide fleet-average 20 percent NO_x reduction and 45 percent PM reduction compacted to the most recent ARB fleet average. Acceptable option for reducing emissions include the use of late model engines, low-emission diesel projects, alternative fuels, engine retrofit technology, after-treatment projects, add-on devices such as particulate filters, and /or other options as such become available;
- Require that all construction equipment, diesel trucks, and generators be equipped with best available technology for emission reductions of NO_x and PM; and
- Require all contractors use equipment that meets CARB's more recent certification standard for off-road heavy duty diesel engines.

Significant after Mitigation: Less than significant.

Because of its short duration and the excellent ventilation characteristics of the site during daylight hours when construction activity occurs, as well as implementation of **Mitigation Measures AQ-2a** and **AQ-2b** would reduce health risks from construction emissions of TAC diesel PM to a less-than-significant level.

4.2.4 CUMULATIVE IMPACTS

The cumulative setting for air quality includes any proposed development within the jurisdiction of the BAAQMD. The General Plan EIR noted that build-out would contribute to a significant and unavoidable impact on regional air quality. The County adopted overriding considerations, citing, in part, the need to balance competing goals such as the need to provide opportunities for jobs and housing, with the goal of preserving open space and agriculture. In balancing the competing goals, the County found that the benefits of the General Plan outweigh the unavoidable environmental impacts.

The recently adopted BAAQMD CEQA Guidelines state that any project that would individually have a significant air quality impact would also have a significant cumulative air quality impact. As described above under discussion of significant impacts, the project would result in a project-level significant impact related to daily emissions of ROG and consistency with the local clean air plan.

Cumulative impacts related to ROG emissions are discussed under **Impact CUM AQ-1.**

Impact CUM AQ-1: Development of the project in conjunction with other development in the region would result in a net increase of reactive organic gases (ROG). (Significant)

As discussed previously, the Bay Area is considered a non-attainment area for ground-level O_3 under both the federal CAA and the California CAA. The area is also considered non-attainment for PM_{10} and $PM_{2.5}$. As part of an effort to attain and maintain ambient air quality standards for O_3 and PM_{10}, and $PM_{2.5}$, BAAQMD has established thresholds of significance for O_3 precursor pollutants (ROG and NOx) and PM_{10} and $PM_{2.5}$.

As described in **Impact AQ-1,** the project, without mitigation, would exceed the BAAQMD-recommended operational threshold of significance for ROG (54 pounds per day), resulting in a significant impact. According to the BAAQMD CEQA Guidelines, any project that would individually have a significant air quality impact would also have a significant cumulative air quality impact.

Implementation of **Mitigation Measure AQ-1**, which prohibits the uses of wood burning fireplaces or stoves within the project and permits only natural gas fireplaces or stoves, would reduce ROG emissions associated with project development to 36 pounds per day, which is below the BAAQMD significant threshold (see **Table 4.2-6**). Therefore, the project's contribution to this impact would not be cumulatively considerable.

4.2.5 REFERENCES

Bay Area Air Quality Management District (BAAQMD). Bay Area 2005 Ozone Strategy. Available at: <http://www.baaqmd.gov/~/media/Files/Planning%20and%20 Research/Plans/2005%20Ozone%20Strategy/adoptedfinal_vol1.ashx>.

California Air Resources Board (ARB). 2010. Aerometric Data Analysis and Management (ADAM). http://www.arb.ca.gov/adam/php_files/aqdphp/topfour1.php

California Air Resources Board (ARB). California Ambient Air Quality Standards (CAAQS). Available at: < http://www.arb.ca.gov/research/aaqs/aaqs2.pdf>.

Contra Costa County General Plan, 2005-2020. (2005). Conservation Element.

U.S. EPA. National Ambient Air Quality Standards (NAAQS). Available at: <http://www.epa.gov/air/criteria.html>.

4.3 BIOLOGICAL RESOURCES

Monk & Associates, Inc. has prepared a *Biological Resource Analysis* report that is appended in its entirety as **Appendix B** of this EIR. The purpose of this section is to provide a description of existing biological resources on the project site and to identify potentially significant impacts related to the project. The biological resources reports that have been incorporated into this analysis are available for review at Contra Costa County, Department of Conservation and Development, Community Development Division, 651 Pine Street, Martinez, California.

Potential impacts are addressed below in **Subsection 4.3.4, Analysis of Potential Impacts**. This biological resources analysis includes mitigation measures that, when implemented, would reduce impacts to levels considered less than significant pursuant to the California Environmental Quality Act (CEQA).

In response to the Notice of Preparation (NOP) for this draft EIR, the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS) submitted a comment letter. Responses to the NMFS letter are included as an appendix to Monk & Associates' Biological Resource Analysis report, which is included in its entirety as **Appendix B** of this EIR.

4.3.1 METHODOLOGY

Background Research

Background research for the project was initiated by Monk & Associates in 2006 and updated in 2009 and 2010, and included the following research and consultations:

- California Department of Fish and Game (CDFG) Natural Diversity Database, RareFind 3.1 application (CNDDB 2010) identifies historic and recent records of special-status plant and animal species (that is, threatened, endangered, rare) known to occur in the region of the project site.
- California Native Plant Society's (CNPS) 2010 electronic version of their Inventory of Rare and Endangered Plants of California (herein referred to as the Inventory) (CNPS 2001) lists special-status plant species known from the nine U.S. Geological Survey quadrangles around the project site.
- Sacramento Field Office of the U.S. Fish and Wildlife Service (USFWS) provides a list of special-status species known from the Woodward Island 7.5 minute quadrangle (the project site quadrangle). All special-status species records were

compiled into tables by USFWS. Monk & Associates examined all known record locations for special-status species to determine if these species had the potential to occur on the project site.

Monk & Associates reviewed several documents prepared for this project site, including the following:

- Listed Vernal Pool Branchiopods Wet Season Survey, Pantages Property. Prepared for Pantages at Discovery Bay, LLC. Prepared by Gibson & Skordal, LLC. May 2003.
- EcoAnalysts, Inc. letter-report on analysis of soil samples at Pantages for fairy shrimp cysts. August 4, 2003 letter-report to Mr. Jim Gibson of Gibson & Skordal, LLC.
- Results of 2004 Biological Surveys and Habitat Assessment for the California Tiger Salamander, Pantages at Discovery Bay. Prepared for Pantages at Discovery Bay, LLC by Miriam Green Associates. November 10, 2004.
- Jurisdictional Delineation, Pantages Property. Prepared for Pantages at Discovery Bay, LLC. Prepared by Gibson & Skordal, LLC. December 2002.
- Delineation Map, Pantages Property. Prepared by Gibson & Skordal, LLC. November 2002.
- U.S. Army Corps of Engineers Jurisdictional Determination for the Pantages Bays Property, January 7, 2009.
- Results of Special-Status Species Surveys on the Pantages Property, Contra Costa, California. Prepared for Pantages at Discovery Bay, LLC. Prepared by Miriam Green Associates. November 1, 2003.
- Preliminary Grading & Utility Plan: Pantages at Discovery Bay. Prepared by dk Associates, Inc. May 2005.
- Tree Report, Pantages at Discovery Bay, Contra Costa County, California. Prepared by HortScience, Inc. August 2006.
- Pantages Bays Aquatic Resources Report. Prepared by Stillwater Sciences, dated October 2006.
- Pantages Bays Aquatic Resources Report. Prepared by Stillwater Sciences, dated May 2007.
- Project Development Plans
- Conceptual Wetland and Emergent Marsh Preservation and Mitigation Plan for Pantages Bays. Prepared by Gibson & Skordal, LLC. November 15, 2006.

- Summary of Biological Resource Issues, Impacts, Mitigation and Findings, March 2007, provided to Monk & Associates by CirclePoint.
- Mooring Area Plan for Pantages Bays prepared by dk Consulting August 2010.
- Evaluation of Potential California Red-Legged Frog (*Rana aurora draytonii*) Habitat on the Pantages Bays Property, Contra Costa County, California. April 1, 2010. Prepared by Mr. Hansen in association with Miriam Green Associates.
- Evaluation of Potential California Giant Garter Snake (*Thamnophis gigas*) Habitat on the Pantages Bay Property, Contra Costa County, California. April 1, 2010. Prepared by Mr. Hansen in association with Miriam Green Associates.
- Response to Comments from the National Marine Fisheries Service (NMFS) dated July 19, 2007 regarding the Notice of Preparation for an Environmental Impact Report (NOP/EIR) for the Pantages Bays Residential Development Project. Prepared by Stillwater Sciences. August 5, 2010 (Appendix C).
- Response to NMFS July 19, 2007 comment letter on Pantages Bays Notice of Preparation. Prepared by Pantages at Discovery Bay, LLC. August 5, 2010.

Field Reconnaissance

Monk & Associates biologists, Ms. Sarah Lynch and Ms. Hope Kingma, conducted general surveys of the project site on September 15 and October 26, 2005 to record biological resources and to assess the likelihood of agency regulated areas on the project site. The surveys involved searching all habitats on the site and recording all plant and wildlife species observed.

On September 20, 2006, Monk & Associates biologist Ms. Lynch returned to the site to note current site conditions and record any wildlife and plants observed. Tables of plants and wildlife observed during these surveys were compiled and are included in **Appendix B** of this EIR.

Monk & Associates' site evaluation included an examination of the areas within the project site that would be regulated as waters of the United States and/or State (as determined during a U.S. Army Corps of Engineers (Corps) confirmation visit conducted on June 4, 2003 on the project site with the applicant's wetland consultants, Gibson & Skordal LLC). Monk & Associates also noted potential habitats on or adjacent to the project site that could support special-status species. The results of Monk & Associates' literature research and field reconnaissance are provided in the sections below.

Wetland Delineation Conducted by Gibson & Skordal, LLC

Two separate wetland delineations were conducted by the applicant's wetland consultants, Gibson & Skordal, LLC. The field studies for the first delineation, which covered the main project site, were conducted on August 7, 2002. This wetland delineation was conducted according to the Corps' 1987 *Wetlands Delineation Manual*.

The delineation map (dated November 2002) was prepared by dk Associates, Inc. in coordination with Gibson & Skordal, LLC. On June 4, 2003 the Corps verified that 19.53 acres of waters of the United States are present on approximately 162 acres of the 171-acre project site.

In 2008, the applicant's wetland consultants, Gibson & Skordal, LLC, submitted a supplemental delineation request to expand the project area (approximately 171 acres) to include Pantages Island, Mean High Water around Pantages Island, and along the Pantages Property, and requested a re-verification of the entire project site. On January 7, 2009, the Corps submitted a jurisdictional determination to the project applicant verifying Gibson & Skordal's May 2008 *Jurisdictional Delineation* map that 36.43 acres of waters of the United States, including Indian Slough, Kellogg Creek and adjacent wetlands, are present within the survey area (see Appendix A of the *Biological Resources Analysis* report).

Special-Status Species Surveys and General Wildlife Surveys Conducted by Others

Special-Status Plant Surveys

Miriam Green Associates conducted special-status plant surveys on the project site on April 17, June 28, and September 22, 2003. Surveys were conducted by Ms. Ramona Robison with the assistance of Ms. Tina Costella. According to the Miriam Green Associates' 2003 report, plant surveys were designed to coincide with the blooming periods of the target special-status plants. Surveys were conducted on foot, and focused on the areas that still supported some native vegetation.

Tree Survey

On February 7, 2006, HortScience, Inc. surveyed all trees growing on the project site. The survey consisted of identifying tree species, measuring the trunk diameters at 54 inches above grade (that is, diameter at breast height (DBH)), evaluating the health and structural condition of the trees, and rating the suitability of each tree for preservation. In August 2006 HortScience prepared a *Tree Report* as a result of their February 7, 2006 survey. On August 23, 2007 HortScience prepared an addendum to their 2006 tree report to include Pantages Island since the widening of

Kellogg Creek by Reclamation District 800 (RD 800) would impact trees on this island. This addendum to their tree report tallies all trees on the project site including those on Pantages Island.

Vernal Pool Crustacean Survey

In 2003, one season of wet season surveys and one season of dry season surveys were completed on the project site. Gibson & Skordal, LLC completed the USFWS-authorized wet season surveys (December 27, 2002 through April 15, 2003).

Christopher Rogers of EcoAnalysts, Inc. completed the USFWS-authorized dry season sampling (June 2003). The results are presented under the fairy shrimp species discussion below.

Aquatic Resources Studies

A reconnaissance site visit was conducted on March 8, 2004 by Stillwater Sciences, the applicant's fisheries biologists, to make a preliminary examination of aquatic habitats in and adjacent to the project area. A more detailed habitat characterization was conducted on March 26, 2004. The latter effort was conducted by driving a boat along the banks, noting dominant and subdominant habitats, and delineating the boundary of habitat types on an aerial photo of the project area. Stillwater Sciences surveyed bank habitat along Kellogg Creek, the East Contra Costa County Irrigation District (ECCID) Dredge Cut/Intake Channel, Hofmann Mitigation Spit, the perimeter of the trapezoidal island located at the juncture of the project site, the Indian Slough Islands, and the ECCID Peninsula, the banks of the two islands located north of the Discovery Bay development, and the north and south sides of the ECCID Peninsula. Bank habitat was characterized by the type of vegetation or lack of vegetation covering the banks. These habitat types were then categorized as low, moderate, or high quality based on the extent of cover they provide fish (Stillwater Sciences 2006).

On July 19, 2007, the NMFS prepared comments on the NOP for the Pantages Bays EIR. In response to the NMFS comments, in 2010, Stillwater Sciences surveyed the east and west banks of Kellogg Creek between Newport Pointe and State Route 4 (3,688 ft.) and identified it as low quality habitat that could be restored to high quality habitat as part of the project. It replaced as superior mitigation previously proposed low quality habitat located behind some of the shoring walls in the North Bay, South Bay, and along the North Cove and Kellogg Creek. See revised Table 8 dated June 2010 by Stillwater Sciences and its Footnotes 6 and 7. This table is part of the response letter Stillwater Sciences prepared to address NMFS' comments. Stillwater Sciences' response letter is included as an appendix to Monk & Associates' Biological Resource Analysis report which is included in its entirety as **Appendix B** of this EIR.

California Black Rail Surveys

In 2003, Miriam Green Associates played taped calls of California black rails (*Laterallus jamaicensis coturniculus*) at the emergent marsh during the early mornings of June 9 and June 19, 2003 to elicit a vocal response from individuals that may be present. No California black rails responded to the taped calls and the habitat was determined to be unsuitable for the species. Hence, this species is not discussed further in this report.

Giant Garter Snake (Thamnophis Gigas) Habitat Assessment

Mr. Hansen conducted a giant garter snake habitat assessment on the project site in 2003. Mr. Hansen is a federal 10(a)(1)(A) permitted biologist authorized by the USFWS to work with the giant garter snake. During Mr. Hansen's site assessment, the project site was traversed on foot, by air, by roadway, and the waterways were traversed by boat in reference to U.S. Geological Survey (USGS) 7.5-minute topographic maps. A follow-up site visit was conducted by Mr. Hansen on March 2, 2010. During the 2003 site assessment and the 2010 follow-up site investigation, all aquatic habitats were investigated for the characteristics that constitute the preferred habitat of this species. Areas of interest included all wetland and bank side habitat on the project site, as well as upland within 200 feet of such habitat. Bank side habitat includes segments of Kellogg Creek on the southern and eastern property boundaries and Indian Slough on the north. Habitat evaluation criteria are based on recognized minimum characteristics necessary to support giant garter snakes, scored cumulatively, and represented categorically using geographic information systems (GIS). All results were then confirmed with a visual assessment of habitat. The results are presented below in the species discussion under the heading "Special-Status Species."

California Tiger Salamander Habitat Assessment

Miriam Green Associates completed a habitat assessment for California tiger salamander (*Ambystoma californiense*) on the project site in 2004. Surveys were conducted to evaluate habitat suitability of the project site and surrounding area for California tiger salamander on April 16, April 28, and November 2, 2004. Previous evaluations of the project site were conducted on February 13 and October 1, 2003, the results are presented below in the species discussion under the heading "Special-Status Species."

California Red-Legged Frog Habitat Assessment

In 2006, Miriam Green Associates prepared a habitat assessment for the California red-legged (*Rana draytonii*) frog and submitted it to the USFWS' Sacramento Field Office. On March 2, 2010, Mr. Hansen and Ms. Green conducted a follow-up site assessment. Miriam Green Associates' biologists also completed a number of site

surveys in 2003 and 2004 to assess the presence of special-status reptiles and amphibians on the project site. Diurnal (day time) field surveys for special-status reptiles and amphibians were conducted February 13 and October 1, 2003 and on April 16, 28, and November 2, 2004. In addition to conducting field surveys, Miriam Green Associates reviewed CNDDB records for California red-legged frog within a 6.2 mile (10-kilometer) radius of the project site. The results are presented below in the species discussion under the heading "Special-Status Species."

General Wildlife Surveys on the Project Site

Miriam Green Associates conducted general wildlife surveys on the project site on February 13, April 17, May 9, June 9, June 19, July 25, September 22, and October 1, 2003. Surveyors include Miriam Green, Waldo Holt, and/or Tina Costella. Follow up surveys were made in 2004 on March 8, April 8, 16, 28, May 13, and November 2, 2004. The March 8, 2004 site visit also included a boat survey of the surrounding waterways between Discovery Bay and the project site, including Indian Slough and Kellogg Creek. The March and early April 2004 surveys provided useful information on shorebird use of the project site since the seasonal wetlands and marsh-contained water throughout this period. Site visits later in April 2004 concentrated on the California tiger salamander. The May 13, 2004 survey focused on nesting birds. The purpose of the November 2004 survey was to ground truth habitat maps prepared for the California tiger salamander. All wildlife observed during each site visit was recorded.

4.3.2 EXISTING CONDITIONS

Project Site Topography and Hydrology

The project site is on the USGS Woodward Island 7.5-minute topographic quadrangle, Sections 23 and 26 of Township 1 North, Range 3 East (see Figure 2 in **Appendix B** of this draft EIR).

Indian Slough forms the northern boundary of the project site and Kellogg Creek forms the eastern and southern boundaries. These large waterways are subject to tidal action; however, it is believed that the emergent marsh onsite does not receive any tidal action from Indian Slough. If there were historical culverts connected to Indian Slough they are old and buried and no longer functional. The project applicant's wetland biologists (Gibson & Skordal) and fisheries biologists (Stillwater Sciences) could not locate such culverts onsite during their site reconnaissance.

The project site is relatively flat. Recently imported fill material from an adjacent development project has been stored and distributed throughout the site, primarily in the western corner on the site. Currently these piles of dirt are higher in elevation than the surrounding topography. Much of the site was historically leveled and

drained to accommodate flood irrigation and other farming practices. Several shallow ditches bisect the site, providing further evidence of past land use manipulation. In addition, there are several large topographic low areas, or depressions, present on the project site. These low areas remain saturated or inundated for prolonged periods of time.

Project Site Soils

Soils on the project site as mapped by the Soil Conservation Service (SCS) (USDA 1997) are shown in **Figure 4.1-1** in **Section 4.1, Agricultural Resources**. There are four soil units mapped on the project site including Marcuse clay (Mb), Brentwood clay loam (wet)(Bc), Pescadero clay loam (Pb), and Sacramento clay, alkali (Sb). The soils map also indicates that Water (W) was mapped over the area of emergent marsh on the project site, illustrating the long-term inundation of this portion of the site.

Plant Communities and Associated Wildlife Habitats

A large portion of the project site has been disturbed by road grading, berm construction, disking, and soil dumping. The entire project site north of Point of Timber Road except for the emergent marsh area had been graded, and the entire southern portion of the project site south of Point of Timber Road had been disked.

Most of the plant communities and wildlife habitats that were once present onsite have been substantially altered, and barren soils or areas supporting ruderal (weedy) conditions currently exist on the project site. It was not therefore possible to determine the original ground cover/ vegetation communities and/or site conditions prior to these activities or the wildlife that would use the site prior to these disturbances.

Plant communities and habitat types identified within the project site are:

- non-native annual grassland
- emergent marsh
- iodine bush scrub
- seasonal wetland
- ornamental vegetation/landscaping
- creek bank habitat

Three of the four plant communities— emergent marsh, seasonal wetland, and iodine bush scrub—would be considered significant by the resource agencies and native plant organizations (CDFG, USFWS, Corps, CNPS), and would warrant protection. All plant communities/habitat types/landscape types are discussed below.

Non-Native Annual Grassland

Non-native annual grassland covers the majority of the project site. This plant community is composed of fox tail barley (*Hordeum murinum leporinum*), Italian ryegrass (*Lolium multiflorum*), salt grass (*Distichlis spicata*), wild oats (*Avena fatua*), rip-gut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), Italian thistle (*Carduus pycnocephala*), fescue (*Vulpia myuros*), and filaree (*Erodium* spp.). In the late-summer months the yellow flowers of tar plant (*Centromadia pungens pungens);* formerly known as *Hemizonia pungens pungens*) cover the grasslands.

Non-native annual grassland provides habitat for graniverous (seed-eating) birds such as mourning dove (*Zenaida macroura*), house finch (*Carpodacus mexicanus*), and lesser goldfinch (*Carduelis psaltria*), and insectivorous birds such as western kingbird (*Tyrannus verticalis*), western meadow lark (*Sturnella neglecta*), northern mockingbird (*Mimus polyglottos*), loggerhead shrike (*Lanius ludovicianus*), western scrub-jay (*Aphelocoma californica*) and northern flicker (*Colaptes auratus*), all of which have been observed on the project site. Other animals observed in the grassland included rabbits and rodents such as black-tailed hare (*Lepus californicus*) and California ground squirrel (*Spermophilus beechyi*), and raptors such as American kestrels (*Falco sparverius*) and red-tailed hawks (*Buteo jamaicensis*), which prey on the smaller rodents, birds, and lagomorphs (hares and rabbits). Fox scat, likely red fox (*Vulpes vulpes*), was also observed in the grassland. Another larger canid, the coyote (*Canis latrans*), was also observed on the project site.

Emergent Marsh

A large emergent marsh habitat is located in the northern portion of the project site. This marsh was delineated by Gibson & Skordal as 16.08 acres, and stays inundated through August of most years, with the majority of the marsh drying down completely by October. During the October 26, 2005 site visit conducted by Monk & Associates' the majority of the marsh only supported saturated soils; however, the southeastern portion of the marsh was still inundated with several inches of water.

Dominant plants in this community are tule (*Schoenoplectus acutus* var. *occidentalis*; formerly called *Scirpus acutus* var. *occidentalis*), brass buttons (*Cotula cornopifolia*), spikerush (*Eleocharis macrostachya*); rabbit's foot grass (*Polypogon monspilensis*), yellow water primrose (*Ludwigia peploides*), floating penny wort (*Hydrocotyle* sp.), swamp grass (*Crypsis schoenoides*), and Bermuda grass (*Cynodon*

dactylon). In addition, a small area of freshwater emergent marsh occurs along the southern edge of the project area where the Hofmann Mitigation Spit meets the project site and is dominated by tule with some areas of yellow iris and non-native grasses along the water's edge.

Emergent marshes provide habitat for a variety of animal species. The aquatic habitat provides wading birds and waterfowl with foraging habitat. During site surveys conducted in 2003 and 2004, Miriam Green and Associates identified a large variety of wading birds and waterfowl in the marsh including great blue heron (*Ardea herodias*), great egret (*Ardea alba*), snowy egret (*Egretta thula*), black-crowned night heron (*Nycticorax nycticorax*), wood duck (*Aix sponsa*), mallard (*Anas platyrhynchos*), American coot (*Fulica americana*), black-necked stilt (*Himantopus mexicanus*), and pied-billed grebe (*Podilymbus podiceps*).

Monk & Associates biologists observed tracks of raccoon (*Procyon lotor*), muskrat (*Ondatra zibethicus*), and black-tailed hare (*Lepus californicus*) in the mud surrounding the water. Raccoons forage for crayfish and frog larvae in the marsh, while the muskrats and rabbits will eat the green vegetation that the marsh provides year round. Reptiles expected at this large emergent marsh include western aquatic garter snake (*Thamnophis couchii*), which would feed on amphibian larvae and invertebrates in the water, and the western pond turtle (*Emys marmorata*), a special-status species, which has been observed in the emergent marsh on site. Finally, the non-native amphibian, bullfrog (*Rana catesbeiana*), has been observed on numerous occasions both by Miriam Green Associates and Monk & Associates' biologists.

Iodine Bush Scrub

Two patches of iodine bush scrub occurs onsite. This plant community is an uncommon native plant community in Contra Costa County (CNPS East Bay Chapter 1997). Iodine bush scrub is dominated by iodine bush (*Allenrolfea occidentalis*), a succulent member of the goosefoot family (*Chenopodiaceae*) that tolerates salty soils by taking up salt into plant tissues. This plant community has been identified in two areas of the project site: one large patch was located in the southwest corner of the project site; another patch was located in the northwest portion of the site, just west of the emergent marsh. Both patches have been disturbed by past land use activities including disking and grading. Iodine bush scrub grows in monotypic stands with little other vegetation growing in between the bushes except for non-native grasses.

The two patches of iodine bush scrub on the project site are not large enough to create any significant wildlife habitats onsite or to attract those animal species that are typically found using chaparral and coastal scrub habitats. While the iodine bushes do provide some shrub cover on the project site, the patches are not

extensive enough for chaparral/coastal scrub animal species to establish nesting habitats or territories. The bushes most likely provide temporary cover and a seed source. Animals expected to visit or use the iodine bush scrub habitats either on a seasonal basis or full time basis include western fence lizard (*Sceloporus occidentalis*), northern alligator lizard (*Elgaria coerulea*), western rattlesnake (*Crotalus viridis*), California towhee (*Pipilo crissalis*), song sparrow (*Melospiza melodia*), golden crowned sparrow (*Zonotrichia atricapilla*), and white-crowned sparrow (*Zonotrichia leucophrys*), all of which have been observed onsite. Rabbits such as the black-tailed hare and the Audubon's cottontail (*Sylvilagus audubonii*) may also take refuge in these bushes.

Seasonal Wetland

Seasonal wetland habitats have been identified on the project site. These seasonal wetlands total 5.63 acres (Gibson & Skordal 2008).. All seasonal wetlands onsite typically sustain seasonal ponding and saturated soil conditions that persist during the winter rainy season before drying up in the spring. The shallower wetland areas are dominated by saltgrass (*Distichlis spicata*) and Mediterranean barley (*Hordeum marinum gussoneanum*). The deeper areas support Baltic rush (*Juncus balticus*), bird's foot trefoil (*Lotus corniculatus*), annual rabbit's foot grass (*Polypogon monspilensis*), Bermuda grass, and common frog fruit (*Phyla nodiflora*) (Gibson & Skordal 2002).

In 2003, vernal pool fairy shrimp (*Branchinecta lynchi*), a federal listed threatened species, was identified in one seasonal wetland onsite (Gibson & Skordal 2002). Fairy shrimp were not found in any of the other wetland habitats onsite after conducting one season of wet season sampling and one season of dry season sampling (EcoAnalysts, Inc. 2003).

Ornamental Vegetation/Landscaping

Ornamental trees grow along Point of Timber Road and near the now-abandoned houses, barns, and sheds on the project site, including Modesto ash (*Fraxinus velutina*), California black walnut (*Juglans californica* var. hindsii), Siberian elm (*Ulmus pumila*), and salt cedar (*Tamarix* sp.). The highest density of trees occurs in the northeastern corner of the project site, particularly along the channel banks. Trees growing along channel banks include California black walnut, Manna gum (*Eucalyptus viminalis*), Fremont cottonwood (*Populus fremontii*), Siberian elm, California fan palm (*Washingtonia filifera*), silver maple (*Acer saccharinum*), weeping willow (*Salix babylonica*), pomegranate (*Punica granatum*), plum (*Prunus* sp.), silk oak (*Grevillea robusta*), firethorn (*Pyracantha* sp.), silver dollar gum (*Eucalyptus polyanthemos*), Ponderosa pine (*Pinus ponderosa*), Hollywood juniper (*Juniperus chinensis*), Canary Island pine (Pinus canariensis), Chinese pistache (*Pistacia chinensis*), Incense cedar (*Calocedrus decurrens*), European olive (*Olea*

europaea), black locust (*Robinia pseudoacacia*), and willow (*Salix* sp.) (HortScience 2006). The trees onsite provide nesting habitat for a variety of bird species including passerine birds (perching birds) such as sparrows, mourning doves (*Zenaida macroura*), western scrub jays (*Aphelocoma californica*), and northern mockingbirds (*Mimus polyglottos*). A pair of white-tailed kites (*Elanus leucurus*) was observed perched in the Modesto ash trees surrounding the old home site. While these trees provide nesting opportunities for the kites, no old nests were observed. These trees also provide roosting habitat for great egrets (*Ardea alba*) and great blue herons (*Ardea herodias*), both of which have been observed by Monk & Associates onsite. There are not enough trees grouped together or large enough trees for egrets or herons to colonially nest onsite.

Bank Habitats

Approximately 2 miles of bank habitat associated with Kellogg Creek and the ECCID Dredge Cut/Intake Channel that occurs within the project site was evaluated and characterized by Stillwater Sciences (Stillwater Sciences 2006). Stillwater Sciences also evaluated an additional 4 miles of bank habitat that occurs outside the project site boundaries. Finally, in 2010 Stillwater Sciences surveyed Kellogg Creek between Newport Pointe and State Route 4 (Stillwater Sciences 2010).

Habitat quality is classified as high, moderate or low as discussed below. Aquatic habitat in the project area is primarily of low quality, consisting of eroding cut bank with adjacent open water. In lesser quantities, there is shaded riverine aquatic (SRA) habitat, freshwater emergent marsh, and submerged vegetation associated with the Indian Slough Islands that provides high quality habitat for fish.

High Quality Habitat

Banks with habitat dominated by vegetation that provides in-water shelter or closely overhanging shelter for fish were classified as high quality. These high quality habitat types historically dominated the floodplains and banks of the Sacramento-San Joaquin Delta and native fish have subsequently evolved to use them during all phases of their lifecycle (Moyle 2002). High quality habitat includes bulrush (*Schoenoplectus* spp., formerly *Scirpus* spp.), cattails (*Typha* sp.), large woody debris (LWD), and shaded riverine aquatic (SRA) habitat. Overhanging vegetation, such as trees and shrubs that make up SRA or riparian habitat, provides cover from predators, shading that can aid in camouflaging fish, and provides suitable conditions for food organisms that support larger fish species. In addition, riparian habitat provides stability along channel banks, protecting them from the erosive force of waves and tidal changes (Gordon et al. 1993). Large woody debris from fallen trees and shrubs, bulrush, and cattails also provide important in-water hiding places to escape from predators, as well as spawning substrate, rearing habitat, and feeding areas (Stillwater Sciences 2006).

Moderate Quality Habitat

Banks with vegetation that provides only overhanging cover for fish, mostly during high tide, was classified by Stillwater Sciences as moderate quality. The moderate quality habitat onsite includes non-native Himalayan blackberry (*Rubus discolor*), grasses and forbs, non-native yellow iris (*Iris pseudacorus*), and non-native pampas grass (*Cortaderia jubata)*.

Low Quality Habitat

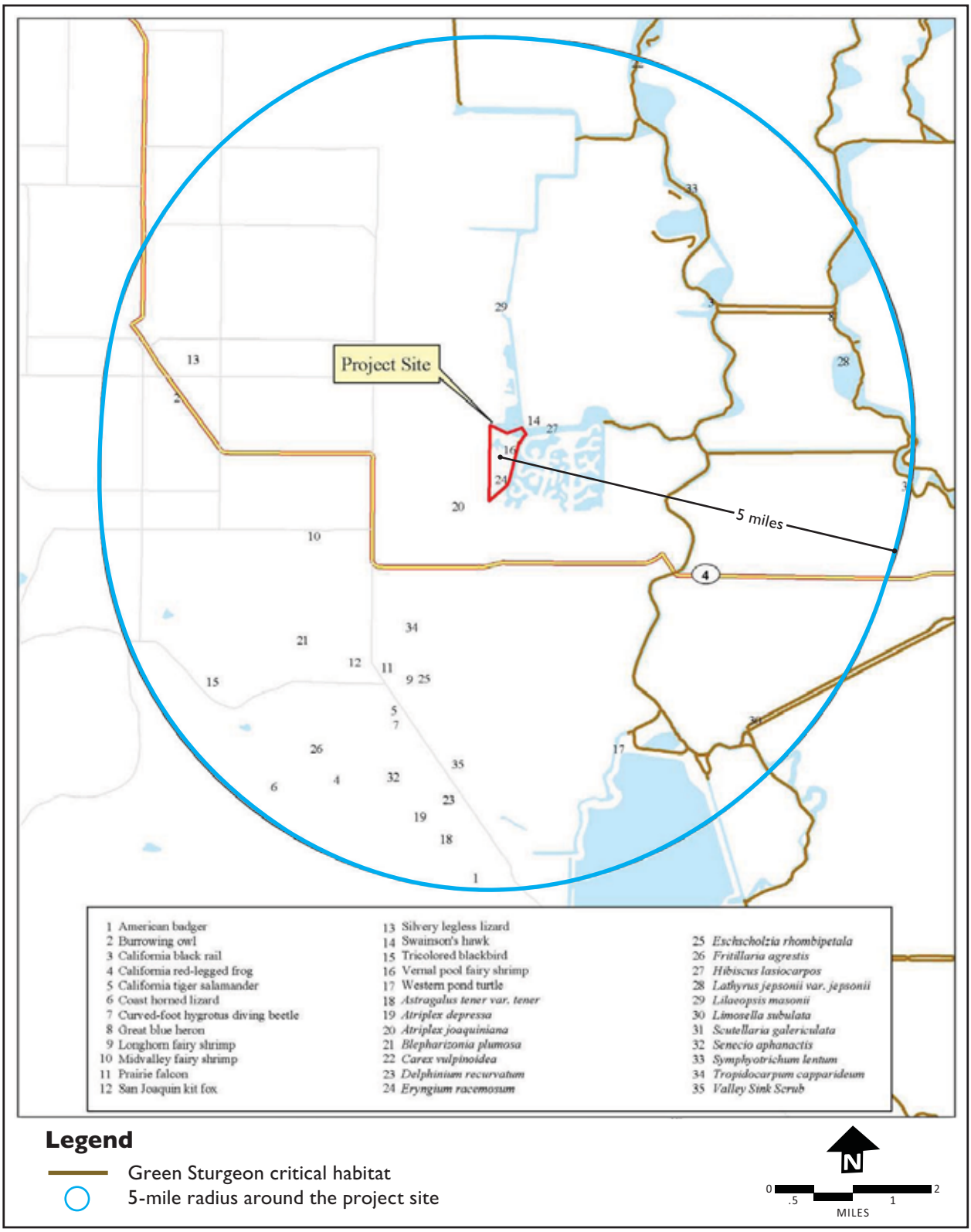
Banks with no vegetation and/or those that were eroding provide no shelter or only small hiding places in between rubble and were therefore categorized as low quality habitat. Low quality habitat includes concrete rubble/drain pipe, eroding cut banks, riprap, and tarps/tires/other debris (Stillwater Sciences 2006).

Lack of aquatic vegetation or cover, and high levels of boating activity may limit fish abundance. Spawning and rearing habitat for these species may be present, but is likely to be of low quality due to the developed and disturbed nature of the project area in general. Adjacent habitat associated with Discovery Bay is comprised of artificial channels used to harbor boats, and is generally considered to be low quality habitat for fish.

Potential Special-Status Plants on the Project Site

Figure 4.3-1 provides a graphical representation of the CNDDB records of special-status species recorded within 5 miles of the project site. Only one special-status plant—Delta button celery (*Eryngium racemosum*)—is known to have occurred in the past on the project site, and none are known to occur there now.

The CNDDB has a 1988 record on the project site for Delta button celery (*Eryngium racemosum*), a state listed endangered species, and this is the only known record for Delta button celery in Contra Costa County. According to the CNDDB record, in 1998 approximately 1,500 individual Delta button celery plants were identified south of Point of Timber Road in an alkali wetland adjacent to Kellogg Creek. These plants were growing in association with iodine bush, alkali heath, hyssop loosestrife (*Lythrum hyssopifolium*), salt grass, alkali weed (*Cressa truxillensis*), and Mediterranean barley. Monk & Associates contacted the observer of this population, Ms. Leslie Zander of Zander Associates, and confirmed that the sighting was made on the project site. Ms. Zander vouchered a specimen of the plant at the University and Jepson Herbarium in Berkeley. The site is therefore presumed to be suitable habitat for this species.



Known CNDDB Records of Special-Status Species Within 5 Miles of the Project Site

Figure 4.3-1

Source: Environmental Vision, 2010.

Monk & Associates conducted a search of the project site in September 2006 for Delta button celery and was unable to find it. However, at the time of Monk & Associates' 2005 and 2006 surveys the project site had been disked, making plant identification difficult.

Potential Special-Status Animals on the Project Site

Figure 4.3-1 provides a graphical representation of the CNDDB records of special-status species recorded within 5 miles of the project site. According to the CNDDB and the USFWS' list, a total of 33 special-status animal species are known to occur in the region of the project site. Of these 33 species, 2 have been identified on the project site: vernal pool fairy shrimp and western pond turtle.

All 33 species are discussed in Table 4 of the *Biological Resources Analysis* report. The vernal pool fairy shrimp and western pond turtle are discussed below along with six threatened, endangered, or sensitive fish species and ten other special-status animal species that have potential to occur onsite. All other special-status fish and animal species considered for this project site were dismissed due to an absence of habitat.

Invertebrates

Vernal Pool Fairy Shrimp

The vernal pool fairy shrimp (*Branchinecta lynchi*) is a federally-listed threatened species. It has no state status. This fairy shrimp is found in vernal pool habitats of the Central Valley, central coast mountains, and south coast mountains (Eng et al. 1990). It is typically found in pools and swales with clear to tea-colored water that have a grassy substrate. In 2003 USFWS-approved protocol surveys for vernal pool crustaceans were conducted on the project site. The vernal pool fairy shrimp was identified in an isolated wetland on the project site, labeled SW2 (Appendix A of the *Biological Resources Analysis* report; **Appendix B** of this EIR). Due to the presence of this listed fairy shrimp on the project site, mitigation will be required. See **Mitigation Measure BIO-3** under **Subsection 4.3.4** for a detailed description of the mitigation required to mitigate project impacts to vernal pool fairy shrimp.

Reptiles

Western Pond Turtle

The western pond turtle (*Emys marmorata*) is a state "species of special concern." This designation does not provide direct legal protection pursuant to CESA.

The western pond turtle is a habitat generalist, inhabiting a wide range of fresh and brackish, permanent and intermittent water bodies from sea level to about 4,500 feet above sea level (USFWS 1992). Typically, this species is found in ponds, marshes, ditches, streams, and rivers that have rocky or muddy bottoms.

The pond turtle also requires upland areas for burrowing habitat where it digs nests and buries its eggs. These nests can extend from 52 feet to 1,219 feet from watercourses (Jennings and Hayes 1992); however most pond turtles nest in uplands within 250 meters of water (Bury, unpublished). Upland nest sites are usually found in areas with sparse vegetation. Sunny, barren, and undisturbed (not disked) land provides optimal habitat, while shady riparian habitat and planted agricultural fields do not provide suitable habitat (op. cit.). Eggs are typically laid from March to August (Zeiner et. al. 1988), with most eggs being laid in May and June. Hatchlings will stay in the nest until the following April (Bury, unpublished). Predators of juvenile pond turtles include the non-native bullfrog (*Rana catesbeiana*) and Centrarchid fish (sunfish). This turtle is most visible between April and July when it can be observed basking in the sun. In areas where the water is very warm during these months, however, it will bask in the warm water and will be more difficult to observe. It eats plants, insects, worms, fish and carrion (Stebbins 2003).

Basking western pond turtles have been identified on the project site on multiple occasions in the emergent marsh habitat and along Kellogg Creek. In addition to the project site providing basking and aquatic habitat for turtles, the surrounding upland habitat may provide suitable nesting habitat. Based on the known presence of the western pond turtle on the project site, potential impacts to this species are regarded as potentially significant. Mitigation could be implemented to reduce potentially significant impacts to this species and its habitat to levels regarded as less than significant. See **Impact BIO-6** and **Mitigation Measure BIO-6** under **Subsection 4.3.4** for a detailed description of project impacts to the western pond turtle, and the mitigation measure required to reduce the impact to a less-than-significant level.

Giant Garter Snake

The giant garter snake (*Thamnophis gigas*) was federally listed as threatened in its entire range on October 20, 1993. Critical habitat has not been designated for this species. It is also a state listed threatened species.

The giant garter snake is one of the largest garter snakes, reaching a total length of at least 63 inches. Dorsal background coloration varies from brownish to olive with a checkered pattern of black spots, separated by a yellow dorsal stripe and two light colored lateral stripes. Giant garter snakes feed primarily on small fishes, tadpoles, and frogs. Habitat requirements consist of the following:

- adequate water during the snake's active season (early-spring through mid-fall) to provide food and cover;
- emergent, herbaceous wetland vegetation, such as cattails and bulrushes, for escape cover and foraging habitat during the active season; grassy banks and openings in waterside vegetation for basking; and
- higher elevation uplands for cover and refuge from flood waters during the snake's dormant season in the winter.

In 2003, Mr. Hansen conducted a Habitat Assessment for the giant garter snake on the project site. Mr. Hansen is a federal 10(a)(1)(A) permittee authorized by the USFWS to survey for and handle the giant garter snake. Mr. Hansen visually surveyed all aquatic habitats on the project site for the characteristics that constitute the preferred habitat of this species. His 2003 habitat assessment concluded that the site contains potential habitat for the giant garter snake, especially along the west bank of Kellogg Creek and adjacent uplands. The assessment also notes that the high level of human disturbance, persistent cattle grazing, historical agricultural practices, and absence of either historical or recent sightings of this species within a 9-mile radius make the occurrence of giant garter snakes here unlikely. An update to this assessment conducted in 2010 reached the same conclusion, quantifying 16.04 acres of perennial emergent marsh and the vegetated edges of Kellogg Creek and ECCID Dredge Cut as suitable habitat.

On February 15, 2006, the USFWS stated that the site is assumed to be habitat for both the red-legged frog and giant garter snake and that formal protocol level surveys would not be required. Based on the USFWS direction, this EIR assumes that the site contains suitable habitat for the giant garter snake. Hence, impacts to this species must be regarded as potentially significant. Mitigation could be implemented to reduce such impacts to levels regarded as less than significant pursuant to CEQA. See **Impact BIO-5** and **Mitigation Measure BIO-5** under **Subsection 4.3.4** for a detailed description of project impacts to the giant garter snake, and the mitigation measures required to reduce the impact to a less-than-significant level.

Fish

Anadromous fish species such as Steelhead (*Oncorhynchus mykiss*) (federally listed at threatened), Central Valley Spring-run Chinook salmon (*Oncorhynchus tshawytscha*) (federally and state listed as threatened), Central Valley fall/late fall run Chinook salmon (*Oncorhynchus tshawytscha*) (California species of special concern), and Sacramento River Winter-run Chinook salmon (*Oncorhynchus tshawytscha*) (federally and state listed endangered species) migrate through the Delta and the Bay as part of their life cycle.

Spawning for these species does not occur in the project vicinity, therefore impacts to eggs or fry are not expected (Stillwater Sciences 2007). Adult migration through the Delta is generally restricted to larger rivers; therefore, adults are not expected to occur in the project area or vicinity where they may be affected; however, a small number of juveniles may occur in the project area, and construction-related turbidity and noise could temporarily affect foraging and predator avoidance behaviors for a small number of juveniles. Thus, mitigation will be required to reduce potentially significant impacts to these species to levels regarded as less than significant. See **Impact BIO-7** and **Mitigation Measure BIO-7** under **Subsection 4.3.4** for a detailed description of project impacts and mitigation measures.

For anadromous fish species such as Pacific lamprey (*Lampetra tridentate*), and River lamprey (*Lampetra ayresi*), it is also unlikely that adult migration or spawning of this species would occur within the project area, since the area is not along a primary migration corridor. However, juveniles may be present during emigration because they rear in the soft, muddy or sandy bottoms of the Delta channels, and larvae may be widely dispersed by tidal action and other hydrodynamic forces in the Delta. Construction-related turbidity may impact foraging and predator avoidance behaviors for a small number of lamprey juveniles. Such impacts would be regarded as potentially significant. Accordingly, mitigation will be required to reduce impacts to levels regarded as less than significant. See **Mitigation Measure BIO-7** under **Subsection 4.3.4** for a detailed description of the mitigation measures.

For Longfin smelt (*Spirinchus thaleichthys*), it is also unlikely that adult migration or spawning of this species would occur within the project area, since the area is not along a primary migration corridor. However, larvae may be present during emigration because they may be widely dispersed by tidal action and other hydrodynamic forces in the Delta. Short-term, construction-related impacts may occur from in-water work that increases turbidity and suspends pollutants in the water column which could smother longfin smelt eggs and disrupt larval development and dispersal (Stillwater Sciences 2007). Such impacts would be regarded as potentially significant. Mitigation will be required to reduce such impacts to levels regarded as less than significant pursuant to CEQA. See **Impact BIO-7** and **Mitigation Measure BIO-7** under **Subsection 4.3.4** for a detailed description of project impacts and mitigation measures.

Delta Smelt

Delta smelt (*Hypomesus transpacificus*) is listed as threatened under both the state and federal Endangered Species Acts. Delta smelt are endemic to the Sacramento-San Joaquin estuary and are found seasonally in Suisun Bay and Suisun Marsh. The project site is within the region designated as critical habitat for this species. Critical habitat for Delta smelt consists of all water and all submerged lands below ordinary high water and the entire water column bounded by and contained in Suisun Bay

(including the contiguous Grizzly and Honker Bays); the length of Goodyear, Suisun, Cutoff, First Mallard (Spring Branch), and Montezuma Sloughs; and the existing contiguous waters in the Delta (59 FR 65256). Critical habitat for delta smelt is designated in: Alameda, Contra Costa, Sacramento, San Joaquin, Solano, and Yolo.

The project area contains suitable spawning and rearing habitat for Delta smelt. Short-term, construction-related impacts may occur from in-water work that increases turbidity and suspends pollutants in the water column which could smother eggs and disrupt larval development and dispersal. Turbidity may also disrupt juvenile and adult feeding, predator avoidance behavior, and migration patterns.

Green Sturgeon

The southern population of green sturgeon (*Acipenser medirostris*) was listed as threatened under the federal Endangered Species Act on April 7, 2006 and is designated as a California "species of special concern."

Critical Habitat for this species was designated and became effective on November 9, 2009. The project site lies within designated Critical Habitat (73 FR No. 174, 52110). The Sacramento River supports the southernmost spawning population of green sturgeon (Moyle 2002). The green sturgeon is anadromous, but it is the most marine-oriented of the sturgeon species and has been found in near shore marine waters from Mexico to the Bering Sea (70 FR 17386).

Spawning does not occur in the project vicinity, therefore impacts to eggs or fry are not expected (Stillwater Sciences 2007). Adult migration through the Delta is generally restricted to larger rivers; therefore, adults are not expected to occur in the project area or vicinity where they may be affected; however, a small number of green sturgeon juveniles may occur in the project area. Construction-related turbidity may impact foraging and predator avoidance behaviors for a small number of green sturgeon juveniles, and such impacts would be regarded as potentially significant pursuant to CEQA. Mitigation will be required to reduce these impacts to levels regarded as less than significant pursuant to CEQA. See **Impact BIO-7** and **Mitigation Measure BIO-7** under **Subsection 4.3.4** for a detailed description of project impacts and mitigation measures.

Sacramento Splittail

Sacramento splittail (*Pogonichthys macrolepidotus*) is designated as a California "species of special concern." This title affords no legally mandated protection for this species; however, pursuant to CEQA (14 CCR §15380), any project-related impacts to this species would be regarded as significant. This native freshwater fish is found as far south as the lower reaches of all tributaries of the Sacramento-San Joaquin Delta (Wang 1986). Spawning occurs from late January to July in tidal freshwater and flooded rivers where submerged aquatic vegetation is present. Eggs

are adhesive and attach to aquatic vegetation. Larvae are able to tolerate brackish water and remain near shore before moving to deeper water as they grow.

Potentially suitable shallow water habitat for spawning splittail and juveniles occurs in the project area in the western portion of the ECCID Dredge Cut/Intake Channel. However, the habitat is of low quality, with little submerged aquatic vegetation. It is unlikely that spawning would occur in the project area (Stillwater Sciences 2007).. Construction-related turbidity may impact foraging and predator avoidance behaviors for a small number of Sacramento splittail juveniles. Such impacts would be regarded as potentially significant. Accordingly, mitigation will be required to reduce impacts to levels regarded as less than significant. See **Impact BIO-7** and **Mitigation Measure BIO-7** under **Subsection 4.3.4** for a detailed description of project impacts and mitigation measures.

Amphibians

California Tiger Salamander

The project site falls into the range of the Central California Distinct Population Segment (DPS) of the California tiger salamander (CTS) (*Ambystoma californiense*). The Central California DPS of the CTS was federally listed as threatened on August 4, 2004. The USFWS designated critical habitat for the Central California DPS in the summer of 2004. The project site is located *outside* of the closest mapped critical habitat unit for the Central California DPS. Critical Habitat Units 14-17 (Contra Costa County) were excluded because they are part of the East Contra Costa Habitat Conservation Plan. On March 4, 2010, the CTS was also state listed as a threatened species under the California Endangered Species Act (CESA). Finally, under Title 14, CCR 41 (1996), CTS is also a protected amphibian that may only be “taken or possessed” under a special permit issued by the CDFG pursuant to sections 650 and 670.7 of these regulations, or Section 2081 of the Fish and Game Code.

CTS occur in grasslands and open oak woodlands that provide suitable aestivation (over summering) and/or breeding habitats. They typically only emerge from their subterranean refugia (typically, in Contra Costa County, California ground squirrel burrows) for a few nights each year during the rainy season to migrate to breeding ponds. Stock ponds, seasonal wetlands, and deep vernal pools typically provide most of the breeding habitat used by CTS. Occasionally CTS are found breeding in slow moving streams or ditches. Aquatic habitats that support predators of CTS such as fish, bullfrogs, red swamp crayfish, or signal crayfish, almost never constitute suitable breeding habitat. In most of the northern range of the CTS, seasonal wetlands that are used for breeding typically must hold water into the month of May to allow enough time for larvae to fully metamorphose.

Miriam Green Associates evaluated the project site for CTS in April and November 2004. Miriam Green Associates concluded that the project site does not provide

habitat for this listed species based on an absence of CTS records within 3.1 miles of the project site, the presence of CTS predators in the emergent marsh onsite, the site's isolation from known CTS populations and the high level of local urbanization and landscape disturbance. Thus, development of the project site should not impact CTS.

California Red-Legged Frog

The California red-legged frog (CRLF) (*Rana draytonii*) was federally listed as threatened on May 23, 1996 and as such is protected pursuant to the Federal Endangered Species Act. This frog is also a California "species of special concern." On March 16, 2010, the USFWS issued the final rule on CRLF critical habitat (USFWS 2010). The project site is located outside designated critical habitat. The CRLF is typically found in slow-flowing portions of perennial streams, and in ephemeral streams, and hillside seeps that maintain pool environments or saturated soils throughout the summer months. Riparian vegetation such as willows (*Salix* sp.) and emergent vegetation such as cattails are preferred red-legged frog habitats, though not necessary for this species to be present, as this frog is also found in open water ponds. Adult California red-legged frogs are primarily nocturnal (USFWS 2010). Populations of California red-legged frog will be reduced in size or eliminated from ponds supporting non-native species such as bullfrogs (*Rana catesbeiana*), Centrarchid fish species (such as sunfish, blue gill, or large mouth bass), and signal and red swamp crayfish (*Pacifastacus leniusculus* and *Procambarus clarkii*, respectively), all known California red-legged frog predators. However, M&A biologists have observed California red-legged frogs of all age classes in ponds supporting bass and in streams supporting sunfish.

According to the CNDDB, the closest known record for CRLF to the project site is located 4.6 miles to the southwest (Occurrence Number 541).

The applicant's biological consultant, Eric Hansen, in association with Miriam Green Associates, completed an assessment of the project site as to its suitability for the CRLF. The assessment, entitled *Evaluation of Potential California Red-Legged Frog (Rana aurora draytonii) Habitat on the Pantages Bays Property, Contra Costa County, California* (April 1, 2010), concluded that the project site contains habitats suitable for California red-legged frogs in the form of a 14.24-acre perennial emergent marsh. However, the high level of human disturbance, persistent cattle grazing, historical agricultural practices, presence of bullfrogs, lack of larvae and adults during both dip-netting and visual amphibian survey in 2003, isolation by surrounding residential development, broad tidal rivers and channels, intensive row-crop agriculture, and lack of either historical or recent sightings of this species within a 5-kilometer radius combine to make the occurrence of red-legged frogs here unlikely, either now or in the future due to the site's distinct isolation from suitable or occupied habitats." The USFWS, in a communication dated February 15,

2006, stated that the site is considered suitable habitat for red-legged frog and giant garter snake and that protocol-level surveys would not be authorized. Further, this agency would be requiring compensation for impacts to these species. The USFWS also stated that compensation could probably be handled by contributing to the ECCHCP.

Thus, based on this email communication from USFWS, it has been determined that impacts to the CRLF from future site development are potentially significant. Mitigation for the project's potential impact to CRLF will be required to reduce such impacts to a level regarded as less than significant pursuant to CEQA. See **Impact BIO-4** and **Mitigation Measure BIO-4** under **Subsection 4.3.4** for a detailed description of project impacts and mitigation measures to the CRFL.

Birds

Swainson's Hawk

The Swainson's hawk (*Buteo swainsonii*) is a state listed threatened species pursuant to the California Endangered Species Act, Title 14, California Code of Regulations. While it has no special federal status, it is protected from direct take under the Federal Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-711). Swainson's hawks, their nests, eggs, and young are also protected under California Fish and Game Code (§3503, §3503.5, §3513, and §3800). Swainson's hawks are known to nest within one-tenth (0.1-mile) of a mile (northeast) of the project site along Indian Slough (CNDDB Occurrence Number 1211). While Swainson's hawks have not been observed nesting on the project site by Miriam Green Associates or Monk & Associates, the eucalyptus trees and pine trees along the project site's northern boundary provide suitable nesting habitat for this raptor. Monk & Associates observed one Swainson's hawk exhibiting defensive behavior at our presence during our September 20, 2006 survey. This hawk flew out of an ash tree onsite towards Monk & Associates, circled overhead screaming for a minute before flying off to the east (towards Kellogg Creek). This behavior indicates that this hawk's nesting territory likely encompasses the project site.

CDFG has prepared a *Staff Report Regarding Mitigation for Impacts to Swainson's Hawks in the Central Valley of California* (CDFG 1994) (hereinafter the Mitigation Guidelines) that prescribe avoidance and mitigation guidelines for impacts to Swainson's hawk nesting and foraging habitats. This document emphatically presents a case that impacts within 10 miles of any active nesting territory that are not mitigated, would be contrary to protections afforded Swainson's hawks through CEQA (14 CCR §15380). The Mitigation Guidelines further state that acceptable mitigation to offset impacts to Swainson's hawk foraging habitat can be met by Fee Title acquisition of Swainson's hawk habitat, or by acquisition of conservation easements over lands that can be managed for this hawk species (hereinafter

Habitat Management Lands). Any land acquired through Fee Title would have to be donated to a suitable conservation organization for management. In addition to providing Habitat Management Lands, applicants would be assessed a management fee for the long-term management of the Habitat Management Lands by a suitable conservation organization.

Any disturbance within 0.5-mile of a Swainson's hawk nest that is not characteristic of the normal activities around the nest site, would likely be regarded by CDFG as a violation of CESA (unless the activities were well tolerated by the Swainson's hawks as determined by a qualified raptor biologist). Typically, CDFG requires that any impact to a Swainson's hawk nest be permitted through a Fish and Game Section 2081 management authorization. The management authorization would include provisions to off-set the loss of any nesting tree. If an active nest occurs on the project site, "to avoid potential violation of Fish and Game Code 2080 (i.e., killing of listed species), project-related disturbance at active Swainson's hawk nesting sites should be reduced or eliminated during critical phases of the nesting cycle (March 1-September 15 annually)" (CDFG 1994). Since there are no known Swainson's hawk nests on the Project site, a 2081 management agreement with CDFG would not be required for the project. However, because there are nest sites within 5 miles of the project site, CDFG would regard the proposed project as having impacts to Swainson's hawk foraging habitat. CDFG requires that applicants/project proponents mitigate impacts to Swainson's hawk foraging habitat within 10 miles of active nest sites. See **Impact BIO-9** and **Mitigation Measure BIO-9** under **Subsection 4.3.4** for a detailed description of project impacts and mitigation measures for Swainson's hawk.

Pursuant to CEQA, any impacts to Swainson's hawk nesting and/or foraging habitat would normally be considered a significant impact. However, impacts to foraging habitat may be mitigatable to a level considered less than significant. Also, since the eucalyptus and pine trees onsite may provide future nesting habitat for the Swainson's hawk, nesting season surveys should be conducted on the project site prior to any earth-moving or tree removal activity.

White-Tailed Kite

The white-tailed kite (*Elanus caeruleus*) is fully protected under the California Fish and Game Code. Fully protected birds may not be "taken" or possessed (i.e., kept in captivity) at any time (§3511). It is also protected under the Federal Migratory Bird Treaty Act (50 CFR 10.13). The white-tailed kite is typically found foraging in grassland, marsh, or cultivated fields where there are dense-topped trees or shrubs for nesting and perching. They nest in a wide variety of trees of moderate height and sometimes in tall bushes, such as coyote bush (*Baccharis pilularis*). Native trees used are live and deciduous oaks (*Quercus spp*.), willows (*Salix* spp.), cottonwoods (*Populus* spp.), sycamores (*Platanus* spp.), maples (Acer spp.), toyon (*Heteromeles*

arbutifolia), and Monterey cypress (*Cupressus macrocarpa*). Although the surrounding terrain may be semiarid, kites often reside near water sources, where prey is more abundant. The particular characteristics of the nesting site do not appear to be as important as its proximity to a suitable food source. Kites primarily hunt small mammals, with California meadow voles (*Microtus californicus*) accounting from between 50 to100 percent of their diet.

Monk & Associates observed a pair of white-tailed kites perched in an ash tree on the project site in September 2006. Monk & Associates also observed white-tailed kites foraging over the project site in September 2005. Miriam Green Associates also observed white-tailed kites foraging over the project site during the course of their 2003 surveys. Some of the landscape trees on the project site provide suitable nesting habitat for white-tailed kites. As such, the proposed project could result in potentially significant impacts to nesting white-tailed kites. Mitigation could be implemented to reduce such impacts to levels regarded as less than significant. See **Impact BIO-8** and **Mitigation Measure BIO-8** under **Subsection 4.3.4** for a detailed description of project impacts and mitigation measures.

Northern Harrier

The northern harrier (*Circus cyaneus*) is a state species of special concern. This raptor is also protected under California Fish and Game Code §3503.5 that protects nesting raptors and their eggs/young. The northern harrier is also protected from direct take under the Migratory Bird Treaty Act (50 CFR 10.13). Northern harriers build grass-lined nests on the ground within dense, low-lying vegetation in a variety of habitats, though they are typically found nesting in grassland or marsh habitats. They usually nest on level to near level ground. This species is particularly vulnerable to ground predators such as coyotes (*Canis latrans*), red fox (*Vulpes vulpes*), and various snake species. Ground nesting birds in general are also subject to disturbance by agricultural practices.

Northern harriers likely forage over the project site and may nest in or around the open grasslands that provide suitable nesting habitat for this species. Hence, development of the proposed project could result in potentially significant impacts to nesting northern harriers. Mitigation could be implemented to reduce such impacts to levels regarded as less than significant. See **Impact BIO-8** and **Mitigation Measure BIO-8** under **Subsection 4.3.4** for a detailed description of project impacts and mitigation measures.

Western Burrowing Owl

The western burrowing owl (*Athene cunicularia hypugaea*) is a California “species of special concern.” Its nest, eggs, and young are also protected under California Fish and Game Code (§3503, §3503.5, and §3800). The burrowing owl is also protected from direct take under the Migratory Bird Treaty Act (50 CFR 10.13).

Burrowing owl habitat is usually found in annual and perennial grasslands, characterized by low-growing vegetation. Often, the burrowing owl utilizes rodent burrows, typically ground squirrel burrows, for nesting and cover. They may also on occasion dig their own burrows, or use man-made objects such as concrete culverts or rip-rap piles for cover. They exhibit high site fidelity, reusing burrows year after year. Occupancy of suitable burrowing owl habitat can be verified at a site by observation of these owls during the spring and summer months or, alternatively, its molted feathers, cast pellets, prey remains, eggshell fragments, or excrement (white wash) at or near a burrow. Burrowing owls typically are not observed in grasslands with tall vegetation or wooded areas because the vegetation obscures their ability to detect avian and terrestrial predators. Since burrowing owls spend the majority of their time sitting at the entrances of their burrows, grazed grasslands seem to be their preferred habitat because it allows them to view the world at 360 degrees without obstructions.

The burrowing owl has been recorded within one mile of the project site at the Discovery Bay West (Villages III, IV, and V) project site. Burrowing owls were not observed on the project site during Miriam Green Associates' site surveys or during Monk & Associates' three project site surveys; however, no protocol-level surveys have been conducted to confirm presence/absence. The site does contain enough burrows such that the owl could be found on the project site, and accordingly, CDFG would regard the project site as suitable habitat for this owl species. Until formal surveys are conducted that demonstrate the absence of this owl on the Project site, impacts must be regarded as potentially significant. Mitigation could be implemented to reduce such impacts to levels regarded as less than significant. See **Impact BIO-10** and **Mitigation Measure BIO-10** under **Subsection 4.3.4** for a detailed description of project impacts and mitigation measures.

Red Shouldered Hawk

Red shouldered hawk (*Buteo lineatus*) is protected under the Federal Migratory Bird Treaty Act (50 CFR 10.13) and under California Fish and Game Code Sections 3503, 3503.5, 3800, and 3513 which protect nesting raptors and their eggs/young. This medium-sized raptor prefers the largest trees in a particular area for nest construction. Blue gum eucalyptus (*Eucalyptus globulus*) trees have become favorite nesting trees for this species in California. A stick nest is constructed and usually two to four eggs are laid in the spring. Incubation lasts about 27 days. Usually two or three nests are built over a several year period by a nesting pair and then are reused year after year. Prey consists of reptiles and small rodents.

Monk & Associates observed red shouldered hawks foraging over the project site. The project site provides suitable habitat for red shouldered hawks to nest. Hence, until nesting surveys are conducted that confirms or negates this species' presence, impacts to the red shouldered hawk from the proposed project are considered potentially significant. Mitigation could be implemented to reduce such impacts to

levels regarded as less than significant. See **Impact BIO-8** and **Mitigation Measure BIO-8** under **Subsection 4.3.4** for a detailed description of project impacts and mitigation measures.

Red-Tailed Hawk

The red-tailed hawk (*Buteo jamaicensis*) is protected under the Migratory Bird Treaty Act (50 CFR 10.13) and under California Fish and Game Code §3503.5, 3800, and 3513 which protect nesting raptors and their eggs/young. This raptor species has an extremely wide tolerance for habitat variation, which can be attributed to its very broad spectrum of prey.

Monk & Associates and Miriam Green Associates have observed red-tailed hawks nesting in a variety of tree species including eucalyptus, coast live oak, and valley oak trees.

The project site's eucalyptus trees provide suitable nesting habitat for red-tailed hawks, and the grasslands provide suitable foraging habitat. Preconstruction surveys should be conducted prior to any proposed earth-moving activity on the project site to ensure that direct take of this species would not occur. Until such surveys are conducted proving absence of nesting red-tailed hawks, impacts are regarded as potentially significant. Mitigation could be implemented to reduce such impact to levels regarded as less than significant. See **Impact BIO-8** and **Mitigation Measure BIO-8** under **Subsection 4.3.4** for a detailed description of project impacts and mitigation measures.

Loggerhead Shrike

The loggerhead shrike (*Lanius ludovicianus*) is a California "species of special concern." It is also protected under the Federal Migratory Bird Treaty Act and California Fish and Game Code (§3503 and 3800) that protects birds, their nests, eggs, and young. This small, predaceous bird of open and often arid habitats prefers areas with scattered shrubs, trees, posts, fences, utility lines, and other acceptable perching locations. This shrike preys mostly upon large insects, but also takes small birds, mammals, amphibians, reptiles, fish, carrion, and various invertebrates.

Loggerhead shrikes have been observed hunting over the project site on several occasions by both Miriam Green Associates and Monk & Associates. The open grassland community on the project site provides suitable hunting ground for loggerhead shrikes, and the landscape trees provide suitable nesting habitat. A survey should be conducted during the nesting season (between April and July) to determine the shrike's presence or absence on the project site. Until such a survey is conducted demonstrating the absence of nesting shrikes, impacts are regarded as potentially significant. Mitigation would reduce such impacts to levels regarded as less than significant. See **Impact BIO-8** and **Mitigation Measure BIO-8** under **Subsection 4.3.4** for a detailed description of project impacts and mitigation measures.

Tricolored Blackbird

Tricolored blackbird (*Agelaius tricolor*) is a state "species of special concern." A gregarious species, the tricolored blackbird is typically found near freshwater, particularly near marsh habitat. Loss of wetland habitats is regarded as the principal factor responsible for this species population decline (Beedy 1992).. Nesting colonies are typically found in stands of cattail (*Typha* spp.) and bulrush (*Scirpus* spp.), although they are also known to utilize blackberry patches (*Rubus* sp.) and thistle clumps (*Cirsium* spp. and *Cynara* spp.) adjacent to water. Flooded lands, margins of ponds, and grassy fields in summer and winter provide typical foraging habitat for this species.

While no tricolored blackbirds were observed on the project site during Miriam Green Associates' extensive surveys, the emergent marsh provides suitable habitat for this special-status bird species. Hence, prior to grading the site or conducting any disturbance within 250 feet of this marsh, focused surveys for nesting tricolored blackbirds should be conducted. Until such surveys are conducted during the nesting season that demonstrate an absence of nesting, impacts to this species are regarded as potentially significant. Mitigation could be implemented to reduce such impacts to levels regarded as less than significant. See **Impact BIO-8** and **Mitigation Measure BIO-8** under **Subsection 4.3.4** for a detailed description of project impacts and mitigation measures.

Wildlife Corridors

Wildlife corridors are linear and/or regional habitats that provide connectivity to other natural vegetation communities within a landscape fractured by urbanization and other development. Wildlife corridors have several functions: 1) they provide avenues along which wide-ranging animals can travel, migrate, and breed, allowing genetic interchange to occur; 2) populations can move in response to environmental changes and natural disasters; and 3) individuals can recolonize habitats from which populations have been locally extirpated. All three of these functions can be met if both regional and local wildlife corridors are accessible to wildlife. Regional wildlife

corridors provide foraging, breeding, and retreat areas for migrating, dispersing, immigrating, and emigrating wildlife populations. Local wildlife corridors also provide access routes to food, cover, and water resources within restricted habitats.

A wildlife corridor would connect two regionally important or significant areas. No such corridors exist on the project site. The project site is isolated from regional wildlife corridor functions, other than as a migratory bird resting/feeding temporary use site. It does not provide any known migratory species habitat to special-status species. Regarding the use of the site as a corridor for mammals, because there is a creek and/or irrigation channel on two sides of the project site, housing and agricultural lands on remaining sides of the project site, no significant or major wildlife corridors are known to occur on the project site. No mammalian corridors were identified during surveys of the project site.

Finally, there are no known wildlife nursery sites on the project site or other habitats that provide unique or special use opportunities for wildlife. Similarly, there are no compelling reasons for any group of animals to translocate to the site either seasonally or indiscriminately. While the project site does provide breeding/nesting habitats for common birds, and otherwise protected species such as raptors, it does not provide unique features that are critical to the survival of such species. Impacts to such species are also discussed elsewhere in this impacts analysis. There are no known significant local or regional wildlife corridors and/or wildlife nursery sites of consequence on the project site. Accordingly, there would be no impacts to these resources.

4.3.3 REGULATORY SETTING

Federal Endangered Species Act

The primary focus of the FESA of 1973 is that all federal agencies must seek to conserve threatened and endangered species. FESA contains four main elements, they are as follows:

Section 4: Species listing, Critical Habitat Designation, and Recovery Planning: outlines the procedure for listing endangered plants and wildlife.

Section 7: Federal Consultation Requirement: imposes limits on the actions of federal agencies that might impact listed species.

Section 9: Prohibition on Take: prohibits the "taking" of a listed species by anyone, including private individuals, and State and local agencies.

Section 10: Exceptions to the Take Prohibition: non-federal agencies can obtain an incidental take permit through approval of a Habitat Conservation Plan.

In the case of salt water fish and some marine organisms, the requirements of FESA are enforced by NOAA Fisheries Service (formerly known as National Marine Fisheries Service or NMFS). The USFWS has jurisdiction and permitting authority over terrestrial wildlife, fresh water fish, and some marine species.

Project Consistency Analysis

Section 7 consultation with NOAA Fisheries Service will be initiated by the Corps for the project's potential impacts to habitat that may support green sturgeon, steelhead, Central Valley spring run Chinook salmon, and Sacramento River winter run Chinook salmon. It would also likely include a discussion on the project's potential impacts to steelhead critical habitat, green sturgeon critical habitat, and essential fish habitat for Central Valley fall and late/fall Chinook salmon.

Section 7 consultation with USFWS will likely be initiated by the Corps for potential impacts to Delta smelt and Delta smelt critical habitat prior to authorizing impacts to waters of the United States. The Section 7 consultation would also include a biological opinion on impacts to vernal pool fairy shrimp.

While the California red-legged frog and the giant garter snake have not been observed on the project site, the USFWS believes they reside onsite and this agency is requiring mitigation for impacts to these species and their habitats (February 15, 2006 email from R. Olah, Chief of Coast/Bay/Delta Branch, Sacramento Field Office of USFWS, to M. Green, Miriam Green Associates). Mitigation requirements for both the giant garter snake and the California red-legged frog varies but typically is at a 3:1 ratio (habitat preservation acreage to impacted acreage). The mitigation ratio for this project would be set by USFWS at the time Section 7 consultation is initiated by the Corps for authorization to impact waters of the United States onsite. It is also possible that impacts to federal listed species could be satisfied by making a financial contribution to the East Contra Costa Conservancy for species covered by the HCP/NCCP (see the Corps Permitting Section and the Impacts and Mitigations Section below for further details).

Federal Migratory Bird Treaty

The Migratory Bird Treaty Act of 1918 (16 U.S.C. §§ 703-712, July 3, 1918, as amended 1936, 1960, 1968, 1969, 1974, 1978, 1986 and 1989) makes it unlawful to "take" (kill, harm, harass, shoot, etc.) any migratory bird listed in Title 50 of the Code of Federal Regulations, Section 10.13, including their nests, eggs, or young. Migratory birds include geese, ducks, shorebirds, raptors, songbirds, wading birds, seabirds, and passerine birds (such as warblers, flycatchers, swallows, etc.).

Project Consistency Analysis

White-tailed kite, Swainson's hawk, northern harrier, western burrowing owl, red shouldered hawk, red-tailed hawk, tricolored blackbird, and loggerhead shrike could nest on the project site in addition to other common, passerine bird species. These raptors (birds of prey) and special-status passerine birds would be protected by the Migratory Bird Treaty Act. Also, the common songbirds and wading birds that could occur on the site would be protected pursuant to this Act. To comply with the Migratory Bird Treaty Act, all active nest sites would have to be avoided while such birds were nesting and protection buffers would have to be established and typically fenced with orange construction fencing. Upon completion of all nesting activities, the project could commence as otherwise planned. More specifics on the size of buffers are provided in the mitigation measures listed in **Section 4.3.4**

California Endangered Species Act

Section 2081 of the State Endangered Species Act

In 1984, the state legislated the California Endangered Species Act (CESA) (Fish and Game Code §2050). The basic policy of CESA is to conserve and enhance endangered species and their habitats. State agencies will not approve private or public projects under their jurisdiction that would jeopardize threatened or endangered species if reasonable and prudent alternatives are available.

CESA requires that all state lead agencies (as defined under CEQA) conduct an endangered species consultation with CDFG if their actions could affect a state listed species. The state lead agency and/or project applicants must provide information to CDFG on the project and its likely impacts. CDFG must then prepare written findings on whether the proposed action would jeopardize a listed species would result in the direct take of a listed species. Because CESA does not have a provision for "harm" (see discussion of FESA, above), CDFG considerations pursuant to CESA are limited to those actions that would result in the direct take of a listed species.

State and federal incidental take permits are issued on a discretionary basis, and are typically only authorized if applicants are able to demonstrate that impacts to the listed species in question are unavoidable, and can be mitigated to an extent that the reviewing agency can conclude that the proposed impacts would not jeopardize the continued existence of the listed species under review. Typically, if there would be impacts to a listed species, mitigation that includes habitat avoidance, preservation, and creation of endangered species habitat is necessary to demonstrate that projects would not threaten the continued existence of a species. In addition, management endowment fees are usually collected as part of the

agreement for the incidental take permit(s). The endowment is used to manage any lands set-aside to protect listed species, and for biological mitigation monitoring of these lands over (typically) a five-year period.

Project Consistency Analysis

One state listed species was positively identified on the project site in the last 12 years: Delta button celery (*Eryngium racemosum*). The state listed species, which have the potential to occur on the project site, include the Central Valley spring run Chinook salmon, Sacramento River winter run Chinook salmon, and Delta smelt.

Two other state listed species have potential to occur on the project site: Swainson's hawk and the giant garter snake. Both animals are listed as threatened under CESA.

The Swainson's hawk is known to nest within 0.1-mile of the project site and, according to CDFG's mitigation guidelines, mitigation for loss of foraging habitat on the project site would be required.

In addition to being a state listed species, the giant garter snake is also a federal listed species; hence, protection of this reptile also falls under the authority of USFWS. In an email dated February 15, 2006, the USFWS stated that the project site provides suitable habitat for the giant garter snake and that mitigation to offset the project's impacts to this species would be required. Implementation of measures required pursuant to CESA is incorporated into the mitigation measures listed in **Section 4.3.4**

California Fish and Game Code Section 3503, 3503.5, 3511, and 3511

California Fish and Game Code §3503, 3503.5, 3511, and 3513 prohibit the "take, possession, or destruction of birds, their nests or eggs." Disturbance that causes nest abandonment and/or loss of reproductive effort (killing or abandonment of eggs or young) is considered a "take." Such a take would also violate federal law protecting migratory birds (Migratory Bird Treaty Act).

All raptors (that is, hawks, eagles, owls) their nests, eggs, and young are protected under California Fish and Game Code (§3503.5). Additionally, "fully protected" birds, such as the white-tailed kite (*Elanus leucurus*) and golden eagle (*Aquila chrysaetos*), are protected under California Fish and Game Code (§3511). "Fully protected" birds may not be taken or possessed (that is, kept in captivity) at any time.

Project Consistency Analysis

Raptors that could be impacted by the project include Swainson's hawk, western burrowing owl, white-tailed kite, red-tailed hawk, red shouldered hawk, and northern harrier. Preconstruction surveys must be conducted for these species to

ensure that there is no direct take of these birds including their eggs, or young. Any active nests that were found during preconstruction surveys must be avoided by the project. Suitable non-disturbance buffers must be established around nest sites until the nesting cycle is complete. More specifics on the size of buffers are provided in the mitigation measures by species. Implementation of measures required pursuant to California Fish and Game Code is incorporated into the mitigation measures listed in **Section 4.3.4**

Protected Amphibians

Under Title 14 of the California Code of Regulations (CCR 14, Division 1, Subdivision 1, Chapter 5, §41. Protected Amphibians), protected amphibians, such as the California tiger salamander may only be taken under special permit from CDFG issued pursuant to Sections 650 and 670.7 of these regulations.

Project Consistency Analysis

The California red-legged frog is a “protected amphibian” listed under Title 14 of the California Code of Regulations. Hence, the California red-legged frog is protected pursuant to these regulations.

Contra Costa County General Plan

The Contra Costa County General Plan 2005-2020 published in January 2005 has several goals and policies that pertain to the protection of biological resources. According to the General Plan, the most significant ecological resource areas in Contra Costa County are defined by three separate categories: (1) areas containing rare, threatened, and endangered species; (2) unique natural areas; and (3) wetlands and marshes. The following goals and policies were adopted to protect these resources:

Vegetation and Wildlife Goals

8-D To protect ecologically significant lands, wetlands, plant, and wildlife habitats.

8-E To protect rare, threatened and endangered species of fish, wildlife, and plants, significant plant communities, and other resources which stand out as unique because of their scarcity, scientific value, aesthetic quality or cultural significance. Attempt to achieve a significant net increase in wetland values and functions within the County over the life of the General Plan. The definition of rare, threatened, and endangered includes those definitions provided by the Federal Endangered Species Act, the California Endangered Species Act, the California Native Plant Protection Act, and the California Environmental Quality Act.

Vegetation and Wildlife Policies

8-6 Significant trees, natural vegetation, and wildlife populations generally shall be preserved.

8-7 Important wildlife habitats which would be disturbed by major development shall be preserved, and corridors for wildlife migration between undeveloped lands shall be retained.

8-8 Significant ecological resource areas in the County shall be identified and designated for compatible low-intensity land uses. Setback zones shall be established around the resource areas to assist in their protection.

8-9 Areas determined to contain significant ecological resources, particularly those containing endangered species, shall be maintained in their natural state and carefully regulated to the maximum legal extent. Acquisition of the most ecologically sensitive properties within the County by appropriate public agencies shall be encouraged.

8-10 Any development located or proposed within significant ecological resource areas shall ensure that the resource is protected.

8-11 The County shall utilize performance criteria and standards which seek to regulate uses in and adjacent to significant ecological resource areas.

8-12 Natural woodlands shall be preserved to the maximum extent possible in the course of land development.

8-13 The critical ecological and scenic characteristics of rangelands, woodlands, and wildlands shall be recognized and protected.

8-14 Development on hillsides shall be limited to maintain valuable natural vegetation, especially forests and open grasslands, and to control erosion. Development on open hillsides and significant ridgelines throughout the County shall be restricted, and hillsides with a grade of 26 percent or greater shall be protected through implementing zoning measures and other appropriate actions.

8-15 Existing vegetation, both native and non-native, and wildlife habitat areas shall be retained in the major open space areas sufficient for the maintenance of a healthy balance of wildlife populations.

8-16 Native and/or sport fisheries shall be preserved and re-established in the streams within the County wherever possible.

8-17 The ecological value of wetland areas, especially the salt marshes and tidelands of the bay and delta, shall be recognized. Existing wetlands in the County shall be identified and regulated. Restoration of degraded wetland areas shall be encouraged and supported whenever possible.

8-18 The filling and dredging of lagoons, estuaries, and bays which eliminate marshes and mud flats shall be allowed only for water-oriented projects which will provide substantial public benefits and for which there are not reasonable alternatives, consistent with State and Federal laws.

8-19 The County shall actively oppose any and all efforts to construct a peripheral canal or any other water diversion system that reduces Delta water flows unless and until it can be conclusively demonstrated that such a system would, in fact, protect, preserve and enhance water quality and fisheries of the San Francisco Bay-Delta estuary system.

8-20 Fish, shellfish, and waterfowl management shall be considered the appropriate land use for marshes and tidelands, with recreation being allowed as a secondary use in limited locations, consistent with the marshland and tideland preservation policies of the General Plan.

8-21 The planting of native trees and shrubs shall be encouraged in order to preserve the visual integrity of the landscape, provide habitat conditions suitable for native wildlife, and ensure that a maximum number and variety of well-adapted plants are sustained in urban areas.

8-22 Applications of toxic pesticides and herbicides shall be kept at a minimum and applied in accordance with the strictest standards designed to conserve all the living resources of the County. The use of biological and other non-toxic controls shall be encouraged.

8-23 Runoff of pollutants and siltation into marsh and wetland areas from outfalls serving nearby urban development shall be discouraged. Where permitted, development plans shall be designed in such a manner that no such pollutants and siltation will significantly adversely affect the value or function of wetlands. In addition, berms, gutters, or other structures should be required at the outer boundary of the buffer zones to divert runoff to sewer systems for transport out of the area.

8-24 The County shall strive to identify and conserve remaining upland habitat areas which are adjacent to wetlands and are critical to the survival and nesting of wetland species.

8-25 The County shall protect marshes, wetlands, and riparian corridors from the effects of potential industrial spills.

8-26 The environmental impacts of using poisons to control ground squirrel populations in grasslands shall be thoroughly evaluated by the County.

8-27 Seasonal wetlands in grassland areas of the County shall be identified and protected.

8-28 Efforts shall be made to identify and protect the County's mature native oak, bay, and buckeye trees.

Project Consistency Analysis

Many of the policies presented in the General Plan are relevant to the project site and the project site's plant communities, wildlife habitats, and wetlands. Under the current development plan, it will not be possible to adhere to all of these policies that are in place to protect natural resources. For example, Policy 8-10 that states, "any development located or proposed within significant ecological resource areas shall ensure that the resource is protected" will not be adhered to under the current development plan since the proposed plan calls for filling protected wetland habitats onsite that support the federally listed vernal pool fairy shrimp. In addition, Policy 8-27 which states: "seasonal wetlands in grassland areas of the County shall be identified and protected" also cannot be adhered to under the current development plan since some of the seasonal wetlands on the project site shall be filled to allow for development. Mitigation measures will be necessary to offset the project's impact to these County protected (and agency protected) resources.

County Tree Ordinance

According to the Contra Costa County tree ordinance, a "protected tree" is any one of the following:

1. On all properties within the unincorporated area of the county:
   - Where the tree to be cut down, destroyed or trimmed by topping is adjacent to or part of a riparian, foothill woodland or oak savanna area, or part of a stand of four or more trees, measures twenty inches or larger in circumference (approximately 6.5 inches in diameter) as measured four and one-half feet from ground level, and is included in the following list of indigenous trees: *Acer macrophyllum* (Big-leaf Maple), *Acer negundo* (Box Elder), *Aesculus californica* (California Buckeye), *Alnus Rhombifolia* (White Alder), *Arbutus menziesii* (Madrone), *Heteromeles arbutifolia* (Toyon), *Juglans Hindsii* (California Black Walnut), *Juniperus californica* (California Juniper), *Lithocarpus densiflora* (Tanoak or Tanbark Oak), *Pinus attenuata* (Knobcone Pine), *Pinus sabiniana* (Digger Pine), *Platanus Racemosa* (California Sycamore), *Populus fremontii* (Fremont Cottonwood), *Populus trichocarpa* (Black Cottonwood), *Quercus agrifolia* (California or Coast Live Oak), *Quercus chrysolepis* (Canyon Live Oak), *Quercus douglasii* (Blue Oak), *Quercus kelloggii* (California Black Oak), *Quercus lobata* (Valley Oak), *Quercus wislizenii* (Interior Live Oak), *Salix lasiandra* (Yellow Willow), *Salix laevigata* (Red Willow), *Salix lasiolepis* (Arroyo Willow), *Sambucus callicarpa* (Coast Red Elderberry), *Sequoia sempervirens* (Coast Redwood), *Umbellularia californica* (California Bay or Laurel);

- Any tree shown to be preserved on an approved tentative map, development or site plan or required to be retained as a condition of approval;
- Any tree required to be planted as a replacement for an unlawfully removed tree.

2. On any of the properties specified in subsection (3) of this section:
   - Any tree measuring twenty inches or larger in circumference (approximately six and one-half inches diameter), measured four and one-half feet from ground level including the oak trees listed above;
   - Any multi-stemmed tree with the sum of the circumferences measuring forty inches or larger, measured four and one-half feet from ground level;
   - And any significant grouping of trees, including groves of four or more trees.
3. Specified properties referred to in subsection (2) of this section includes:
   - Any developed property within any commercial, professional office or industrial district;
   - Any undeveloped property within any district;
   - Any area designated on the general plan for recreational purposes or open space;
   - Any area designated in the county general plan open space element as visually significant riparian or ridge line vegetation and where the tree is adjacent to or part of a riparian, foothill woodland or oak savanna area. (Ords. 94-59, 94-22).

Project Consistency Analysis

Most, if not all, of the trees on the project site would be protected under Contra Costa County's tree ordinance since the trees are on "any undeveloped property within any district" (subsection 3A) <u>and</u> most, if not all, of the trees are "twenty inches or larger in circumference (approximately six and one-half inches diameter), measured four and one-half feet from ground level…" and several trees on the project site are "indigenous" trees as listed in subsection 1(A). **Mitigation Measure BIO-1** requires conformance with this ordinance by ensuring protection of trees during construction.

The East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP)

The East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP or Plan) is intended to provide an effective framework to protect natural resources in eastern Contra Costa County, while improving and streamlining the environmental permitting process for impacts on endangered species. The Plan allows Contra Costa County, the Contra Costa County Flood Control and Water Conservation District, the East Bay Regional Park District, the Cities of Brentwood, Clayton, Oakley, and Pittsburg, and the Implementing Entity (known as the East Contra Costa County Habitat Conservancy), (collectively, the Permittees) to control endangered species permitting for activities and projects in the region while providing comprehensive species, wetlands, and ecosystem conservation and contributing to the recovery of endangered species. In October of 2007, Contra Costa County adopted Ordinance NO. 2007-53 adopting the "East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan Fees and Implementation Procedures."

The project site is located immediately east and outside of the permit area of the adopted HCP/NCCP, therefore excluding the project area from participation in the Plan. However, as an option to mitigate for impacts to special status species and critical habitat the applicant may, with permission from state and federal regulatory agencies and agreement from the Conservancy, make a financial contribution to the Conservancy, such contribution shall be used to acquire and manage habitat lands for covered species.

A financial contribution to the Conservancy would serve to mitigate impacts to special-status species and critical habitats for California red-legged frog, giant garter snake, Swainson's hawk, western burrowing owl, and possibly for vernal pool fairy shrimp. It should be noted that a financial contribution to the HCP/NCCP will not provide incidental take coverage and the applicant will need to acquire incidental take permits from USFWS and CDFG, as required by these agencies. While other avoidance and minimization measures may be required for impacts to special-status species, a financial contribution to the Conservancy would likely be all the mitigation compensation required by USFWS and/or CDFG for impacts to HCP/NCCP covered species.

Project Consistency Analysis

A federal incidental take permit is required for any activity that could result in take of a federally-listed species, such as California red-legged frog, the giant garter snake, and the vernal pool fairy shrimp. Since the applicant is not eligible to receive

incidental take coverage by participation in the HCP/NCCP, a Section 7 consultation will be needed in order to provide for take of federally-listed species.

While the Swainson's hawk is a state-listed species, and its foraging habitat could be impacted by the project, incidental taking authority (a Section 2081 permit) from CDFG is not warranted as no nest site would be removed by the project (unless a nest site is found during preconstruction surveys). Regardless, CDFG has a formal Swainson's hawk impact and mitigation policy in effect for impacts to foraging habitat that would be enforceable pursuant to CEQA (please see Swainson's hawk section above). Contribution of funds to the Conservancy, as approved by CDFG, would mitigate impacts not only to Swainson's hawk foraging habitat, but also impacts to most other special-status animal species that could be affected by the project including the California red-legged frog, giant garter snake, vernal pool fairy shrimp, and western burrowing owl (if this owl is later found to be on the project site). The HCP does not cover impacts to listed fish species.

The HCP requires payment of approximately $10,558.09[1] per project site acre in the Zone I (Discovery Bay) area. However, it must be noted that the project site is located just outside of (east of) the HCP Inventory Area, so the set fee for projects located within Zone I must be negotiated with the resource agencies (CDFG and USFWS), and it may be slightly higher or less than the Zone I fee (J. Kopchik, East Contra Costa County Habitat Conservancy, pers. comm. with S. Lynch of M&A, December 11, 2006). The fee would be determined at the time incidental take permits are under review by CDFG and USFWS for this project. Both CDFG and USFWS have stated that they would allow use of the HCP to mitigate the Pantages Project's impacts to federal and state listed species (J. Gan, CDFG, pers. comm. with S. Lynch of M&A, November 28, 2006; and, S. Larsen, USFWS, pers. comm. with S. Lynch of M&A, November 28, 2006).

Please note that mitigation funds paid to the Conservancy would also mitigate many other special-status species impacts under consideration for the proposed project. Thus, for example, if western burrowing owls were to move onto the project site, avoidance measures would have to be implemented while the owls nested. Upon completion of nesting, the owls could be passively removed from the project site (as allowed by CDFG). Contribution of funds to the Conservancy would alleviate any further requirements by CDFG to purchase and preserve burrowing owl mitigation lands. Use of the HCP would also mitigate impacts to California red-legged frog, giant garter snake, and vernal pool fairy shrimp as approved by CDFG and USFWS

[1] 2010 fees are valid from March 15, 2010 until March 14, 2011.

(which approval they have indicated they will grant). Thus, the applicant would not have to find and seek agency approval for separate preservation lands or methods for the affected special-status species.

U.S. Army Corps of Engineers Jurisdiction and General Permitting

Section 404 of the Clean Water Act

Pursuant to Section 404 of the Clean Water Act (33 U.S.C. 1344), the U.S. Army Corps of Engineers (Corps) regulates the discharge of dredged or fill material into "waters of the United States" (33 CFR Parts 328 through 330). This requires project applicants to obtain authorization from the Corps prior to discharging dredged or fill materials into any water of the United States. "Waters of the United States" are defined as, "...all interstate waters including interstate wetlands...intrastate lakes, rivers, streams (including intermittent streams), wetlands, [and] natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce..." (33 CFR Section 328.3).

Section 404 jurisdiction in "other waters" such as lakes, ponds, and streams, extends to the upward limit of the ordinary high water mark (OHWM) or the upward extent of any adjacent wetland. The OHWM on a non-tidal water is the "line on shore established by the fluctuations of water and indicated by physical characteristics such as a clear natural line impressed on the bank; shelving; changes in the character of soil; destruction of terrestrial vegetation; the presence of litter or debris; or other appropriate means that consider the characteristics of the surrounding areas" (33 CFR Section 328.3[e]). Wetlands are defined as "...those areas that are inundated or saturated by surface or ground water at a frequency and duration to support a prevalence of vegetation adapted for life in saturated soil conditions" (33 CFR Section 328.8 [b]). Wetlands usually must possess hydrophytic vegetation (i.e., plants adapted to inundated or saturated conditions), wetland hydrology (e.g., topographic low areas, exposed water tables, stream channels), and hydric soils (i.e., soils that are periodically or permanently saturated, inundated or flooded) to be regulated by the Corps pursuant to Section 404 of the Clean Water Act.

Project Consistency Analysis

On January 7, 2009, the U.S. Army Corps of Engineers confirmed their jurisdiction over 36.43 acres of waters of the United States on the project site. This jurisdictional acreage includes Indian Slough, Kellogg Creek and adjacent wetlands, (see the Corps determination letter in the Biological Resources Analysis Report in **Appendix B** of this EIR). This jurisdictional determination was based on wetland delineations completed on the project site by Gibson & Skordal, LLC.

A *Conceptual Wetland and Emergent Marsh Preservation and Mitigation Plan for Pantages Bays* was prepared by Gibson & Skordal, LLC (dated November 15, 2006). Minimization of indirect impacts will be accomplished by grading home pads to drain toward streets and away from open space areas, landscaping with native plants, constructing bioswales, maintaining natural buffers between the development and the preserved marsh habitat within the open space areas, and using native plantings as landscaping buffers between development and open space preserve areas. An exception is at the EVA crossing of the marsh, where there is no buffer. The location of the EVA was chosen so that the road crossed the marsh at its narrowest point. In most other cases, there is a minimum of 50 feet between the edge of the residential development and the preserved marsh. At some locations, grading will encroach into the 50 foot width; however, the graded area will be planted with native vegetation and maintained naturally (no irrigation) such that it functions as a buffer. The open space preserve area will be separated from adjacent development or recreational areas with fencing that protects the open space preserve from unauthorized use while providing a visual connection to the open space. Where houses back up to the open space preserve, residential fences will be tubular steel or some other form of permanent, visually open, fencing. Past mitigation efforts have shown that with open fencing, protected areas are kept relatively free from trash accumulation and homeowners accept greater stewardship of preserved open spaces. In addition, along the EVA/trail, kiosks with educational signage will be developed to reduce human-induced impacts.

Because full avoidance of waters of the United States/State is not possible, potential impacts will be minimized to the extent feasible through changes in project design. Impacts will also be minimized by the use of Best Management Practices to protect preserved wetlands/marsh and ensure water quality in preserved wetlands and other waters within the project area. These practices can include installing orange construction fencing, hay or gravel waddles, and other protective measures during construction. During project construction, the applicant states that a biological monitor will be on-site to monitor the integrity of preserved wetlands and other waters. Mitigation is included in Section 4.3.4 to ensure compliance with these requirements.

Section 14 of the Rivers and Harbors Act

Section 14 of the Rivers and Harbors Act as approved on March 3, 1899 (33 U.S.C. 408), makes it unlawful for any person to take possession of or make use of for any purpose, or build upon, alter, destroy, or in any manner whatever impair the usefulness of any sea wall, bulkhead, jetty, dike, levee, wharf, pier, or other work built by the United States, or under the control of the United States, in whole or in part, for the preservation and improvement of any of its navigable waters or to prevent floods. The Secretary of the Army, on the recommendation of the Chief of

Engineers, may grant permission for the alteration or permanent occupation or use of any of the aforementioned public works when in his judgment such occupation or use will not be injurious to the public interest. This permission will be granted by an appropriate real estate instrument in accordance with existing real estate regulations.

Project Consistency Analysis

The removal of bank habitat along Kellogg Creek must be authorized by the Secretary of the Army, on the recommendation of the Chief of Engineers. This permission will be granted by an appropriate real estate instrument in accordance with existing real estate regulations. In order to obtain this authorization from the Corps, the project applicant must submit a request to the Secretary of the Army and the Chief of Engineers, describing the proposed project and any correspondence with the local Reclamation District/ Reclamation Board authorizing this work.

Section 401 of the Clean Water Act

The State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Board (RWQCB) regulate activities in "waters of the State" (which includes wetlands) through Section 401 of the Clean Water Act. While the Corps administers permitting programs that authorize impacts to waters of the United States, including wetlands, and other waters, any Corps permit authorized for a proposed project would be invalid unless it is a NWP that has been certified for use in California by the SWRCB, or if the RWQCB has issued a project specific certification or waiver of water quality. Certification of NWPs requires a finding by the SWRCB that the activities permitted by the NWP will not violate water quality standards individually or cumulatively over the term of the issued NWP (the term is typically for five years). Certification must be consistent with the requirements of the federal Clean Water Act, the California Environmental Quality Act, the California Endangered Species Act, and the SWRCB's mandate to protect beneficial uses of waters of the State. Any denied (i.e., not certified) NWPs, and all Individual Corps permits, would require a project specific RWQCB certification or waiver of water quality.

Additionally, if a proposed project would impact waters of the State, including wetlands, and the project applicant cannot demonstrate that the project is unable to avoid these adverse impacts, water quality certification will most likely be denied. Section 401 Certification may also be denied based on significant adverse impacts to waters of the United States, including wetlands. The RWQCB has also adopted the Corps' policy that there shall be "no net loss" of wetlands. Thus, prior to certifying water quality, the RWQCB will impose avoidance mitigation requirements on project proponents that impact waters of the State.

Project Consistency Analysis

Any Section 404 permit authorized by the Corps for the project would be inoperative without also obtaining authorization from the RWQCB pursuant to Section 401 of the Clean Water Act (i.e., without obtaining a certification of water quality). Since the RWQCB does not have a formal method for technically defining what constitutes waters of the state, Monk & Associates expects that the RWQCB should remain consistent with the Corps' determination of waters of the United States. The Corps determined there are 36.43 acres of waters of the United States on the 171-acre project site. It is likely that the RWQCB will concur with the Corps findings. Please note that any isolated wetlands or other waters that are determined to be on the project site that are not regulated by the Corps pursuant to the SWANCC decision, would still be regulated by the RWQCB pursuant to the Porter-Cologne Water Quality Control Act (see next section).

Any impacts to waters of the State would have to be mitigated to the satisfaction of the RWQCB prior to the time this resource agency would issue a permit for impacts to such features. The RWQCB requirements for issuance of a "401 Permit" can parallel the Corps requirements for permitting impacts to Corps regulated areas pursuant to Section 404 of the Clean Water Act. Please refer to the Corps Applicability Section above for likely mitigation requirements for impacts to RWQCB regulated wetlands. Also, please refer to the applicability section of the Porter-Cologne Water Quality Control Act below for other applicable actions that may be imposed on the project by the RWQCB prior to the time any certification of water quality is authorized for the project. Please note that any isolated wetlands or other waters that are determined to be on the project site that are not regulated by the Corps pursuant to the SWANCC decision, would still be regulated by the RWQCB pursuant to the Porter-Cologne Water Quality Control Act (see below).

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act, Water Code § 13260, requires that "any person discharging waste, or proposing to discharge waste, that could affect the waters of the State to file a report of discharge" with the RWQCB through an application for waste discharge (Water Code Section 13260(a)(1). The term "waters of the State" is defined as any surface water or groundwater, including saline waters, within the boundaries of the State (Water Code § 13050(e)). It should be noted that pursuant to the Porter-Cologne Water Quality Control Act, the RWQCB also regulates "isolated wetlands," or those wetlands considered to be outside of the Corps' jurisdiction pursuant to the SWANCC decision (see Corps Section above).

The RWQCB generally considers filling in waters of the State to constitute "pollution." Pollution is defined as an alteration of the quality of the waters of the state by waste that unreasonably affects its beneficial uses (Water Code §13050(1)).

The RWQCB litmus test for determining if a project should be regulated pursuant to the Porter-Cologne Water Quality Control Act is if the action could result in any "threat" to water quality.

The RWQCB requires complete pre- and post-development Best Management Practices Plan (BMPs) of any portion of the project site that is developed. This means that a water quality treatment plan for the pre- and post-developed project site must be prepared and implemented. Preconstruction requirements must be consistent with the requirements of the National Pollutant Discharge Elimination System (NPDES). That is, a *Stormwater Pollution Prevention Plan* (SWPPP) must be developed prior to the time that a site is graded (see NPDES section below). In addition, a post construction BMPs plan, or a Stormwater Management Plan (SWMP) must be developed and incorporated into any site development plan.

Project Consistency Analysis

The Corps determined there are 36.43 acres of waters of the United States were present on the 171-acre project site. The RWQCB will also exert its jurisdiction over these areas pursuant to the Porter-Cologne Water Quality Control Act. Since any "threat" to water quality could conceivably be regulated pursuant to the Porter-Cologne Water Quality Control Act, care will required when constructing the proposed project to be sure that adequate pre and post construction Best Management Practices Plan (BMPs) are incorporated into the project implementation plans.

The project site currently does not have a stormwater drainage system, and no municipal provision for stormwater management exists on the site. As discussed in **Section 4.9, Hydrology and Water Quality**, treatment of stormwater and extensive erosion control measures have been proposed to ensure that the project will meet RWQCB standards.

California Department of Fish and Game Protections

Section 1602 of California Fish and Game Code

Pursuant to Section 1602 of the California Fish and Game Code, CDFG regulates activities that divert, obstruct, or alter stream flow, or substantially modify the bed, channel, or bank of a stream, which CDFG typically considers to include riparian vegetation. Any proposed activity in a natural stream channel that would substantially adversely affect an existing fish and/or wildlife resource, would require entering into a Streambed Alteration Agreement (SBAA) with CDFG prior to commencing work in the stream. However, prior to authorizing such permits, CDFG typically reviews an analysis of the expected biological impacts, any proposed mitigation plans that would be implemented to offset biological impacts and engineering and erosion control plans.

Project Consistency Analysis

The proposed removal of bank habitat along Kellogg Creek will require a SBAA. Impacts from project development include loss of low, moderate, and high quality bank habitat. The project will remove approximately 5,380 linear feet of the 10,120 linear feet of existing bank habitat along the project site. Mitigation measures will be necessary to offset the project's impact to bank habitat subject to CDFG jurisdiction as detailed in **Subsection 4.3.4**, below.

Reclamation Board Encroachment Permit

Approval by the Reclamation Board (Board) is required for projects or uses which encroach into rivers, waterways, and floodways within and adjacent to federal and State authorized flood control projects and within designated floodways adopted by the Board. Any proposed project within these areas requires Board approval. The Board exercises jurisdiction over the levee section, the waterward area between project levees, a 10-foot-wide strip adjacent to the landward levee toe, within 30 feet of the top of banks of unleveed project channels, and within designated floodways adopted by the Board. In addition, activities outside of these limits which could adversely affect the flood control project are also under Board jurisdiction. A copy of the Reclamation Board Encroachment Permit will be sent to the U.S. Army Corps of Engineers for review and comment. Applications which must be considered by the Board are placed on the agenda of the next regular Board meeting. The Department of Water Resources must be notified ten days before construction begins. The Department of Water Resources Flood Inspection Section conducts inspection services on behalf of the Board.

Project Consistency Analysis

This project will require a Reclamation Board Encroachment Permit and all activities associated with the removal of bank habitat along Kellogg Creek; this activity must be coordinated and approved by the Board. Proof of acquisition of such a permit shall be a requirement of Contra Costa County and incorporated into conditions of project approval.

4.3.4 ANALYSIS OF POTENTIAL IMPACTS

CEQA Significance Criteria

Plants, Wildlife, Waters

In accordance with Appendix G (Environmental Checklist Form) of the CEQA Guidelines, implementing the project would have a significant biological impact if it would:

a) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;

b) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan;

c) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service;

d) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance;

e) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service; or

f) Have a substantial adverse effect on federally protected "wetlands" as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

Waters of the United States and State

Pursuant to Section 404 of the Clean Water Act (33 U.S.C. 1344), the Corps regulates the discharge of dredged or fill material into waters of the United States, which includes wetlands, as discussed in the bulleted item above, and also includes "other waters" (stream channels, rivers) (33 CFR Parts 328 through 330). Substantial impacts to Corps regulated areas on a project site would be considered a significant adverse impact. Similarly, pursuant to Section 401 of the Clean Water Act, and to the Porter-Cologne Water Quality Control Act, the RWQCB regulates impacts to waters of the state. Thus, impacts to RWQCB regulated areas on a project site would also be considered a significant impact.

Stream Channels

Finally, pursuant to Section 1602 of the California Fish and Game Code, CDFG regulates activities that divert, obstruct, or alter stream flow, or substantially modify the bed, channel, or bank of a stream which CDFG typically considers to include riparian vegetation. Any proposed activity that would result in modifications to a natural stream channel would be considered a significant impact.

Discussion of No Impacts

Analysis of the project plans and site characteristics in the context of the significance criteria stated above shows that there would be no impact for two of the five criteria. The following discussion presents the evidence in support of this conclusion.

a) Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

The project site does not constitute a wildlife movement corridor, but rather serves wildlife in their local movement patterns. While local wildlife (deer, skunks, raccoons, rats, etc.) will likely use the site to move to and from the adjacent housing developments where they are able to scavenge for food, the loss of this area for local movements is not a significant impact as these species are capable of moving through developed areas. Thus, loss of this habitat would not be a considered significant impact under CEQA. In accordance with the CEQA Guidelines, impacts to "corridors" and "interfer[ing] substantially" with these corridors would constitute a significant impact. In order for there to be a significant impact, first there has to be a corridor, not just a resident wildlife use pattern established onsite; second, "substantially" would indicate that the wildlife corridor in question would be important to special-status species or essential to a population. These criteria are not met by the project site. Hence, development of the proposed project would not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established corridors. Finally, the project site does not constitute a native wildlife nursery site. No impact would occur.

b) Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

The project site is located adjacent to but outside of the HCP/NCCP Inventory Area and as a result the project is not eligible for take coverage through the HCP/NCCP. Although the project is located outside the inventory area of the HCP/NCCP, it is expected that the project may be allowed to make a financial contribution to the East Contra Costa County Habitat Conservancy (Conservancy) as mitigation for impacts to federal- and state-listed special status species. The mitigation funding would be determined by state and federal regulatory agencies and agreement from the Conservancy. Further discussion of mitigation funding to the Conservancy is

included in **Section 4.3, Biological Resources**. The project would not conflict with any habitat conservation plan or natural community conservation plan and no impact would occur.

Discussion of Less-than-Significant Impacts

Analysis of the project plans and site characteristics in the context of the significance criteria stated above shows that there would be a less-than-significant impact for one of the five criteria. The following discussion presents the evidence in support of this conclusion.

c) Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

Although a specimen of Delta button celery that was identified onsite was vouchered at the University and Jepson Herbarium, CEQA requires an analysis of the existing site conditions only and not historic conditions or findings. Thus, as Delta button celery no longer occurs on the project site, impacts to this species from the currently proposed development are not expected to result in significant adverse impacts to this species. As such, pursuant to CEQA, no mitigation requirements for Delta button celery are warranted.

Discussion of Significant Impacts

Analysis of the project plans and site characteristics in the context of the significance criteria stated above shows that there would be a significant impact for four of the five criteria. The following discussion presents the evidence in support of this conclusion.

d) Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Impact BIO-1: Development of the project would have a significant impact on trees. (Significant)

Eighty trees were surveyed on the project site, most of which are greater than 6.5 inches in diameter at breast height (DBH). All of the trees would be removed in order to widen Kellogg Creek and create the project bays and coves, infrastructure and residential lots. Indigenous trees, as specified in subsection 1(A) of the Contra Costa County Tree Ordinance, on the project site include California black walnut, Fremont cottonwood (*Populus fremontii*), and willows.

Under the Contra Costa County Tree Ordinance, any tree measuring 6.5 inches or greater DBH on any undeveloped property in any district, and/or any indigenous tree, is protected. Hence, the trees on the project site are protected. Removal of protected trees would be a potentially significant impact.

Implementation of **Mitigation Measure BIO-1** as described below would reduce this impact to a less-than-significant level.

Mitigation Measure BIO-1: Landscape Trees.

To offset impacts resulting from the removal of 80 trees on the project site, the project includes landscaping with approximately 770 trees that would be planted along the project roadways and at the project site entry as part of the proposed landscaping. This is an approximately 9.5:1 mitigation ratio. Comply with the following landscape/irrigation improvement and initial protection requirements subject to the review and approval of the Zoning Administrator:

A. Final Landscape Plan: At least 30 days prior to the issuance of a grading permit a final landscape/irrigation plan, prepared by a licensed landscape architect shall be submitted to the Community Development Department (CDD) for review and approval of the Zoning Administrator. The Final Plan shall be designed in general accord with the preliminary landscape plan, Sheet 10 of 10 of the Project Plans dated October 2009.

B. Minimum Size Plants: All proposed trees shall be a minimum of 15-gallon size; all shrubs shall be a minimum 5-gallon size.

C. Maintenance Cost: Landscaping shall generally be designed to minimize landscape maintenance cost.

D. Compliance with Water Conservation and Sight Obstruction Ordinance Requirements: The landscape plan shall contain sufficient information to demonstrate compliance with the reporting requirements and standards of the Water Conservation Landscaping in New Developments ordinance (Chapter 82-26) as amended, and the Sight Obstruction at Intersections ordinance (Chapter 82-18). The latter ordinance applies to intersections with public roads. The landscape architect shall certify that the plan complies with the ordinance improvement standards and reporting requirements.

E. To assure the long term viability of this landscaping the applicant shall post a bond for the value of the landscaping, installation plus 20%. The term of the bond shall extend 24 months beyond the installation of landscaping. Prior to the acceptance of the bond by the County a qualified landscape designer shall assess the value of the landscape and

provide a copy of that assessment to the Community Development Department. Prior to the release of the bond a landscape designer shall submit a letter to the Zoning Administrator that the landscaping is in good health.

Significance after Mitigation: Less than significant.

Planting native trees at a 9.5:1 (mitigation to impacts) ratio in accordance with an approved tree management and monitoring plan would reduce the project's impact to protected trees to a less than significant level because trees that are being removed will be replaced with a greater number of trees.

e) Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?

Impact BIO-2: Development of the project would have a significant impact on bank habitat. (Significant)

Impacts from the proposed project would include the loss of low, moderate, and high quality bank habitat. Overall, the project will remove approximately 5,380 linear feet of the 10,120 linear feet of existing habitat along the project site (Kellogg Creek, the ECCID Dredge Cut/Intake Channel (Old Kellogg Creek), and Pantages Island.

Specifically, existing low and moderate quality habitat along the east bank of the project site will be removed to allow for the widening of Kellogg Creek, the creation of new bays, and the development of waterfront homes. Some high quality bank habitat along the southern end of the site will be preserved, although other areas of high quality habitat will be removed.

In order to widen Kellogg Creek, moderate and high quality bank habitat along the eastern edge of the channel will be removed. Additionally, in order to widen Kellogg Creek the southeastern corner of Pantages Island will be removed, requiring the removal of some high quality habitat.

Loss of moderate and high quality bank habitat which provides shelter and habitat for special-status fish is considered a significant impact. Additionally, impacts to the creek/channel banks without prior authorization from CDFG pursuant to Section 1602 of California Fish and Game Code, and without prior authorization from the Bureau of Reclamation, and without prior authorization from the Corps pursuant to Section 14 of the Rivers and Harbors Act would be a significant adverse impact. Implementation of **Mitigation Measure BIO-2** described below would reduce this impact to a less-than-significant level.

Mitigation Measure BIO-2: Bank Habitat

a. Prior to removal of bank habitat along Kellogg Creek or disturbing any creek/channel banks within the project site and at Pantages Island, the applicant shall contact the CDFG, the Corps, the RWQCB, and the Reclamation Board and determine if permits are warranted for the activities pursuant to the regulations that are in effect. Proof of permits (for example, a Section 404 permit, Section 401 permit, Section 1602 permit) or an absence of requirements for such permits from these resource agencies shall be provided to Contra Costa County Department of Conservation and Development.

b. All mitigation measures implemented to improve bank habitat shall be approved by the Corps, the RWQCB, CDFG, and the Reclamation Board (if necessary) through issuance of necessary permits.

c. Mitigation for loss of bank habitat shall be completed as prescribed by the CDFG, Corps, RWQCB, and Reclamation Board. The applicant has provided a report to Contra Costa County describing how the applicant will mitigate impacts to bank habitats, and these stated mitigations, described below, shall become a condition of project approval.

d. Specifically, the applicant proposes to mitigate for the loss of 5,380 lineal feet of excavated low and moderate quality bank habitat by: (1) enhancement of 9,157 lineal feet of existing low and moderate low quality bank habitat, both onsite and offsite, to high quality bank habitat (shaded riverine aquatic habitat and shallow water habitat) on Pantages Island, ECCID Property on the south side of the ECCID Dredge Cut/Channel, Old Kellogg Creek, and Kellogg Creek between Newport Pointe and State Route 4; and (2) creation of 1,903 lineal feet of moderate quality bank habitat (shallow sloping or level bench to MHW with riparian trees and grasses, rip-rap with willows between MHW and MLW) on the excavated portion of Pantages Island, the North Cove and the end of Point of Timber Road in the North Bay. Bank habitat mitigation totals approximately 11,060 lineal feet.

e. Enhance existing bank habitat or create new bank habitat on-site, approximately 11,060 linear feet in total, including shaded riverine aquatic habitat and shallow water habitat (high quality bank habitat on Pantages Island and the ECCID portion of the project site; moderate quality bank habitat on the easterly side of Pantages Island and the northerly side of the north cove at the northeasterly end of the project site; and low quality bank habitat at the back of some waterfront lots).

f. The revegetation design shall restore the bank to *moderate quality habitat* following construction, which includes the following:

i. Riprap with willow plantings shall be established between mean low water (MLW) and mean high water (MHW) to provide additional stabilization and some shaded riverine aquatic habitat.

ii. A shallow sloping or level bench shall be established at approximately MHW to support larger riparian trees such as Fremont cottonwood.

iii. The upper bank shall be sloped at 5:1 and also planted with riparian trees and grasses.

iv. Riparian trees planted along the shallow sloping or level bench shall be planted on 15-foot centers to ensure adequate bank coverage.

v. Native riparian trees such as valley oaks, California buckeyes, and Fremont cottonwoods and native grasses can be used for revegetation.

vi. The planted riparian trees shall be monitored by a biologist or arborist annually for a period of 5 years to ensure that mortality does not exceed 20 percent after 5 years. If there is greater than 20 percent mortality of planted trees after 5 years, the project proponent shall be responsible for replanting and monitoring the trees for an additional 3-year period.

vii. During the 5-year monitoring period invasive weed monitoring shall also be conducted. In the event that an increase in the distribution or density of invasive plants is documented (for example, water hyacinth or Brazilian waterweed), an invasive weed management and eradication program shall be developed and implemented.

viii. A performance bond, letter of credit, or other financial instrument shall be established to pay for any remedial work that might need to occur.

ix. Once vegetation has become established, the upper bank should provide overhanging vegetation cover for fish during most tidal elevations. However, the placement of riprap without natural habitat features (e.g., large woody debris) along most of the lower bank would create minimal in-water habitat for fish. Given incorporation of both high quality and low quality habitat features, this design is characterized as being overall of moderate value.

To improve the overall habitat value of the bank, installation of tree species along the lower bank may be possible by installing Sonatubes in the rip-rap and planting the trees within these tubes. The Sonatubes allow trees to grow along rip-rap banks without harming the integrity of the bank.

g. Low and moderate quality habitat along the south side of the ECCID Dredge Cut/Intake Channel, the section of Old Kellogg Creek at the southwestern end of the project site and the east and west sides of Kellogg Creek between Newport Point and State Route 4, shall be restored to high quality habitat by creating a slope setback.

h. The setback shall be created by excavating existing bank material from approximately MLW to the top of the bank.

   i. An intertidal berm with a 10:1 or 20:1 slope shall be established to create shallow water habitat and stabilize the bank.

   ii. The berm shall be planted with tules to provide in-water resting and hiding places for fish.

   iii. The upper bank shall be sloped at 3:1 or 5:1 and planted with native riparian trees and shrubs to create shaded riverine aquatic habitat.

   iv. Trees and shrubs planted along upper bank shall be monitored by a qualified biologist or arborist for a minimum 5-year period. If there is greater than 20 percent mortality of planted trees and shrubs after 5 years, the applicant shall be responsible for replanting and monitoring the trees for an additional 3-year period.

   v. During the 5-year monitoring period invasive weed monitoring shall also be conducted. In the event that an increase in the distribution or density of invasive plants is documented (for example, water hyacinth or Brazilian waterweed), an invasive weed management and eradication program shall be developed and implemented.

   vi. A performance bond, letter of credit, or other financial instrument shall be established to pay for any remedial work that might need to occur.

i. Existing low and moderate quality bank habitat around the perimeter of Pantages Island shall be restored to high-quality habitat by implementing the setback design as described for the ECCID Dredge Cut/Intake Channel. This design shall be established around most of the island, except for bank habitat adjacent to Kellogg Creek. Bank habitat along Kellogg Creek shall be stabilized with riprap to prevent erosion due to wave action from existing and future boater activity. Therefore, this area of Pantages Island will be designed to provide moderate-quality bank habitat as prescribed above. <u>Also to address wave action, moderate quality habitat shall also be created along the North Cove and in the North Bay at the end of Point of Timber Road.</u>

Significance after Mitigation: Less than significant.

This impact would be reduced to a less-than-significant level because the creek bank would be restored to pre-project conditions in accordance with current regulations and permit requirements. Subsequent to the creek bank restoration, a 5-year monitoring program would also be carried out to ensure that any tree and shrub mortality is documented and the dead trees/shrubs are replaced as necessary to revegetate the impacted bank.

c) Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

Impact BIO-3: Development of the project would have a significant impact on vernal pool fairy shrimp. (Significant)

The vernal pool fairy shrimp, a federal listed threatened species, has been identified in a seasonal wetland on the project site. The wetland (349 square feet) where this species was found is slated for removal to allow for the proposed project. Hence, impacts to vernal pool fairy shrimp from the proposed project are potentially significant. Implementation of **Mitigation Measure BIO-3** described below would reduce this impact to a less-than-significant level.

Mitigation Measure BIO-3: Vernal pool fairy shrimp.

a. In order to offset the project's impact on vernal pool fairy shrimp the applicant shall implement one of the following measures:

   i. Purchase credits in an existing fairy shrimp mitigation bank at a ratio determined during negotiations with USFWS during Section 7 Consultation between the Corps and the USFWS;

   ii. Acquire suitable mitigation property via fee title at a ratio determined during negotiations with USFWS during Section 7 Consultation between the Corps and the USFWS; or

   iii. With permission from state and federal regulatory agencies and in agreement with the Conservancy, the project proponent shall make a financial contribution to the Conservancy, to offset the project's impact to the vernal pool fairy shrimp. The financial contribution to the Conservancy or the amount of mitigation land that shall be purchased via fee title shall be determined during negotiations with USFWS during Section 7 consultation between the Corps and the USFWS.

b. Prior to impacting the seasonal wetland where the vernal pool fairy shrimp were found, documentation of the mitigation transaction (e.g., financial contribution to the Conservancy), and/or a copy of the Biological Opinion outlining the mitigation requirements and incidental take statement from USFWS, shall be provided to Contra Costa County Department of Conservation and Development.

c. Prior to grading onsite, and as prescribed in a Biological Opinion issued for the project, topsoils from the wetland containing the fairy shrimp egg bank shall be scalped by a qualified federal 10(a)(1)(A) permitted biologist and redeposited in appropriate seasonal mitigation wetlands that shall be created within the wetland mitigation preserve onsite.

Significance after Mitigation: Less than significant.

By obtaining "incidental take" authorization from the USFWS and purchasing credits in a suitable mitigation bank, or acquiring suitable mitigation property via fee title, or making a financial contribution to the East Contra Costa Habitat Conservancy, this impact would be mitigated to a less-than-significant level because the vernal pool fairy shrimp habitat would be preserved at a suitable location.

Impact BIO-4: Development of the project would have a potentially significant impact on the California red-legged frog. (Significant)

The California red-legged frog is a federal listed threatened species and a California species of special concern. It has not been identified on the project site; however, protocol level surveys following USFWS' survey protocol have not been conducted or authorized by this agency.

In an email communication with the applicant's biologist, the USFWS stated that the project site provides suitable habitat for this listed frog species and that compensation for the project's impact on this species "could probably be handled by contributing to the [East Contra Costa County] HCP." The details of which would be worked out at the time the Corps initiates Section 7 consultation with the Service.

The 14.14-acre perennial emergent marsh on the project site, and a surrounding 200-foot radius of upland buffer area provides suitable aquatic and upland habitat for the California red-legged frog (the words "suitable habitat" do not imply that this frog species is present onsite, only that the habitat conditions onsite are "suitable" for this species' presence). Hence, impacts to the California red-legged frog from the proposed project are regarded as potentially significant. Implementation of **Mitigation Measure BIO-4** as described below would reduce this impact to a less-than-significant level.

Mitigation Measure BIO-4: California red-legged frog.

a. Mitigation shall be 1:1 for impacts to aquatic and upland buffer habitat, that is, for each 1 acre of aquatic or upland buffer habitat impacted, 1 acre of compensatory habitat shall be preserved onsite or acquired offsite in a suitable location) or mitigation may be as required by the USFWS during consultation initiated by the Corps with USFWS pursuant to Section 7 of FESA.

b. Replacement habitat can be acquired via fee title acquisition of land, contribution into an existing mitigation bank, or, with permission from state and federal regulatory agencies and in agreement with the Conservancy, the applicant may make a financial contribution to the Conservancy.

c. Any mitigation and subsequent monitoring requirement stipulated in permits/ authorizations issued by the USFWS and the Corps for this project shall be completed as stated in the permits/authorizations. Copies of all survey reports and monitoring reports required by USFWS in the conditions of the Biological Opinion shall be submitted to Contra Costa County Department of Conservation and Development.

d. Contra Costa County shall receive copies of all agency agreements/ authorizations related to this species, and shall not issue a grading or building permit until all agency agreements/ permits relating to the California red-legged frog have been obtained for this project and mitigation has been implemented.

Significance after Mitigation: Less than significant.

By obtaining "incidental take" authorization from the USFWS and purchasing credits in a suitable mitigation bank, or acquiring suitable mitigation property via fee title, or making a financial contribution to the East Contra Costa Habitat Conservancy, this impact would be mitigated to a less than significant level because the California red-legged frog habitat would be preserved at a suitable location.

Impact BIO-5: Development of the project would have a potentially significant impact on the giant garter snake. (Significant)

The giant garter snake is a federal and state listed threatened species. It has not been identified on the project site; however, a trapping study following USFWS' survey protocol has not been conducted or authorized by this agency.

In an email communication with the applicant's biologist, the USFWS stated that the project site provides suitable habitat for this listed snake species and that compensation for the project's impact on this species "could probably be handled

by contributing to the [East Contra Costa County] HCP." The details of which would be worked out at the time the Corps initiates Section 7 consultation with the USFWS.

According to the applicant's herpetologist, the project site's perennial emergent marsh, the vegetated edges of Kellogg Creek, and the ECCID Dredge Cut provides 16.04 acres of suitable aquatic and upland habitat for the giant garter snake. (The words "suitable habitat" does not imply that this snake species is present onsite, only that the habitat conditions onsite are "suitable" for this species' presence.) Hence, impacts to the giant garter snake from the proposed project are regarded as potentially significant pursuant to CEQA. Implementation of **Mitigation Measure BIO-5** described below would reduce this impact to a less-than-significant level.

Mitigation Measure BIO-5: Giant garter snake.

a. Mitigation shall be 1:1 for impacts to suitable aquatic and upland habitat (that is, for each 1 acre of suitable aquatic and upland habitat impacted, 1 acre of compensatory habitat shall be preserved onsite or acquired offsite in a suitable location) or mitigation may be as required by the USFWS during consultation initiated by the Corps with USFWS pursuant to Section 7 of FESA.

b. Replacement habitat can be acquired via fee title acquisition of land, contribution into an existing mitigation bank, or, with permission from state and federal regulatory agencies and in agreement with the Conservancy, the project proponent may make a financial contribution to the Conservancy. Any mitigation and subsequent monitoring requirement stipulated in permits/ authorizations issued by the USFWS and the Corps for this project shall be completed as stated in the permits/authorizations.

c. Contra Costa County shall receive copies of all agency agreements/authorizations related to this species, and shall not issue a grading permit or building permit until all agency agreements/permits relating to the giant garter snake have been obtained and mitigation for this species has been implemented.

Significance after Mitigation: Less than significant.

By obtaining "incidental take" authorization from the USFWS and purchasing credits in a suitable mitigation bank, or acquiring suitable mitigation property via fee title, or making a financial contribution to the East Contra Costa Habitat Conservancy, this impact would be mitigated to a less than significant level because giant garter snake habitat would be preserved at a suitable location.

Impact BIO-6: Development of the project would have a potentially significant impact on the western pond turtle. (Significant)

The western pond turtle is a California species of special concern that is known to occur on the project site. Pond turtles have been observed basking in the emergent marsh onsite and along Kellogg Creek/Indian Slough. It is unknown whether or not the western pond turtle nests in the uplands onsite. However, due to the amount of disturbance that has occurred onsite to date due to historic farming practices, routine disking practices, and soil deposition and grading related to the Bureau of Reclamation Kellogg Creek dredging project, it seems unlikely that the western pond turtle nests onsite or has nested onsite in recent years. Regardless, impacts to individual western pond turtles or their basking/aquatic habitats would be regarded as a potentially significant impact.

Implementation of **Mitigation Measure BIO-6** as described below would reduce this impact to a less-than-significant level.

Mitigation Measure BIO-6: Western Pond Turtle.

The applicant shall install turbidity barriers around construction areas in Kellogg Creek and the buffers protecting the preserved emergent marsh to ensure that western pond turtles do not enter the project construction areas.

a. The western pond turtle is not a state listed species; therefore, it is not protected pursuant to the California Endangered Species Act. Thus, the resource agencies (CDFG and USFWS) do not have specific mitigation guidelines that must be followed to offset a project's impact to the western pond turtle. Mitigation for this special-status species is determined on a project by project basis. It is likely that any mitigation implemented for the California red-legged frog and the giant garter snake would also mitigate the proposed project's impact on the western pond turtle. The mitigation measure for impacts to these two listed species would be a 1:1 mitigation ratio (that is, for each 1 acre of impact, 1 acre of mitigation land would be acquired offsite or preserved onsite) for impacts to aquatic habitat and a surrounding upland buffer area, or mitigation would be as worked out by the applicant, the USFWS, and the Corps at the time applications for permits/authorizations from these two agencies are submitted. Replacement habitat can be acquired via fee title acquisition of land, contribution into an existing mitigation bank, or, with permission from state and federal regulatory agencies and in agreement with the Conservancy, the applicant may make a financial contribution to the Conservancy.

Significance after Mitigation: Less than significant.

Since the western pond turtle is not a state or federal listed species, there is not an agency specific mitigation ratio that is required to mitigate impacts to this species. However, by purchasing credits in a suitable mitigation bank, or acquiring suitable mitigation property via fee title, or making a financial contribution to the East Contra Costa Habitat Conservancy, project impacts would be mitigated to a less than significant level because western pond turtle habitat would be preserved at a suitable location. Also, installation of turbidity barriers would protect individual turtles by keeping them out of project construction zones.

Impact BIO-7: Development of the project would have potentially significant impact on federal and/or state listed fish species and fish species designated by the State of California as Species of Special Concern. (Significant)

Several federal and/or state listed fish species and/or state designated species of special concern could be impacted by project construction:

- Chinook salmon (some ESUs are federally listed, some ESUs are federal candidates for listing; all are State species of concern)
- steelhead (Federal listed threatened species)
- green sturgeon (Federal listed threatened species and State species of special concern)
- Delta smelt (Federal listed threatened species, State candidate species)
- longfin smelt (State species of special concern)
- Pacific lamprey (State species of special concern)
- river lamprey (State species of special concern)
- Sacramento splittail (State species of special concern)

Short-term, construction-related impacts to listed and other special status fish species could include direct take of eggs, larvae, juveniles and adult fish due to use of dredges, pumps, and other in-water construction equipment. Special-status fish may also be impacted by construction activities that increase turbidity and re-suspend polluted bottom sediment. These activities can smother eggs, impair gas exchange, and affect larval development (USFWS 1997). Turbidity may also disrupt juvenile and adult fish feeding, predator avoidance behavior, and migration patterns. Construction activities will also temporarily remove habitat available for spawning, feeding, and resting activities. These impacts have the potential to occur

where channel widening and excavation of uplands is proposed. The project will result in impacts to designated Critical Habitat for Delta smelt and the green sturgeon.

Impacts to longfin smelt, Pacific lamprey, and river lamprey are most likely to occur during the spring and summer. In addition, construction-related impacts to Sacramento splittail may occur from in-water work that increases turbidity in the water column and re-suspends polluted sediment. Turbidity may also disrupt Sacramento splittail juvenile and adult feeding, predator avoidance behavior, and migration patterns. Impacts are most likely to occur between early winter and mid-summer when Sacramento splittail spawning and rearing activities are occurring. Long-term impacts to fish have the potential to occur due to permanent loss of bank habitat.

Hence, impacts to Chinook salmon, steelhead, green sturgeon, Delta smelt, longfin smelt, Pacific lamprey, river lamprey and Sacramento splittail from the proposed project are considered to be potentially significant impacts. Implementation of **Mitigation Measure BIO-7** as described below would reduce this impact to a less-than-significant level.

Mitigation Measure BIO-7: Federal and/or State Listed Fish Species and California Species of Special Concern fish

a. To minimize potential impacts to federal and/or state listed fish and California “species of special concern” during construction and dredging of the two interior bays, a levee shall be maintained between the area to be excavated and the Kellogg Creek channel.

b. A qualified fisheries biologist shall be onsite during all pumping and siphoning activity to ensure that these activities do not result in take of federal and/or state listed fish and California “species of special concern.”

c. Silt curtains or suction dredges shall be used when conducting work in the ECCID Dredge Cut/Intake Channel and Kellogg Creek. Use of this equipment will localize sediment movement and protect fish from entrainment and the effects of increased turbidity.

d. All in-water work shall be conducted between August 1 and November 30 to minimize the potential for take of threatened and endangered fish species. By conducting work within this time period, the project will avoid most critical spawning, migratory, and dispersal periods for listed fish species.

e. Long-term impacts to fish are not expected provided the proposed bank habitat mitigation to re-create and replace impacted bank habitat is implemented by the applicant.

Significance after Mitigation: Less than significant.

By maintaining the levee between the area to be excavated and the Kellogg Creek channel, having a fisheries biologist onsite during all in-water work, and conducting work outside the critical spawning, migratory, and dispersal periods for listed fish species, and implementing bank habitat mitigation as described in **Mitigation Measure BIO-2**, above, project impacts would be mitigated to a less than significant level because listed and special-status fish species would not be likely to be in the area at the time work is conducted and impacts to fish habitat would be minimized and restored.

Impact BIO-8: Development of the project would have a potentially significant impact on tree nesting raptors. (Significant)

Suitable nesting habitat for white-tailed kite, red-tailed hawk, red shouldered hawk, Swainson's hawk, western burrowing owl, and northern harrier occurs on the project site. Since the Swainson's hawk is a state listed species which typically requires greater mitigation then non-listed raptors, the Swainson's hawk is discussed in a separate mitigation measure below. Similarly, since the western burrowing owl is a California species of special concern that has formal CDFG mitigation requirements, mitigation for the western burrowing owl is also discussed in a separate mitigation measure below.

The white-tailed kite is fully protected under the California Fish and Game Code (3511). The northern harrier is a state species of special concern. The white-tailed kite, the red-tailed hawk, the red shouldered hawk, and the northern harrier are also protected under the Migratory Bird Treaty Act (50 CFR 10.13) and their nest, eggs, and young are protected under California Fish and Game Code Sections 3503, 3503.5. Any project-related impacts to these species, their active nests, eggs, or young would be considered significant. Potential impacts to these species from the proposed project include loss of nesting habitat, disturbance to nesting birds, and possibly death of adults and/or young. No nesting raptors (birds of prey) have been identified on the project site. In the absence of survey results indicating otherwise, the project may result in impacts to nesting raptors that would be potentially significant. Implementation of **Mitigation Measure BIO-8** as described below would reduce this impact to a less-than-significant level.

Impacts to unoccupied nesting habitats for these species would not be considered significant as there are other local and regional nesting habitats available for use by these species that could be used in subsequent nesting seasons. Consequently no mitigation is warranted for impacts to unoccupied nesting habitats.

Mitigation Measure BIO-8: Tree Nesting Raptors

a. If possible, tree removal shall be completed outside the nesting season (that is, between September 2 and February 28). In an abundance of caution, a preconstruction nesting survey of the tree to be removed shall be conducted within 30 days of the scheduled removal to ensure no birds are nesting.

b. If construction or tree removal would commence between March 1 and September 1 during the nesting season, nesting surveys shall be conducted 30 days prior to grading/construction of the project or any proposed tree removal work. The raptor nesting surveys shall include examination of all trees and shrubs within sphere of influence of the proposed project, and not just of those trees slated for removal.

c. If nesting raptors are identified during the surveys, the dripline of the nest tree shall be fenced with orange construction fencing (provided the tree is on the project site), and a 300-foot radius around the nest tree shall be staked with bright orange lath or other suitable staking.

d. If the tree is adjacent to the project site then the buffer shall be demarcated per above where the buffer occurs on the project site. The size of the buffer may be altered if a qualified raptor biologist conducts behavioral observations and determines the nesting raptors are well acclimated to disturbance. If this occurs, the raptor biologist shall prescribe a modified buffer that allows sufficient room to prevent undue disturbance/ harassment to the nesting raptors. This buffer may be reduced no smaller than 100 feet from the nest tree.

e. No construction or earth-moving activity shall occur within the established buffer until it is determined by a qualified raptor biologist that the young have fledged (that is, left the nest) and have attained sufficient flight skills to avoid project construction zones. This typically occurs by August 1. This date may be earlier than August 1 or later, and would have to be determined by a qualified raptor biologist.

Significance after Mitigation: Less than significant.

By conducting tree removal outside the nesting season and/or erecting a protective buffer around any tree supporting nesting raptors, project impacts would be mitigated to a less than significant level because there would be no loss of raptor eggs or nestlings which are protected under California Fish and Game Code and the Federal Migratory Bird Treaty Act.

Impact BIO-9: Development of the project would have a potentially significant impact on the Swainson's hawk. (Significant)

The Swainson's hawk is a state-listed threatened species. While the Swainson's hawk has no special federal status it is protected from direct take under the Federal Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-711). Swainson's hawks, their nests, eggs, and young are also protected under California Fish and Game Code (§3503, §3503.5, §3513, and §3800). Swainson's hawks are known to nest within 0.1-mile northeast of the project site along Indian Slough (CNDDB Occurrence Number 1211). While Swainson's hawks have not been observed nesting on the project site (they have not been observed nesting onsite by the applicant's biologists or Monk & Associates), the eucalyptus trees and pine trees along the project site's northern boundary provide suitable nesting habitat for this raptor. Additionally, Monk & Associates observed one Swainson's hawk on the project site exhibiting defensive behavior during the September 20, 2006 site visit.

Based on the proximity of known nesting Swainson's hawks and the suitability of nesting and foraging habitat on the project site, implementation of the proposed project would be viewed by CDFG as a loss of Swainson's hawk nesting and foraging habitat. Pursuant to CEQA, any impacts to Swainson's hawk nesting and/or foraging habitat would be considered a potentially significant adverse impact (PS). Implementation of **Mitigation Measure BIO-9** as described below would reduce this impact to less than significant.

CDFG has prepared a *Staff Report Regarding Mitigation for Impacts to Swainson's Hawks in the Central Valley of California*(CDFG 1994) (hereinafter the Mitigation Guidelines) that prescribes avoidance and mitigation guidelines for impacts to Swainson's hawk nesting and foraging habitats. The Mitigation Guidelines state that acceptable mitigation to offset impacts to Swainson's hawk foraging habitat can be met by Fee Title acquisition of Swainson's hawk habitat, or by acquisition of conservation easements over lands that can be managed for this hawk species (hereinafter Habitat Management Lands). Any land acquired through Fee Title would have to be donated to a suitable conservation organization for management. In addition to providing Habitat Management Lands, the applicant would be assessed a management fee for the long-term management of the Habitat Management Lands by a suitable conservation organization.

In CDFG's Mitigation Guidelines, to replace impacted Swainson's hawk foraging habitat, the acreage requirements for Habitat Management Lands is based upon how far the proposed development is from an active Swainson's hawk nest site. The Mitigation Guidelines require applicants to replace any impacted Swainson's hawk foraging habitat within 1 mile of a nest site with 1 acre of suitable Habitat Management Land (1:1 impact to replacement ratio). Impacts that occur to Swainson's hawk foraging habitat greater than 1 mile from a nest site, but less than

5 miles require that each impacted acre be replaced with three-quarters of an acre of Habitat Management Land (1:¾ impacts to replacement ratio). Finally, impacts that occur to Swainson's hawk foraging habitat greater than 5 miles, but less than 10 miles from an active Swainson's hawk nest require that each impacted acre be replaced with 1-half acre of Habitat Management Land (1:½ impact to replacement ratio). Because the known nest site is located within 1 mile of the project site, CDFG can be expected to request that the applicant mitigate loss of foraging habitat at a 1:1 impact to replacement ratio.

Mitigation Measure BIO-9: Swainson's Hawk.

a. To meet the CDFG's mitigation requirements for impacts to Swainson's hawk foraging habitat the applicant shall implement one of the following scenarios:

   i. Dedicate and preserve 135 acres of habitat[2] (this is a 1:1 impact to mitigation ratio), as approved by CDFG, to a conservation organization. An operating endowment shall be provided to the conservation organization to manage any preserved lands in perpetuity.

   ii. With permission from state and federal regulatory agencies and in agreement with the Conservancy, the applicant may make a financial contribution to the Conservancy, commensurate with approximately 135 acres of impacts to Swainson's hawk foraging habitat.

b. To ensure that no impacts occur to any nesting Swainson's hawks, preconstruction nesting surveys shall be conducted no more then one month prior to construction to establish whether Swainson's hawk nests within 1,000 feet of the project site are occupied.

c. If an active nest is found on or adjacent to the project site "to avoid potential violation of Fish and Game Code 2080 (i.e., killing of listed species), project-related disturbance at active Swainson's hawk nesting sites should be reduced or eliminated during critical phases of the nesting cycle (March 1- September 15 annually)"(CDFG 1994).

d. If Swainson's hawks are found nesting on the project site, a qualified raptor biologist shall establish a non-disturbance boundary around the nesting site. The size of this non-disturbance boundary shall be determined by the

2 The mitigation requirement for 135 acres is the 171-acre project site minus the 36.43 acres of Corps jurisdictional waters of the U.S. onsite which do not provide foraging habitat for Swainson's hawk.

qualified raptor biologist in the field and in coordination with CDFG. The buffer shall be based on the location of the nesting tree, the birds' tolerance of noise and other disturbance (e.g., ground vibrations).

e. Upon completion of nesting cycle, as determined by a qualified raptor biologist, and in coordination with CDFG, any non-disturbance boundary/nest buffer could be vacated.

f. If the nest tree must be removed as part of the project, removal of this tree shall be mitigated in accordance with the mitigation measure prescribed for tree removal impacts in **Mitigation Measure BIO-1**. Tree planting is proposed as mitigation at a 9.5:1 ratio (that is, planting: removal). Replacement nest trees shall be native species (such as oaks or cottonwoods).

Significance after Mitigation: Less than significant.

By implementing all of the above mitigation requirements project impacts to Swainson's hawk would be reduced to a less than significant level because loss of foraging habitat and nesting habitat would be adequately compensated (mitigated) and nesting Swainson's hawks would not be disturbed during the nesting season which would prevent the loss of eggs and/or nestling birds.

Impact BIO-10: Development of the project would have a potentially significant adverse effect on the western burrowing owl. (Significant)

The western burrowing owl is a state species of special concern. This owl is also protected under California Fish and Game Code §3503, §3503.5, §3513, and §3800, and the Federal Migratory Bird Treaty Act. Burrowing owls have not been observed on the project site; however, they are known to nest in the immediate Discovery Bay West area and their presence onsite cannot be ruled out. Burrowing owls are mobile species and could nest on any upland portion of the project site in subsequent years. Impacts to burrowing owl from the proposed project would be regarded as a significant impact. Such an impact could be mitigated to a level considered less than significant pursuant to CEQA with implementation of **Mitigation Measure BIO-10** described below.

Mitigation Measure BIO-10: Western Burrowing Owl

Burrowing owl surveys conducted according to the methodologies prescribed by CDFG in their 1995 *Staff Report on Burrowing Owl Mitigation* and the Burrowing Owl Consortium in their 1993 *Burrowing Owl Survey Protocol and Mitigation Guidelines* are more likely to be accepted by CDFG. Below we provide the survey methodology that shall be used to conduct burrowing owl surveys. These surveys would meet the standards of care required by CEQA for conducting surveys for the western burrowing owl and are accepted by CDFG.

a. A nesting survey shall be conducted for western burrowing owl in the spring of the year prior to construction of the project and again 30 days prior to construction of the project.

b. If the site would be developed in the winter, then the following surveys should be conducted in the winter months. Since burrowing owls move around (through dispersal and local movements) readily in the winter months, and since there are migrants that can temporarily occupy burrows in the winter, surveys conducted in the winter months are less reliable at detecting resident burrowing owls. Regardless of whether development commences in the winter months, surveys must be completed as described below for spring/summer surveys.

c. Surveys shall commence at least 90 days in advance of projected site disturbance and again in the 30 day period just prior to breaking ground. In accordance with the Consortium's guidelines, four site visits are recommended for a complete survey. Two surveys shall be conducted 90 days before ground disturbance associated with the project and two surveys shall be conducted in the 30 day period prior to ground disturbance associated with the project. The CDFG Staff Report states that preconstruction surveys need to be completed within 30 days of grading prior to CDFG accepting a survey conclusion that no burrowing owls occur in a proposed study area (i.e., negative findings). If no owls are found during these surveys, no further regard for the burrowing owl would be necessary.

d. Western burrowing owl surveys shall be conducted from two hours before sunset to one hour after, or one hour before to two hours after sunrise. All burrowing owl sightings, occupied burrows, and burrows with owl sign (*e.g.*, pellets, excrement, and molt feathers) must be counted and mapped.

e. Surveys shall be conducted by walking all suitable habitat on the entire project site and (where possible) in areas within 150 meters (approx. 500 feet) of the project impact zone. The 150-meter buffer zone is surveyed to identify burrows and owls outside of the project area which may be impacted by factors such as noise and vibration (heavy equipment) during project construction.

f. Pedestrian survey transects shall be systematically spaced to allow 100 percent visual coverage of the ground surface. The distance between transect center lines shall be no more than 30 meters (approx. 100 ft.) and shall be reduced to account for differences in terrain, vegetation density, and ground surface visibility. To effectively survey large projects (100 acres or larger), two or more surveyors shall be used to walk adjacent, parallel transects.

g. To avoid impacts to owls from surveyors, owls and/or occupied burrows should be avoided by a minimum of 50 meters (approx. 160 ft.) if in the non-breeding months (October 1st through February 1st) and 250 feet during the breeding months (February 1st through October 1st). Disturbance to occupied burrows and within the established buffers should be avoided until no burrowing owls occur on the site. Note that CDFG can approve a passive western burrowing owl eviction plan during the non-breeding season.

h. If burrowing owls are detected on the site during the breeding season (peak of the breeding season is April 15 through July 15), and appear to be engaged in nesting behavior, a fenced 250-foot buffer would be required between the nest site(s) (*i.e.*, the active burrow(s)) and any earth-moving activity or other disturbance in the project area. This 250-foot buffer could be decreased to 160 feet once it is determined by a qualified raptor biologist that the young have fledged (that is, left the nest). Typically, the young fledge by August 31. This date may be earlier than August 31, or later, and would have to be determined by a qualified burrowing owl biologist. If burrowing owls were found on the project site, a qualified biologist would also need to delineate the extent of burrowing owl habitat on the site.

i. To mitigate impacts to burrowing owls, CDFG prescribes that six and a half acres (6.5 acres) of replacement habitat be set aside (*i.e.,* protected in perpetuity) per pair of burrowing owls, or unpaired resident bird. Such a set-aside will offset permanent impacts to burrowing owl habitat. To illustrate the extent of mitigation land required by California Department of Fish and Game, we provide this example: If two pairs of burrowing owls are identified on the project site, 13 acres of mitigation land would be acquired. Or, if one pair and one resident bird are identified, 13 acres of mitigation land would be acquired. The protected lands should be adjacent to occupied burrowing owl habitat if possible, and at a location selected in consultation with CDFG. Land identified to offset impacts to burrowing owls must be protected in perpetuity by a suitable property instrument, e.g., a conservation easement or fee title acquisition. Any mitigation lands set aside for burrowing owl would also include preparation of a Mitigation Plan for burrowing owl and their habitat. A Mitigation Plan shall be prepared and submitted to CDFG for this agency's review and comment. Contra Costa County Department of Conservation and Development must approve the Mitigation Plan prior to issuing a grading permit for the proposed project.

j. The Mitigation Plan shall identify the mitigation site and any activities proposed to enhance the site, including the construction of artificial burrows and maintenance of California ground squirrel populations on the

mitigation site. In addition, for each pair of burrowing owls found in the construction area, two artificial nesting burrows will be created at the mitigation site. The Plan should also include a description of monitoring and management methods proposed at the mitigation site. Monitoring and management of any lands identified for mitigation purposes would be the responsibility of the applicant for at least five years. An annual report must be prepared for submittal to CDFG and Contra Costa County Department of Conservation and Development by December 31 of each monitoring year. Contingency measures for any anticipated problems should be identified in the plan.

k. With permission from state and federal regulatory agencies and in agreement with the Conservancy, the applicant may make a financial contribution to the Conservancy to mitigate impacts to burrowing owls and burrowing owl habitat.

Significance after Mitigation: Less than significant.

By implementing all of the above mitigation requirements project impacts to western burrowing owls would be reduced to a less than significant level because loss of foraging habitat and nesting habitat would be adequately compensated (mitigated) and nesting burrowing owls would not be disturbed during the nesting season which would prevent the loss of eggs and/or nestling birds.

Impact BIO-11: Development of the project would have a potentially significant impact on other protected nesting birds. (Significant)

Birds protected pursuant to the Federal Migratory Bird Treaty Act and CDFG Code §3503 and §3800 could nest on the project site and may be disturbed to an extent that eggs and/or young would be lost. Additionally, the loggerhead shrike and the tricolored blackbird, both California species of special concern, could nest onsite. Impacts to protected bird species during the nesting season would be regarded as a significant impact. Implementation of **Mitigation Measure BIO-11** as described below would reduce this impact to a less-than-significant level.

Mitigation Measure BIO-11: Impacts to Other Nesting Birds.

a. A nesting survey shall be conducted prior to commencing with construction work if this work would commence between March 15 and August 31.

b. If special-status birds, such as loggerhead shrike or tricolored blackbird, are identified nesting within the area of affect, a 100-foot non-disturbance radius around the nest must be fenced. No construction or earth-moving activity shall occur within this 100-foot staked buffer until it is determined by a qualified ornithologist that the young have fledged (that is, left the

nest) and have attained sufficient flight skills to avoid project construction zones. This typically occurs by August 1. This date may be earlier than August 1, or later, and would have to be determined by a qualified ornithologist. Similarly, the qualified ornithologist could modify the size of the buffer based upon site conditions and the bird's apparent acclimation to human activities.

c. If common (that is, not special-status) passerine birds (that is, perching birds such as northern mockingbirds) are identified nesting in the trees proposed for removal, tree removal would have to be postponed until it is determined by a qualified ornithologist that the young have fledged and have attained sufficient flight skills to leave the project site. Typically, most passerine birds can be expected to complete nesting by August 1, with young attaining sufficient flight skills by this date that are sufficient for young to avoid project construction zones. Unless otherwise prescribed for special-status bird species, upon completion of nesting no further protection or mitigation measures would be warranted for nesting birds.

Significance after Mitigation: Less than significant.

By conducting preconstruction nesting surveys and implementing protective nesting buffers as described above project impacts to passerine birds would be reduced to a less than significant level because the nest site and nesting attempt would be protected during the nesting season which would prevent the loss of eggs and/or nestling birds.

f) Would the project have a substantial adverse effect on federally protected "wetlands" as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Impact BIO-12: Impacts to Waters of the United States and/or State. (Significant)

The Corps and the RWQCB have jurisdiction over waters of the United States and State pursuant to Sections 404 and 401 of the Clean Water Act, respectively. The proposed project would result in impacts to 5.29 acres of seasonal wetland habitat and 0.30 acre of marsh habitat, as confirmed by the Corps. Development of the proposed project will also result in impacts to approximately 5,800 linear feet of existing bank along Kellogg Creek. These areas would also meet the RWQCB criteria as "waters of the State."

Contra Costa County General Plan 2005-2020 published in January 2005 has several goals and policies that pertain to the protection of biological resources. One goal detailed in the General Plan states that "The County shall strive to identify and conserve remaining upland habitat areas which are adjacent to wetlands and are

critical to the survival and nesting of wetland species." Another goal states that "Seasonal wetlands in grassland areas of the County shall be identified and protected."

Because full avoidance of waters of the United States/State is not possible, any impacts to seasonal wetlands and the adjacent uplands would be regarded as significant. Implementation of **Mitigation Measure BIO-12** would reduce this impact to a less-than-significant level.

Mitigation Measure BIO-12: Impacts to Waters of the United States and/or State.

Authorization from the Corps and the RWQCB (for example, an Individual Permit and a Certification of Water Quality) shall be obtained prior to filling any waters of the U.S./State on the project site.

A *Conceptual Wetland and Emergent Marsh Preservation and Mitigation Plan* for Pantages Bays was prepared by Gibson & Skordal, LLC (dated November 15, 2006). According to this mitigation plan, minimization of indirect impacts would be accomplished by grading home pads to drain toward streets and away from open space areas, landscaping with native plants, construction on bioswales, maintaining natural buffers between the development and the preserved marsh habitat within the open space areas, and using native plantings as landscaping buffers between development and open space preserve areas. An exception is at the Emergency Vehicle Access (EVA) crossing of the marsh where there is no buffer. The location of the EVA was chosen so that the road crossed the marsh at its narrowest point. In most other cases, there is a minimum of 50 feet between the edge of the residential development and the preserved marsh. At some locations, grading would encroach into the 50 foot width; however, the graded area would be planted with native vegetation and maintained naturally (no irrigation) such that it functions as a buffer. The open space preserve area shall be separated from adjacent development or recreational areas with permanent fencing that protects the open space preserve from unauthorized use while providing a visual connection to the open space. Residential fences would be tubular steel or some other form of permanent, visually open, fencing where houses back up to the open space preserve. Past mitigation efforts from other development projects have shown that with open fencing, protected areas are kept free from dumping of trash by homeowners as the community has more connection and feels more stewardship of the open space. In addition, along the EVA/trail, kiosks with educational signage will be developed to reduce human-induced impacts.

Impacts to waters of the United States/State will also be minimized by implementing the following measures:

a. The project proponent shall implement best management practices consistent with the Storm Water Pollution Prevention Plan (SWPPP) prepared for the project to protect the emergent marsh and wetland mitigation area, including installing orange construction fencing, hay or gravel waddles, and other protective measures.

b. During project construction, a biological monitor shall be onsite to monitor the integrity of preserved wetlands and other waters.

c. For those wetland areas that cannot be avoided, compensation wetlands shall be enhanced/created to replace those wetlands permanently affected by project activities. If possible, wetlands shall be created on-site and shall resemble those wetlands affected by the project (known as in-kind replacement).

d. All impacted wetlands shall be replaced at a minimum 1:1 ratio (for each square foot of impact, one square foot of wetland would be enhanced/created) or as otherwise specified in permitting conditions imposed by the Corps and RWQCB.

e. The specific mitigation for the project consists of the components listed here:

- Creation of approximately 5.36 acres of seasonal wetland on-site;
- Creation of approximately 0.30 acre of marsh habitat on-site;
- Creation and enhancement of approximately 11,060 linear feet of bank habitat on-site, including Shaded Riverine Aquatic habitat and shallow water habitat;
- Creation of approximately 46 acres of open water habitat on-site;
- Preservation of all avoided and created aquatic areas; and
- Implementation of a comprehensive long-term storm water management plan designed to protect water quality.

The compensatory mitigation envisioned for the project will consist of two major efforts. First will be the creation of seasonal wetland habitat in the uplands adjacent to the preserved marsh, and second will be the creation and enhancement of bank habitat within the project area.

Creation (Compensatory Mitigation)

Seasonal Wetland/Emergent Marsh/Open Water Habitat

a. A minimum of approximately 5.29 acres of seasonal wetland and 0.30 acre of marsh shall be created within the 44-acre preserve area. Specifically, the creation of the seasonal wetland will occur in the 12.58-acre upland area in

the northwest corner of the site. The expansion of the marsh shall be accomplished either on the eastern side of the existing marsh on the new peninsula created by the opening of the northern bay or along the western side of the existing marsh. This represents a 1:1 mitigation ratio (created wetlands to impacted wetlands).

b. Soil borings shall be taken prior to the construction of the seasonal wetlands within the open space preserve to verify the suitability of the proposed wetland soils (e.g. cobbly soils or old alluvium would not be suitable soils).

c. Ground water depths shall also be identified within the open space preserve.

d. The locations of the created wetlands shall be selected based on the existing topography within the uplands, soil composition, and ground water depths, and the created seasonal wetlands shall be excavated to a depth necessary to accumulate seasonal (winter) groundwater and/or to any clay layer that will perch rainfall.

e. The upper 6 inches of top soil shall be scalped from the seasonal wetlands to be impacted and will be placed in the created wetlands for seed source. These topsoils would contain a seed bank of the impacted pool plant species which would germinate with fall/winter hydration of the re-created pools.

f. The created wetlands shall be very slightly over excavated to accommodate the addition of topsoil.

g. This mitigation measure may be substituted by implementing another wetland compensation plan that is approved for the project by both the Corps and the RWQCB.

Bank Habitat

Overall, the project will remove approximately 5,380 linear feet of the 10,120 linear feet of existing habitat along the project site. The applicant proposes to mitigate for the loss of 5,380 lineal feet of excavated low and moderate quality bank habitat by: (1) enhancement of 9,157 lineal feet of existing low and moderate low quality bank habitat, both onsite and offsite, to high quality bank habitat (shaded riverine aquatic habitat and shallow water habitat) on Pantages Island, ECCID Property on the south side of the ECCID Dredge Cut/Channel, Old Kellogg Creek, and Kellogg Creek between Newport Pointe and State Route 4; and (2) creation of 1,903 lineal feet of moderate quality bank habitat (shallow sloping or level bench to MHW with riparian trees and grasses, rip-rap with willows between MHW and MLW) on the excavated portion of Pantages Island, the North Cove and the end of Point of Timber Road in the North Bay. Bank habitat mitigation totals approximately 11,060 lineal feet.

Open Space Preservation

The preserved and created seasonal wetlands and marsh habitat would be located within a 44-acre permanently preserved area. In addition, the approximately 11,060 linear feet of enhanced and created bank habitat shall be preserved in perpetuity. It is envisioned that ownership of the 44 acres of open space preserve areas as well as the enhanced bank habitat on ECCID property and Pantages Island and the created banks within the bays and coves will be transferred to RD 800, and that a conservation easement would be conveyed to the Town of Discovery Bay Community Services District (TDBCSD) for preservation in perpetuity. The TDBCSD would also function as the Preserve Manager and conduct the long-term monitoring and maintenance of the preserve areas in perpetuity. On the adjoining Ravenswood project, a conservation easement has been conveyed to the TDBCSD for the same purpose pursuant to Corps Permit No. 199400928. TDBCSD will therefore be able to ensure consistent and coordinated management of the two conservation areas. RD 800 will own and be responsible by conservation covenants to monitor and maintain the bank habitat within Pantages Bays in perpetuity. Funding will be provided through annual assessments of homeowners in Pantages Bays that are secured through a binding, permanent agreement. This funding and monitoring is separate from the compensatory mitigation monitoring for the created wetlands is outlined in the Conceptual Wetland and Emergent Marsh Preservation and Mitigation Plan for Pantages Bays was prepared by Gibson & Skordal, LLC (dated November 15, 2006). Alternative long-term mitigation monitoring acceptable to permitting agencies may also be considered.

A 5-year monitoring program will be established to monitor the progress of the wetland mitigation toward an established goal. At the end of each monitoring year, an annual report will be submitted to the Corps, RWQCB and Contra Costa County. This report will document the hydrological and vegetative condition of the mitigation wetlands, and will recommend remedial measures as necessary to correct deficiencies.

Aside from the minimum replacement ratio and in perpetuity protection, various regulatory agencies may provide additional conditions and stipulations for permits. Permits for impacts to waters of the U.S. will be required by the Corps. Similarly, permits for impacts to waters of the state will be required by both the RWQCB and CDFG prior to the impacts occurring. These agencies will likely impose their own mitigation requirements. Any other conditions that are stipulated for impacts to waters of the U.S. or state by the Corps, RWQCB, and/or CDFG shall also become conditions of project approval.

Significance after Mitigation: Less than significant.

By obtaining prior authorization from the Corps and the RWQCB to impact waters of the U.S./State on the project site and creating mitigation wetlands as stipulated in the approvals/authorizations provided by these agencies, project impacts to waters of the U.S./State would be mitigated to a less than significant level because there would be no net loss of wetlands (waters of the U.S./State).

4.3.5 CUMULATIVE IMPACTS

c) Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

e) Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?

f) Would the project have a substantial adverse effect on federally protected "wetlands" as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Impact CUM BIO-1: Cumulative Impacts to Vegetation and Wildlife Resources. (Significant)

Implementation of the proposed project would contribute to a cumulative loss of seasonal wetlands, non-native annual grassland, iodine bush scrub, and creek bank habitat in the region. Implementation of the project would also result in cumulative impacts to common plant and animal species. The seasonal wetlands are also known to support a federal listed species: the vernal pool fairy shrimp. Impacts to the seasonal wetlands onsite will result in the cumulative loss of this species in the region. Additionally, the iodine bush scrub, ornamental trees, emergent marsh, and non-native grassland communities of the project site may also be important for several special-status animal species such as the Swainson's hawk, burrowing owl, California red-legged frog, giant garter snake, the loggerhead shrike, and tricolored blackbird (see Impacts and Mitigations Section above). There are other proposed projects in Eastern Contra Costa County that would/are impacting similar resources to those that would be impacted by the project. Project-related impacts would be considered cumulative with other projects in the region. The mitigation measures

prescribed above would offset cumulative impacts to special-status species, wetlands, trees, and plant communities/wildlife habitats to less-than-significant levels.

Construction of the project would result in cumulative impacts to "waters of the United States" and stream channels that are regulated by the Corps, RWQCB, the CDFG, and the Reclamation Board. On a regional basis, these impacts would add to other development related losses of "waters of the United States" and stream channels. In addition, by altering drainage patterns and water flow, downstream aquatic life could be affected as well. Several special-status fish species are known to occur in waterways in the vicinity, and these fish species could also be adversely impacted by the proposed project. Mitigation that includes creation and enhancement of impacted "waters of the U.S.," stream channels, and bank habitat would offset this cumulative impact to less-than-significant levels.

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4.4 CULTURAL RESOURCES

This section discusses known paleontological, archaeological, and historical resources that may be present on or near the project site, and evaluates the potential for the project to impact known and unknown cultural resources. Applicable legislation relating to cultural resources and archaeological sites is also summarized. This discussion is based on the *Cultural Resources Assessment of the Proposed Pantages at Discovery Bay Development*, prepared by Peak & Associates, Inc. (2003, updated in 2007), which is attached as **Appendix C** to this draft EIR and is available for review at Contra Costa County, Department of Conservation and Development, Community Development Division, 651 Pine Street, Martinez, California. An online database maintained by the University of California Museum of Paleontology was accessed and reviewed in 2010.

There were no public comments related to cultural resources received in response to the Notice of Preparation (NOP) for this draft EIR.

4.4.1 EXISTING CONDITIONS

Cultural Resources

Cultural resources are traces of human occupation and activity that include prehistoric and historic archaeological sites, districts, and objects; standing historic structures buildings, districts, and objects; and locations of important historic events of sites of traditional and/or cultural importance to various groups. Historic cultural materials may include finds from the late 19th through early 20th centuries that can be attributed to Hispanic, Asian or other ethnic groups. Potentially significant objects and features associated with the Historic Period (1769 – present) can include the following: structural remains or portions of foundations (bricks, cobbles/boulders, stacked field stone, postholes, etc.); trash pits, privies, wells and associated artifacts; isolated artifacts or isolated clusters of manufactured artifacts (e.g., glass bottles, metal cans, manufactured wood items, etc.); or human remains.

Paleontological Resources

Paleontological resources consist of the fossilized remains of plants and animals, including vertebrates (animals with backbones) and invertebrates (e.g., starfish, clams, ammonites, and marine coral). The age and abundance of fossils depends on the topography and geological formations of the region of interest. Geologic

mapping of surficial deposits in the Discovery Bay area of Contra Costa County indicate that most of the higher elevations of the region are the crests of old sand dunes of Pleistocene (10,000 to 1 million years ago) or early Holocene (present to 10,000 years ago) age, and are underlain by sandy eolian deposits that are generally considered to have formed more than 7,000 years ago. In the immediate vicinity of the project site, the lower-lying areas between the crest of dunes are underlain by younger, fine-grained alluvial fan deposits of Kellogg Creek.

A record search was conducted on July 15, 2010 of the online database maintained by the University of California Museum of Paleontology (UCMP) to identify any known paleontological resources in the project vicinity. According to the UCMP, no records of known fossil localities exist on the project site; the closest recorded paleontological site is located approximately 9 miles south, within Alameda County.

Archeological and Historical Resources

Regional Prehistoric Condition

Human occupation in northern California began at least 9,000 to 11,500 years ago, with Native American occupation and use of the Bay Area extending over the last approximately 5,000 to 8,000 years. The following discussion includes a description of the Native American tribes that are expected to have inhabited the project site based on the ethnography of the project area as well as archeological discoveries in the project area. Ethnography is the study of people and is used to characterize the prehistoric setting of the project region. Ethnographic information and archaeology are important because they provide the context for what types of artifacts may be found on the project site.

Ethnographic History

The Yokut people occupied the San Joaquin Valley and neighboring foothills. They were members of the Penutian language family, a distinct language group in California, found in the Central Valley, San Francisco Bay, and along the Pacific Coast from Marin County to Point Sur. Cultural traits were shaped by the environmental influences of the area. For example, although they spoke different languages, the Miwok people were culturally more similar to the nearby Yokuts than to the foothill members of their own language group. Furthermore, the material culture of the southern San Joaquin Yokut was more closely related to that of their non-Yokut neighbors than to the Delta members of their own language group.

The Yokuts of the interior valley, somewhat removed from the coastal incursions of the Spanish, maintained a large degree of cultural cohesiveness until they were overrun by miners and settlers in the 1850s. The Delta Yokuts, on the other hand, were nearly all mission Indians by the early 1820s and there is little knowledge of their aboriginal way of life.

Trade was well developed among the different groups, with mutually beneficial interchange of needed or desired goods such as obsidian, shell beads, and acorns. Settlements were oriented around water resources, with major villages situated near waterways that provided reliable water supplies and substantial food sources.

Regional Archaeological Context

The earliest archaeological discovery within interior portions of Contra Costa County (County) has a radiocarbon date of 2500-400 Before Christ (B.C.) This time period is associated with flexed burials and artifacts that reflect the later culture of the Bay Area (the Berkeley Pattern). The Berkeley Pattern (lasting until about Anno Domini (A.D.) 500) is characterized by the use of certain hunting and cooking tools. Around A.D. 500, the social trends of the later Berkeley Pattern intensified and developed into the Augustine Pattern. These trends include development of status distinctions based on wealth emergence of group-oriented religions, greater complexity of exchange systems to equalize access to resources, and regulation of trade relationships between different populations. Archeologically, the Augustine Pattern is marked by the introduction of the bow and arrow.

Regional Historical Conditions

Hispanic Period (1772–1848)

In 1772, Pedro Fages discovered the Carquinez Straits and explored the Contra Costa County area (Peak & Associates 2003). Between 1769 and 1823, the Franciscan order of missionary priests, serving as the principal agency of Spain's imperial expansion into Alta California, founded 21 missions establishing Hispanic control over an area from San Diego to the Bay Area. The Franciscan missions were organized to convert the native people to Roman Catholic Christianity and to a frontier form of Hispano-European society.

The introduction of disease for which native populations has no natural immunity or resistance slowly led to the decline of the native population and thus, the mission system began to fall apart. After 1834, the missions were secularized and Franciscan control was phased out. The largest part of the mission lands came into

the hands of opportunistic Spanish colonists. These colonists created a hacienda system built around a frontier ranching economy, characteristic of Mexican California in the late 1830s and 1840s (Peak & Associates 2003).

American Period (1848–Present)

After the Mexican War, the Treaty of Guadalupe Hidalgo (1848) transferred sovereignty of California to the United States. This coincided with the discovery of gold in the Mother Lode region of the Sierra Nevada, accelerating population growth in the area. The gold rush and the long-term success of mining encouraged the development of ranching, farming, trade, and urban growth. These events began a cycle of development causing California's population to increase every decade since the 1850s.

In the late 1800s, Point of Timber, a landing on Indian Slough located within the project area, proved to be an important shipping point for lumber and grain. Point of Timber generated enough traffic to create a trading center over a mile west of the intersection between Point of Timber Road and Byron Highway. The site included a general store, blacksmith shop, and a post office.

By the end of World War I, the Delta had been transformed from a large tidal marsh into a series of improved channels and leveed islands that is still recognizable today. Railroad construction by the Southern Pacific Railroad gave impetus to the beginning of industrial development in the County.

4.4.2 CULTURAL RESOURCES INVESTIGATIONS

Records Search

Peak & Associates conducted a records search of the project vicinity in December 2002 and September 2007 at Northwest Information Center at Sonoma State University (NWIS). An additional records search of the California Historical Resources Information System (CHRIS) was conducted by the Northwest Information Center in January 2010 to confirm the findings of the 2002 and 2007 records searches. The records searches revealed that approximately 1,070 acres west of the existing Discovery Bay development was part of an earlier field study conducted by Trent Mears in 1994. This study did not formally record any sites on the project site but did note three residential/farming complexes that were considered to be potentially significant historical resources. No prehistoric resources were observed during that study (see Project Site Survey discussion, below).

The NWIS record search also included a review of the Revised Preliminary Historic Resources Inventory for Contra Costa County, California (1989), which is derived from their listing in the California Inventory of Historic Resources. This review found that Point of Timber shipping point (see **Site PA-03-G05**, below), on the eastern edge of the project site, and the Point of Timber Trading Station, outside of the project site near Byron, are listed on the Revised Preliminary Historic Resources Inventory.

According to Peak & Associates, Inc., other surveys identified by NWIS were completed for a project north of Indian Slough directly opposite the project site and for the route of a Pacific, Gas & Electric (PG&E) gas pipeline to the west of the project site. Neither of these surveys recorded historical sites near the project site.

Project Site Survey

A field survey of the project site was conducted on March 19, 2003 and September 2007, by Peak & Associates, Inc. to confirm the results of the previous field survey (Mears 1994). Peak & Associates concluded that the existing soils on the project site and historical use of the site (i.e., irrigated crop production) result in a low likelihood of locating prehistoric resources or evidence of historic habitation on the site.

Topographic maps of the project area (1916 and 1978 United States Geological Survey (USGS)) were reviewed to determine historical land uses at the project site. Based on a review of these resources, the historical uses on the site include residential, agricultural, and grazing uses. According to the 1916 Byron 15' USGS quadrangle map, there was one structure at the eastern end of Point of Timber Road (PA-03-G05) and one residence in the northeastern corner of the project site, at the end of a minor road leading north from the end of Point of Timber. The 1978 Byron 15' USGS quadrangle map includes both of these structures as well as two additional residences: one residence is located at the end of Point of Timber Road (PA-03-G03) and one residence is located farther west on the north side of Point of Timber Road (PA-03-G04).

Peak & Associates confirmed that there is no longer a standing structure in the northeast corner of the project site, although an ornate entry gate, introduced vegetation, and a small artificial pond are still present. The building's foundation is no longer present. Furthermore, there are few artifacts in the area and no indication of a privy or trash dump, suggesting that historical archaeology would be unlikely to produce meaningful results.

The three major structures (identified by their field numbers) that were recorded during the field survey are discussed in greater detail below.

Site PA-03-G03

In 2002, this complex consisted of a residence, barn, and four sheds on the south side of Point of Timber Road in the western portion of the project site. The house was a two-story frame structure with stucco walls and a composite shingle roof. The second-story was an addition to the original one-story house which had a gabled roof. The second story extended from the rear (south) half of the original house and had a shed roof sloping downward to the south. The house had a tall brick chimney on the west side, which had been extended higher by an iron pipe. The residence appeared to have been heavily modified with architectural features that were not uniformly consistent. A large hole on the grounds of the complex may have represented an old well.

To the south and east of the house were four standing sheds and the remains of a fifth shed. One relatively new shed, located next to the fallen shed, had cinder block walls and a tin roof. The other three sheds were in disrepair.

The barn had tin roofing and an unusual design. It had an open section facing north and an enclosed section on the south that was elevated approximately 3 feet above ground level (probably used for feed storage). The unique design and elevation are likely related to the wet ground conditions common in the area.

The residence was the only structure on PA-03-G03 that appeared on the most recent USGS edition (1978) for the project area. This indicates that most of the complex was built after 1978 and is thus too young to be considered eligible for the National Register of Historic Places (NRHP). The structure bears little resemblance to its original appearance and there is no known association of the complex with historical persons or events. In the absence of a privy pit or other locus of older artifacts, the site is not eligible for NHRP. The complex represents post World War II farming activity and is of no greater importance at the state or local level than at the national level. The site is not eligible for the California Register of Historical Resources (CRHR).

Site PA-03-G04

In 2002, the building group north of Point of Timber Road in the western portion of the project site, consisted of a residence, tankhouse, and garage. According to the Peak & Associates report, the residence burned to the ground. A review of aerial photographs of the site indicated that the site contains only building debris associated with the complex. The tankhouse was a three-story square tower with a pyramidal tin roof and a small one-story extension with a gabled roof to the north.

There were numerous artifacts scattered around the site, but none that could be accredited to anything other than recent occupation. PVC piping in the house plumbing proved that the site was occupied until quite recently.

The 2007 site inspection revealed that the whole location had been leveled, aside from a pile of construction debris. The Peak & Associates report found that, although the tankhouse was a historically interesting type of structure, it was not unusual enough or sufficiently intact to be considered significant. Thus, the site and its remains are not eligible for listing in the NHRP. Because the remains of all of the structures have been removed and/or leveled, there is even less reason to consider the site significant. In its present condition, it is not eligible for the CRHR.

Site PA-03-G05

The PA-03-G05 complex consists of a residence, barn, and three sheds. The structural complex is at the end of Point of Timber Road; however the road once extended north to the far northeastern corner of the project site. This may have been the location of the Point of Timber shipping point. Even though the 1916 USGS map does not show a waterway in this area, prior to 1916, there would not have been any reason for the road to extend to unreclaimed swampland, except to reach the former Point of Timber shipping point. Therefore, it is likely that the northeast corner of the property is the site of the shipping point.

In 2002, the residence at the site had burned down and the barn appeared to be relatively modern. The remains of the residence included a trace of a stairway, indicating that the house was once a two-story structure. The residence was once connected to a 10- by 20-foot building via a narrow enclosed hallway. The residence was built without foundations and at one time had a full-length front porch.

The barn was very large and appeared quite modern. It had characteristic features of modern barns, including a hay loft with a roof extension at a lower pitch on both long sides, a small roof extension at the peak on one side to protect hoisting gear, and concrete wall foundations. The corrugated tin roofing was missing in places and rusted elsewhere. The vertical plank siding was missing some planks.

To the south of the barn, there was a small shed. The shed was raised about 4 feet from the ground on a concrete wall, indicating that it was a relatively new addition. West of this (between the house and the barn) were two other sheds which had partially fallen down. These sheds were originally frame structures with plank siding.

The reinspection in 2007 indicated that the residence was more deteriorated and the sheds on the west side had almost completely collapsed.

The evidence appears to indicate that the northeast corner of the project site is the former location of the Point of Timber shipping site. However, the surviving features are not the sort that would be associated with a shipping point. Point of Timber is the site of an historic event, but there is no longer any physical evidence associated with the event. None of the surviving or partially surviving structures are old enough to have been part of the Point of Timber operation. There is no known association with historic persons or events, the only older structure is nearly destroyed, and no archeologically interesting artifacts were found. Therefore, the site is not eligible for listing in the NHRP or in the CRHR.

4.4.3 REGULATORY SETTING

National Historic Preservation Act

Section 106 of the National Historic Preservation Act (NHPA) requires federal agencies to take into consideration the potential effects of proposed undertakings on cultural resources listed on or determined eligible for inclusion in the National Register of Historic Places (NRHP), and to allow the Advisory Council on Historic Preservation the opportunity to comment on the proposed undertaking. The regulations implementing Section 106 are promulgated by the Secretary of the Interior, as codified in Title 36 Code of Federal Regulations (CFR) Part 800. Section 106 requirements apply to properties not formally determined eligible, but which are considered to meet eligibility requirements.

Archaeological resources are typically considered eligible for inclusion in the NRHP because of the information they have or may be likely to convey. Intensity of impacts to archaeological resources relates to the importance of the information they contain and the extent of the disturbance or degradation.

Determining the NRHP eligibility of a site or district is guided by the specific legal context of the site's significance as set out in 36 CFR Part 60.4. The NHPA authorizes the Secretary of the Interior to expand a National Register of districts, sites, buildings, structures and objects of significance in American history, architecture, archaeology, engineering and culture. A property may be listed in the NRHP if it meets criteria for evaluation as defined in 36 CFR 60.4. Section 110(d)(6)(A) of the NHPA allows properties of traditional religious and cultural importance to a tribe to be determined eligible for inclusion in the NRHP.

The quality of significance in American history, architecture, archaeology, engineering and culture is present in districts, sites, buildings, structures and objects that possess integrity of location, design, setting, materials, workmanship, feeling and association and:

1. That are associated with events that have made a significant contribution to the broad patterns of our history; or
2. That are associated with the lives of persons significant in our past; or
3. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
4. That have yielded, or may be likely to yield, information important in prehistory or history.

Project Consistency Analysis

The project area was surveyed for cultural and historically significant resources. None of the project sites have been determined eligible for the NRHP.

California Register of Historic Resources

The California Office of Historic Preservation (OHP) administers the California Register of Historic Resources (CRHR), which was established in 1992 though amendments to the Public Resources Code, to be used by state and local agencies, private groups, and citizens to identify the state's historical resources and to indicate what properties are to be protected from substantial adverse change.

The CRHR includes resources that have been formally determined eligible for, or listed in, the NRHP, State Historical Landmark Number 770 or higher, Points of Historical Interest recommended for listing by the State Historical Resources Commission (SHRC) for listing, resources nominated for listing and determined eligible in accordance with criteria and procedures adopted by the SHRC, and resources and districts designated as city or county landmarks when the designation criteria are consistent with CRHR criteria.

PRC Section 5024.1 requires evaluation of historical resources to determine their eligibility for listing on the CRHR. The criteria for listing resources on the CRHR were expressly developed to be in accordance with previously established criteria developed for listing in the NRHP, which is described above.

As defined by Section 15064.5(a)(3)(A-D) of the CEQA Guidelines, a resource shall be considered historically significant if the resource meets the following criteria:

- It is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- It is associated with the lives of persons important in our past;
- It embodies the distinctive characteristics of a type, period, region or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
- It has yielded, or may be likely to yield, information important in prehistory or history. (Criterion D is usually applied only to archaeological sites, rather than in the evaluation of most historic architectural structures, see below.)

Automatic CRHR listings include NRHP listed and determined eligible historic properties (either by the Keeper of the NRHP or through a consensus determination on a project review); State Historical Landmarks from number 770 onward; Points of Interest nominated from January 1998 onward. Landmarks prior to 770 and Points of Historical Interest may be listed through an action of the SHRC (CAL/OHP ca. 1999b).

Project Consistency Analysis

The project area was surveyed for cultural and historically significant resources. None of the sites within the project area have been determined eligible for the CRHR.

Senate Bill 18

Signed into law on September of 2004, Senate Bill 18 (SB 18) requires cities and counties to notify and consult with California Native American Tribes about proposed local land use planning decisions for the purpose of protecting tribal cultural resources. SB 18 stipulates that, beginning on March 1, 2005, cities and counties must send any proposals for revisions or amendments to general plans and specific plans to those California Native American Tribes that are on the Native American Heritage Commission’s (NAHC) contact list and have traditional lands located within the city or county’s jurisdiction. Cities and counties must also conduct consultations with these tribes prior to adopting or amending their general plans or specific plans.

Project Consistency Analysis

The NAHC in Sacramento was contacted for a list of individuals who might be able to contribute information regarding Native American resources in the project area. Letters were sent to the recommended individuals in February 2003, but no replies were received. It should be noted that based on the presence of the peat soils, it is believed that regular flooding of this project area occurred prior to levee construction. Therefore, it is unlikely that there was substantial prehistoric habitation at or near the project site.

Other California Laws and Regulations

The disposition of Native American burials is governed by Section 7050.5 of the California Health and Safety Code and PRC Sections 5097.94 and 5097.98 and fall within the jurisdiction of the NAHC.

Project Consistency Analysis

The project will follow the procedures required by the California Health and Safety Code as outlined below in **Impact CUL-4** and **Mitigation Measure CUL-4** if any Native American remains are uncovered during project construction. The project would therefore be consistent with these requirements.

Contra Costa County General Plan

The Open Space Element of the Contra Costa General Plan contains the following relevant policies related to the protection of cultural resources:

Open Space Element

9-32: Areas which are identifiable and important archaeological or historic significance shall be preserved for such uses, preferably in public ownership.

9-33: Buildings or structures that have visual merit and historic value shall be protected.

9-34: Development surrounding areas of historic significance shall have compatible and high quality design in order to protect and enhance the historic quality of the area.

Project Consistency Analysis

The project would be in compliance with General Plan policies related to cultural resources. As previously stated, and in response to policy OS 9-33, existing structures on site are not eligible for listing in the NRHP or in the CRHR.

Furthermore, the project site is not in an area identified for archaeological or historical significance and is therefore in compliance with policies OS 9-32 and OS 9-34.

4.4.4 ANALYSIS OF POTENTIAL IMPACTS

CEQA Significance Criteria

Appendix G of the CEQA Guidelines identifies environmental issues to be considered when determining whether a project could have significant effects on the environment. As stated in Appendix G, the project would have a significant impact on cultural resources if it would:

a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5;

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5;

c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; or

d) Disturb any human remains, including those interred outside of formal cemeteries.

Discussion of Significant Impacts

Site surveys and archival research confirmed that no known archeological or paleontological resources exist on the site. Formal evaluation of the structures on the site also confirmed that no structure or site is eligible for listing on the National Register of Historic Places or the California Register of Historic Resources.

However, there is always a possibility that an unknown resource may exist in the project area and could be discovered during grading, excavation, or construction. The following mitigation measures would ensure proper identification and treatment of any resources uncovered during construction of the project.

a) Would the project cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?

Impact CUL-1: Construction of the project could potentially cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5. (Significant)

As described previously in this section, none of the buildings on the project site were identified as eligible for listing in the NRHP and therefore their removal would not constitute a significant impact. However, there is always a possibility that an unknown site may exist in the project area and could be discovered during grading, excavation, or construction. Indicators of historic resources include glass, metal, ceramics, brick, wood, and similar debris.

Mitigation Measure CUL-1: Pursuant to CEQA Guidelines Section 15064.5, in the event that any prehistoric, historic, archaeological or paleontological resources are discovered during ground-disturbing activities, all work within 100 feet of the resources shall be halted and the applicant shall consult with the County and a qualified professional (historian, archaeologist and/or paleontologist as determined appropriate and approved by the County) to assess the significance of the find.

If any find is determined to be significant, representatives of the County and the consulting professional shall determine the appropriate avoidance measures or other appropriate mitigation.

In considering any suggested mitigation proposed by the consulting professional to mitigate impacts to cultural resources, the County shall determine whether avoidance is feasible in light of factors such as the nature of the find, project design, costs, and other considerations.

If avoidance is infeasible, other appropriate measures, such as data recovery, shall be instituted. Work may proceed on other parts of the project site while mitigation for cultural resources is carried out. All significant cultural materials recovered shall, at the discretion of the consulting professional, be subject to scientific analysis, professional museum curation, and documentation according to current professional standards.

At the County's discretion, all work performed by the consulting professional shall be paid for by the applicant and at the County's discretion, the professional may work under contract with the County.

Significance after Mitigation: Less than significant.

This mitigation provides specific direction to protect unanticipated historical resources discoveries during project construction. Implementation of **Mitigation Measure CUL-1** would reduce potential impacts to a less-than-significant level.

b) Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

Impact CUL-2: Construction of the project could potentially cause a substantial adverse change in the significance of an unknown archaeological resource pursuant to Section 15064.5. (Significant)

As previously discussed, no archeological resources were observed or are known to be present on the project site. However, there is a possibility that resources meeting the definition of a unique archeological resource in Section 21083.2 of the

Public Resource Code or qualifying as historic resources could become visible once vegetation is removed or during construction excavation. Indicators of prehistoric site activity include artifacts, exotic rock, or unusual amounts of shell or bone.

Mitigation Measure CUL-2: Implementation of **Mitigation Measure CUL-1** would reduce impacts from changes in the significance of an archaeological resource to a less-than-significant level.

Significance after Mitigation: Less than significant.

This mitigation provides specific direction to provide protection of unanticipated archaeological resources discoveries during project construction. Implementation of **Mitigation Measure CUL-2** would reduce potential impacts to a less-than-significant level.

c) Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Impact CUL-3: Construction of the project potentially could directly or indirectly destroy a unique paleontological resource on site or unique geologic feature. (Significant)

As previously discussed, no paleontological resources or unique geologic features were observed or are known to be present on the project site. There is, however, a possibility that paleonotological resources may become visible once vegetation is removed or during construction activities such as grading and excavation. Examples of paleonotological resources include body fossils (e.g., bones, any part of an organism) and trace fossils (e.g., any evidence of past life such as tracks, trailways, burrows).

Mitigation Measure CUL-3: Implementation of **Mitigation Measure CUL-1** would reduce impacts to paleontological resources or a unique geologic feature to a less-than-significant level.

Significance after Mitigation: Less than significant.

This mitigation provides specific direction to protect unanticipated paleontological resources or unique geologic feature discoveries during project construction. Implementation of **Mitigation Measure CUL-3** would reduce potential impacts to a less-than-significant level.

d) Would the project disturb any human remains, including those interred outside of formal cemeteries?

Impact CUL-4: Construction of the project could potentially disturb human remains, including those interred outside of formal cemeteries. (Significant)

Although no signs of human remains or burial sites were observed during the survey of the project site, or known to be present in the project area, there is always a possibility that such remains may become visible once vegetation is removed or during construction activities such as grading and excavation.

The project applicant shall comply with California law regarding the treatment of Native American human remains as contained in California Health and Safety Code Section 7050.5 and Section 7052 and California Public Resources Code Section 5097.

California law recognizes the need to protect Native American human burials, skeletal remains, and items associated with Native American burials from vandalism and inadvertent destruction. The California Health and Safety Code requires that if human remains are found in any location other than a dedicated cemetery, work is to be halted in the immediate area, and the county coroner is to be notified to determine the nature of the remains. The coroner is required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or state lands (Health and Safety Code Section 7050.5[b]). If the coroner determines that the remains are those of a Native American interment, then the Native American Heritage Commission shall be consulted to identify the most likely descendants and the appropriate disposition of the remains.

Mitigation Measure CUL-4: In the event of the accidental discovery or recognition of any human remains in any location other than a dedicated cemetery, the following steps shall be taken:

1. There shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until:

- The coroner of the county in which the remains are discovered must be contacted to determine that no investigation of the cause of death is required, and
- If the coroner determines the remains to be Native American:
  - The coroner shall contact the Native American Heritage Commission within 24 hours;
  - The Native American Heritage Commission shall identify the person or persons it believes to be the most likely descended from the deceased Native American;
  - The most likely descendent may make recommendations to the landowner or the person responsible for the excavation work for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in Public Resources Code Section 5097.98; or

2. Where the following conditions occur, the landowner or his authorized representative shall rebury the Native American human remains and associated grave goods with appropriate dignity on the property in a location not subject to further subsurface disturbance:
   - The Native American Heritage Commission is unable to identify a most likely descendent or the most likely descendent failed to make a recommendation within 24 hours after being notified by the Commission;
   - The identified descendant fails to make a recommendation; or
   - The landowner or his authorized representative rejects the recommendation of the descendant, and the mediation by the Native American Heritage Commission fails to provide measures acceptable to the landowner.

Significance after Mitigation: Less than significant.

Implementation of **Mitigation Measure CUL-4** would ensure compliance with the requirements of Section 15064.5 of the State CEQA Guidelines (CEQA Guidelines, Section 15064.5, subd. (e)), which dictate the actions that shall be taken in the event that human remains are discovered outside of a dedicated cemetery. Compliance with the provisions of the guidelines would reduce the significant impact to unknown archeological material and prehistoric human remains in the project area to a less-than-significant level.

4.4.5 CUMULATIVE IMPACTS

The cumulative setting for cultural resources includes the planned developments within the county that could potentially affect archaeological or historical resources. As determined by the Contra Costa County General Plan EIR, development associated with the General Plan buildout would result in potentially significant impacts to known and unknown historical and archeological resources. As such, development of the project site, in combination with the planned projects of the General Plan EIR, would result in a significant cumulative impact to cultural resources.

No known historical, archaeological, or paleontological resources were identified on the project site, and therefore the project would not contribute to this cumulative impact. To the extent that construction activities unearth previously undiscovered resources, implementation of **Mitigation Measures CUL-1** through **CUL-4** would ensure their proper identification and treatment. The project would therefore not result in a considerable contribution to this cumulative impact.

4.4.6 REFERENCES

Peak & Associates, Inc. (2003, updated in 2007) Cultural Resources Assessment of the Proposed Pantages at Discovery Bay Development.

University of California Museum of Paleontology. Locality Search. Available at http://ucmpdb.berkeley.edu/loc.shtml. Accessed on July 15, 2010.

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4.5 ENERGY

This section describes the potential effects of the project on energy conservation. The information in this section comes primarily from analysis of the project site plans and communication with service providers.

There were no public comments related to energy demands received in response to the Notice of Preparation (NOP) for this draft EIR.

4.5.1 EXISTING CONDITIONS

Electrical and Gas Services

In Contra Costa County, electrical and gas services in the project area are provided by Pacific Gas & Electric Company (PG&E). PG&E obtains its energy supplies from power plants and natural gas fields in northern California, as well as from energy purchased outside its service area and delivered through high voltage transmission lines and pipelines. Power is generated from various sources, including fossil fuel, hydroelectric, nuclear, wind, and geothermal plants; and is fed into the electrical grid system serving Northern California.

The project site is located within the southeastern portion of PG&E's Delta Distribution Planning Area (DPA), which covers the eastern portion of Contra Costa County from Bay Point to Middle River. Electricity distribution facilities that serve the project site are located in a subsection of the Delta DPA – the Brentwood DPA – which has a current capacity of approximately 335 megawatts (MW) (Lau 2010). Existing electrical utility lines that serve Discovery Bay are currently located within a joint trench in a public utility easement that crosses the site under the private extension of Point of Timber Road.

PG&E supplies natural gas to the project area through a distribution system in eastern Contra Costa County. An existing 6-inch plastic gas main extends along the south side of Point of Timber Road, terminating just east of the project site (Tedder 2005).

PG&E updates all load forecasts for gas and electricity services every year. Load growth forecasts for this area are currently determined using load growth projection tools that use a number of sources of data including past peak loading, population, development plans, and temperature history information. If an update for the distribution area indicates that the load growth is different than forecasted, an expansion of the existing systems would be timed to match the faster or slower

growth. The distribution systems that would serve the project are designed to adequately serve the energy demands from projected development within the County's Urban Limit Line, including the proposed project (Lau 2010; Nelson 2010).

4.5.2 REGULATORY SETTING

California's Energy Efficiency Standards for Residential Buildings, Title 24

The Energy Efficiency Standards for Residential Buildings were established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. The 2008 Standards went into effect in January 2010. Typically, every three years, energy efficiency standards are revised and performance requirements are more stringent. It is expected at least one more update would occur prior to the development of the project. Building permits submitted on or after this date must comply with the 2008 Standards. In addition, new minimum green building requirements are included in the most recent California Building Code update, which takes effect in January 2011.

Project Consistency Analysis

The project would incorporate 'green building' and energy saving measures pursuant to the Energy Efficiency Standards of Title 24, and the new California Green Building Code. The project would therefore not conflict with the provisions of Title 24.

Contra Costa County General Plan

The Conservation Element of the General Plan contains the following relevant goals related to energy conservation:

Goal 8-L: Reduce energy use in the County to avoid risks of air pollution and energy shortages which prevent orderly development.

Project Consistency Analysis

The project would incorporate 'green building' and energy saving measures pursuant to the Energy Efficiency Standards of Title 24, and the new California Green Building Code. These same measures would reduce the potential energy use of the project, thereby ensuring consistency with Goal 8-L of the General Plan.

4.5.3 ANALYSIS OF POTENTIAL IMPACTS

CEQA Significance Criteria

Energy significance determinations utilized in this section are based on Appendix F (Energy Conservation) of the CEQA Guidelines. A significant impact will occur if implementation of the project would:

a) Result in a wasteful, inefficient and unnecessary use of energy; or

b) Result in a significant demand on regional energy supply or requirements of substantial additional capacity.

Discussion of Less-than-Significant Impacts

Analysis of the project plans and site characteristics in the context of the two significance criteria stated above shows that less-than-significant impacts would result for each of the criteria. The following discussions present the evidence in support of this conclusion.

a) Would the project result in a wasteful, inefficient and unnecessary use of energy?

b) Would the project result in a significant demand on regional energy supply or requirements of substantial additional capacity?

Energy Demands/Usage

Based on energy averages provided by PG&E, the project would be expected to increase peak load demands on gas and electricity services by 2,336 cubic feet per hour (cfh) and 2 MW (Lau 2010; Nelson 2010).

Gas and electric services would require the extension of existing underground electrical and gas utility lines from utility corridors in Point of Timber Road. PG&E has indicated that it has sufficient capacity to serve the project contingent upon submittal of the appropriate application by the developer. It is not anticipated that off-site improvements of these service lines would be necessary. However, realignment and extension of these existing service lines would be necessary on the project site to accommodate the new building footprints and would be completed as part of project development. PG&E does not anticipate that service interruption to existing utility services in the project area would be required during the realignment and extension of service lines on the project site. If a service interruption in the surrounding community would be required in order to energize

the new service lines, the interruption would be planned in advance by PG&E and notices to the community would be sent by PG&E prior to the service interruption (Lau 2011).

As previously discussed, electrical and gas services would be provided by PG&E. No deficiencies in electrical and gas service have been identified by PG&E in the vicinity of the project, nor has PG&E identified any deficiencies that would be caused by the project. Furthermore, compliance with the Energy Efficiency Standards of Title 24 would reduce the project's potential to use energy in a wasteful manner. Therefore, the project's impact on energy would be less than significant.

4.5.4 CUMULATIVE IMPACTS

The cumulative setting for energy impacts is the regional energy distribution systems that serve the project site and the County. Development proposed as part of the build out of the General Plan within the County could increase energy demands on these systems. However, the General Plan EIR does not identify any cumulative energy impact related to build out.

PG&E has indicated that the distribution systems serving the County are designed to adequately serve the energy demands from projected development within the County's Urban Limit Line, including the proposed project (Lau 2010; Nelson 2010). As such, the project in combination with the other development in the County would not result in cumulative impacts to energy.

4.5.5 REFERENCES

Lau, Warren, Electrical Distribution Engineer, PG&E – Diablo Division. Personal Communication August 20, 2010 and April 18, 2011.

Nelsen, Matt, PG&E, Entry Engineer – Gas Distribution Planning. Personal Communication September 2, 2010.

Tedder, Gene, Senior Business Manager, PG&E – Antioch, CA Office. Personal Communication January 4, 2005.

4.6 GEOLOGY AND SOILS

This section describes the geology and soils of the project site and the potential risks associated with known geologic hazards, including seismic activity (i.e., earthquakes). This section assesses the potential impacts to geology and soils as a result of project implementation and includes mitigation measures to reduce potentially significant impacts.

Information in this section is based on the following geotechnical reports prepared for the project by ENGEO, Inc. (ENGEO) in 1999, 2004, and 2006:

- ENGEO, 2006, Geotechnical Exploration, Pantages, Discovery Bay, California (revised October 27, 2006).
- ENGEO, 2004, Geotechnical Exploration, Pantages, Discovery Bay, California.
- ENGEO, 1999, Preliminary Geotechnical Exploration, Discovery Shores, Contra Costa County, California.

The geotechnical reports that have been incorporated into this analysis are available for review at Contra Costa County, Department of Conservation and Development, Community Development Division, 651 Pine Street, Martinez, California. Illustrated in **Figure 4.6-1** are the locations of the various geological investigations on the project site.

No comments related to the geology and soils were received in response to the Notice of Preparation (NOP) for this environmental impact report (EIR).

4.6.1 EXISTING CONDITIONS

Regional Geology

The project site is located in the Sacramento Delta, within the Great Valley Geomorphic Province of California. In this region, wind-blown deposits (i.e., weakly consolidated fluvial, deltaic and eolian) overlie bedrock. The nearest outcrop of bedrock to the project site is approximately 4.5 miles to the southwest in the foothills of the Diablo Range.

Most of the higher elevations of the region are the crests of old sand dunes of Pleistocene or early Holocene age[1], and are underlain by sandy eolian deposits that are generally considered to have formed more than 7,000 years ago. In the immediate vicinity of the project site, the lower-lying areas between the crest of dunes are underlain by younger, fine-grained alluvial fan deposits of Kellogg Creek.

Site Geology

The near-surface sediments across the project site primarily consist of eolian, tidal wetland, lacustrine (lake-deposited) and alluvial (water-deposited) deposits. These sediments are typically irregularly stratified, poorly-consolidated deposits of clay, silt and sand. The geology of the near-surface deposits on the site has been largely influenced by changes in sea level during the Late Pleistocene and early Holocene ages.[2]

Soils on the project site were mapped by the Soil Conservation Service (SCS) and presented in the *Biological Resources Analysis* report, included as **Appendix B**. The four soil units mapped on the project site include Marcuse clay (Mb), Brentwood clay loam (wet)(Bc), Pescadero clay loam (Pb), and Sacramento clay, alkali (Sb). All of these soils are classified as hydric, meaning they are soils that form in wetlands. The Marcuse clay, Brentwood Clay Loam (wet), and the Pescadero Clay Loam soils form in alluvium from sedimentary rock. The Sacramento Clay alkali forms in mixed alluvium.

Artificial Fill

In 2003, the project site was used by Reclamation District 800 (RD 800) for detention of dredge spoils as part of a channel dredging program in Discovery Bay. Artificial fill related to the dredging program was generally identified at the ground surface along the northern and southeastern edges of the project site, as well as within the areas of the former siltation ponds located in the central portion of the project site. The fill primarily consists of up to 3 to 4 feet of stiff, silty and sandy clay.

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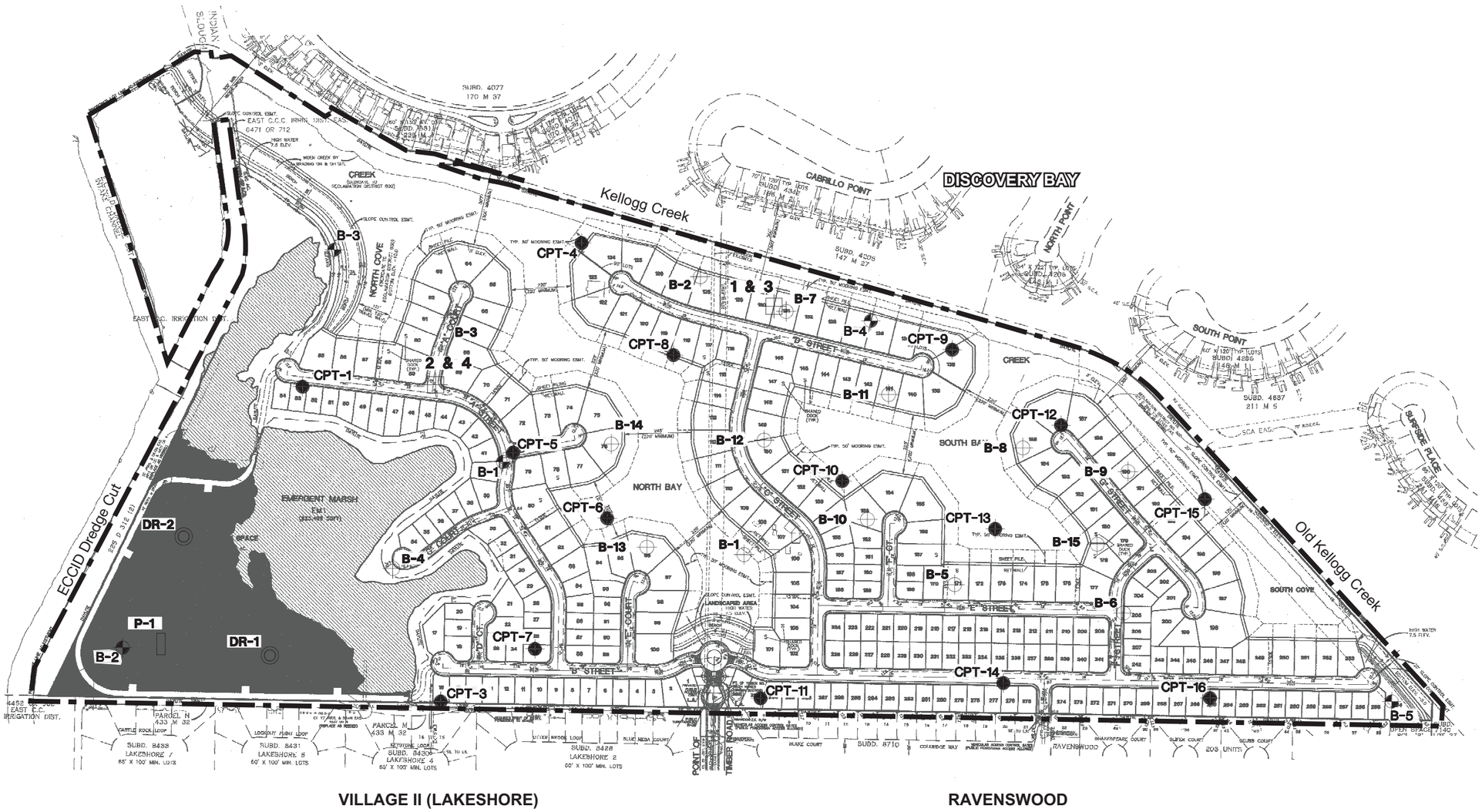
[1] The Holocene age is a geological time period which began approximately 12,000 years ago. The Late Pleistocene age is a geological time period that began approximately 10,000 years ago.

[2] The Pleistocene Epoch occurred between 1.8 million and 10,000 years ago.



EXPLANATION

B-6 APPROXIMATE LOCATION OF EXPLORATORY BORING (ENGEO, 2004)

B-5 APPROXIMATE LOCATION OF EXPLORATORY BORING (ENGEO, 1999)

B-15 APPROXIMATE LOCATION OF EXPLORATORY BORING (ENGEO, 2006)

CPT-16 APPROXIMATE LOCATION OF CONE PENETRATION TEST (ENGEO, 1999)

2 & 4 APPROXIMATE LOCATION OF RAPID IMPACT COMPACTION TEST AREA AND CPT (2004)

DR-2 DOUBLE RING INFILTROMETER

P-1 PERCOLATION TEST

N

0 125 250 500 FEET

Geotechnical Location Of Field Investigations

Figure 4.6-1

Source: ENGEO, Inc., 2007.

Figure 4.6-1 Location of Field Investigations (back)

Fine-Grained Alluvium

Fine-grained alluvium deposited from Kellogg Creek occurs at ground surface across the majority of the project site. The alluvium deposits typically consist of silty to sandy clay, clayey to sandy silt, and relatively thin layers of loose to medium dense sand. These layers are considered relatively weak and potentially compressible. The soft clayey soils were about 1.5 to 6 feet thick, and encountered at approximate elevations of 0 to 15 feet below ground surface.

Dune Sand

Fine- to medium-grained silty dune sand occurs at the surface of the elevated areas on the northern portion of the site. The dune sand deposits are 10 to 15 feet thick, with base elevations approximately 5 to 15 feet below ground surface. Sands characterized as having a fine- to medium-grain size and silty texture are relatively consistent throughout the deposit, and are characteristic of eolian sand deposits caused by wind transport.

Groundwater

Groundwater beneath the project site was encountered at depths between 3.5 to 13 feet below ground surface. However, groundwater levels on the site are not static and may fluctuate due to seasonal variation in rainfall, tidal action, or other factors not in evidence at the time of the subsurface investigation.

Seismic and Geological Hazards

The project site is located in an area of moderate seismic activity. No active or inactive faults are known to come to the surface on or within the immediate vicinity of the project site. The closest active fault with surface expression, as identified by the California Geology Survey (formerly California Division of Mines and Geology), is the Greenville fault, approximately 9 miles southwest of the project site (California Geological Survey 2007). Other active faults in the project region include the Calaveras fault, 22 miles to the southwest; the Hayward fault, 31 miles to the southwest; and the San Andreas fault, 49 miles to the southwest. No portion of the project site is mapped within an Earthquake Fault Zone (EFZ), as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map (California Geological Survey 2010).

Although no active faults have been mapped through the project site, a seismically-active blind thrust belt underlies the Coast Range - Great Valley geomorphic boundary and passes through the eastern portion of Contra Costa County (County). Its location is not well established, but it is predicted to lie within 5 miles of the project site.

Potential seismic hazards at the project site resulting from a nearby moderate to major earthquake can generally be classified as primary and secondary. The primary seismic hazard is ground rupture, also called surface faulting. Common secondary seismic hazards include ground shaking, soil liquefaction, lateral spreading, and land subsidence.

Surface Rupture

Surface rupture occurs when the ground surface is broken due to fault movement during an earthquake. The location of surface rupture generally can be assumed to be along an active major fault trace. No known active or potentially active faults cross the project site; therefore, the probability of experiencing surface rupture is low.

Ground Shaking

Ground shaking is a general term referring to all aspects of motion of the earth's surface resulting from an earthquake, and is normally the major cause of damage in seismic events. An earthquake of moderate to high magnitude generated within the San Francisco Bay Area (Bay Area) could cause considerable ground shaking at the project site.[3] The degree of shaking would be dependent on the magnitude of the event, the distance to the seismic source of rupture, and local geologic conditions. According to the Contra Costa County General Plan (General Plan) Safety Element, the project site is in an area designated as "highest damage susceptibility." These areas are defined by the General Plan as weak, water saturated deposits that possess many adverse engineering characteristics, and have poor earthquake stability.

[3] A probabilistic seismic hazard evaluation prepared for the project site forecasts a horizontal ground surface acceleration (g) of 0.31 g with a 10 percent probability of exceedance in a 50-year design lifetime of the planned improvements.

Slope Stability

Slope failure can occur as either rapid movement of large masses of soil (landslide) or slow, continuous movement (creep). The primary factors influencing the stability of a slope are: the nature of the underlying soil or bedrock; the geometry of the slope (height and steepness); rainfall; and the presence of previous landslide deposits. However, the project area is flat, and landslide hazards are not expected.

Soil Liquefaction

Liquefaction is the temporary transformation of loose, saturated granular sediments from a solid state to a liquefied state as a result of seismic ground shaking. In the process, the soil undergoes temporary loss of strength, which commonly causes ground displacement or ground failure to occur. Since saturated soils are a necessary condition for liquefaction, soil layers in areas where the groundwater table is near the surface have higher liquefaction potential than those in which the water table is located at greater depths.

As previously discussed, the upper 10 to 15 feet of the dune sands appear to be loose to medium dense in consistency across much of the central and northern portion of the project site. Given that the water table is near the surface (as high as 3.5 feet below ground surface), these upper, loose dune sand layers are potentially liquefiable. Because of their clay content, the layers of loose to medium dense alluvial sands encountered in the southern portion of the project site are considered non-liquefiable.

With regard to liquefaction potential, the Safety Element of the General Plan presents a map that divides Contra Costa County into three categories: “generally high,” “generally moderate to low,” and “generally low.” According to this map, the project site is in the “generally high” category. However, this map is only used as screening tool by the County during the processing of land development applications. The classification “generally high” liquefaction does not imply the presence of liquefiable sands on a parcel. Site specific investigations are needed to determine if truly liquefiable sands are present on site and to provide stabilization measures where liquefiable sands are confirmed. Because the site is in the “generally high” category, quantitative evaluation of liquefaction potential is required by the County.

Lateral Spreading

Lateral spreading is a form of horizontal displacement of soil toward an open channel or excavation boundary. Lateral spreading can result from either the slump of low cohesion unconsolidated material or more commonly by liquefaction of

either the soil layer or a subsurface layer underlying soil material on a slope, resulting in gravitationally driven movement. Earthquake shaking leading to liquefaction of saturated soil can result in lateral spreading where the soil undergoes a temporary loss of strength.

The potential for lateral spreading is rated high in the portions of the project site that are adjacent to open bodies of water and underlain by liquefiable sands. Additionally, the proposed landscaped slope near the central western entrance to the site has potential to experience lateral spreading during an earthquake.

Expansive Soils

Expansion and contraction of volume can occur when expansive soils undergo alternating cycles of wetting (swelling) and drying (shrinking). During these cycles, the volume of the soil changes markedly. As a consequence of such volume changes, structural damage to buildings and infrastructure may occur if the potentially expansive soils were not considered in project design and during construction.

The Uniform Building Code (UBC) classifies the expansivity of soils based on their Plastic Index (PI), as determined by laboratory testing using prescribed test procedures. The UBC states that PI's between 91-130 are considered to have a "High Expansion Potential" and any values in excess of 130 are to be termed "Very High Expansion Potential". The distinctions are contained in Table 18-I-B of the UBC. The near-surface soils in the northern portion of the project site generally consist of non-plastic (non-expansive) sandy material. By contrast, soils in the southern portion of the project site consist primarily of clayey materials of medium to high plasticity (tendency to swell or shrink due to changes in moisture content) and a moderate to high expansion potential. Soils that rated as highly expansive represent a significant risk of damage to buildings and infrastructure.

Ground Subsidence

Subsidence can occur in areas where the subsurface materials, such as limestone rock or salt deposits, are dissolved by fluid flow, creating subsurface voids that can collapse. Subsidence also occurs where natural resources are extracted, and soil grains compact. Decomposition of highly organic soils and seasonal drying of expansive clay soils can result in subsidence, which could damage buildings.

No areas of significant organic soils were encountered during the preliminary geotechnical investigations on the project site. However, relatively weak and potentially compressible layers of soft clay were encountered in the south central portion of the site. Based on the proposed fill thickness, the total consolidation

settlement across the site is estimated to range from approximately 0.5 to 1 inch. Approximately 90 percent of the estimated consolidation settlements would be compacted within 4 months under the weight of the fill (ENGEO 2011).

Corrosivity of Soils

A corrosive substance is one that will destroy or irreversibly damage another surface or substance with which it comes into contact. The soils at the project site contain a moderate to severe degree of sulfate, and are severely corrosive to buried metals. Concrete and metal structures that come into contact with these soils would be at risk for corrosion, which could result structural damage to buildings and infrastructure.

Soil Erosion

Soil erosion is a natural process that can be caused by wind or water. Sand mining and loss of vegetation west of the project area has caused accelerated erosion along the coast. The eolian soils located beneath the project area are susceptible to wind erosion. Erosion of these soils could also be accelerated by loss of vegetation or an increase in channelized water runoff.

Runoff water quality is regulated by the National Pollutant Discharge Elimination System (NPDES) program (established through the Federal Clean Water Act); the NPDES program objective is to control and reduce pollutant discharges to surface water bodies. In California, the NPDES program is administered by the State Water Resources Control Board (State Board), with local oversight provided by the Regional Water Quality Control Boards (Water Boards). Refer to **Section 4.9, Hydrology and Water Quality**, for detailed discussion of NPDES program.

4.6.2 REGULATORY SETTING

California Building Standards Code

Title 24 of the California Code of Regulations, also known as the California Building Standards Code, sets minimum requirements for building design and construction. The 2010 version of the California Building Standards Code are effective as of January 1, 2011. The California Building Standards Code is a compilation of three types of building standards from three different origins:

- Building standards that have been adopted by state agencies without change from building standards contained in national model codes;
- Building standards that have been adopted and adapted from the national model code standards to meet California conditions; and

- Building standards, authorized by the California legislature, that constitute extensive additions not covered by the model codes that have been adopted to address particular California concerns.

In the context of earthquake hazards, the California Building Standards Code's design standards have a primary objective of assuring public safety and a secondary goal of minimizing property damage and maintaining function during and following seismic events. The 2010 code assigns a seismic design category (SDC) to each structure. The SDC is assigned as a means of capturing both the seismic hazard, in terms of mapped acceleration parameters (spectral values), site class (defining the soil profile), and the occupancy category (based on its importance or hazardous material contents). The SDC affects design and detailing requirements as well as the structural system that may be used and its height.

Project Consistency Analysis

The project and its components would be required to be constructed in accordance with the 2010 California Building Code (or later adopted codes). Additionally, implementation of **Mitigation Measure GEO-1** would ensure protection of the project development and the subsequent community to adverse effects from seismic related ground failures.

Alquist-Priolo Earthquake Fault Zoning Act

The California Legislature passed the Alquist-Priolo Earthquake Fault Zoning Act in 1972 to mitigate the hazard of surface faulting to structures. The act's main purpose is to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The act addresses only the hazard of surface fault rupture and is not directed toward other earthquake hazards. Local agencies must regulate most development in fault zones established by the state geologist.

Project Consistency Analysis

Since the project area does not lie in an Alquist-Priolo EFZ, and no evidence of active faulting has been documented, the risk of surface fault rupture at the project area is considered very low, and no actions need to be taken to conform with the Alquist-Priolo Act.

Seismic Hazards Mapping Act

The Seismic Hazard Mapping Act was adopted in 1990 following the Loma Prieta earthquake to reduce threats to public health and safety and to minimize property damage caused by earthquakes. The Act directs the U.S. Department of

Conservation to identify and map areas prone to the earthquake hazards of liquefaction, earthquake induced landslides, and amplified ground shaking. The act requires site-specific geotechnical investigations to identify potential seismic hazards and formulate mitigation measures prior to permitting most developments designed for human occupancy within the Zones of Required Investigation.

Project Consistency Analysis

The California Geological Survey has not yet released Seismic Hazard Maps of the County. However, the project would be constructed in accordance with the California Building Code, as previously stated. Additionally, implementation of **Mitigation Measure GEO-1** would ensure protection of the project development and the subsequent community to adverse effects from seismic related ground failures.

Contra Costa County Code, Section 94-4.420

Section 94-4.420 of the Contra Costa County Code (County Code), "Soil Report", was adopted in 1978 to mitigate the hazards of unstable soils and geological formations to structures. Pursuant to the County Code, two copies of the preliminary soil investigation report prepared for a project must be submitted to the County's building inspection department. The report shall indicate the presence of critically expansive soils, unstable geological formations, or any soil problems which may present a hazard to structure, buildings, or other improvements. If soil instability issues arise, a report including the recommended corrective actions taken to prevent structural damage to buildings, structures, or improvements must also be submitted. Upon review of the preliminary soil report, the County building inspector will determine the completeness of the report and the effectiveness of the recommended corrective actions. If approved, the County building Inspector shall certify the final map or parcel map and the recommended actions in the report shall become a condition of approval and incorporated into the development.

Project Consistency Analysis

As identified below under **Mitigation Measure GEO-1**, the project will require site-specific geological assessments performed by state-licensed geologists and specialists to identify potential seismic and geologic hazards and incorporate

recommended mitigation measures into the proposed development of the project site. The project would be required to comply with all provisions of the County Code.

Contra Costa County General Plan

The following policies from the Safety Element of the County General Plan are relevant to geology, soils, and seismicity issues on the project site.

Safety Element

10-3: Because the region is seismically active, structures for human occupancy shall be designed to perform satisfactorily under earthquake conditions.

10-6: Structures of human occupancy, and structures and facilities whose loss would substantially affect the public safety or the provision of needed services, shall not be erected in areas where there is a high risk of severe damage in the event of an earthquake.

10-8: Ground conditions shall be a primary consideration in the selection of land use and in the design of development projects.

10-10: Policies regarding liquefaction shall apply to other ground failures which might result from groundshaking but which are not subject to such well-defined field and laboratory analysis.

10-14: Preparation of a geologic report shall be required as a prerequisite before authorization of public capital expenditures or private development projects in areas of known or suspected faulting.

10-20: Any structures permitted in areas of high liquefaction danger shall be sited, designed, and constructed to minimize the dangers from damage due to earthquake-induced liquefaction.

10-21: Approvals to allow the construction of public and private development projects in areas of high liquefaction potential shall be contingent on geologic and engineering studies which define and delineate potentially hazardous geologic and/or soils conditions, recommend means of mitigations these adverse conditions; and on proper implementation of the mitigation measures.

10-27: Soil and geological reports shall be subject to the review and approval of the County Planning Geologist.

Policy Consistency Analysis

All development within the project site will be designed based on the most recent state seismic requirements and building codes. These measures would ensure the reduction of potential risks to people and property resulting from seismic and geologic hazards. The project would therefore be consistent with the County's General Plan policies relevant to geology, soils, and seismicity.

4.6.3 ANALYSIS OF POTENTIAL IMPACTS

CEQA Significance Criteria

Appendix G of the CEQA Guidelines identifies environmental issues to be considered when determining whether a project could have significant effects on the environment. As identified in Appendix G, the project would have a significant impact on geology and soils if it would:

a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

   i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault;

   ii. Landslides;

   iii. Strong seismic ground shaking; or

   iv. Seismic-related ground failure, including liquefaction;

b) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water;

c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on-or off site landslide, lateral spreading, subsidence, liquefaction or collapse;

d) Result in substantial soil erosion or the loss of topsoil; or

e) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property.

Discussion of No Impacts

Analysis of the project plans and site characteristics shows that no impact would result for one of the five significance criteria. The following discussion presents the evidence in support of this conclusion.

a) i. Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated by the most recent Alquist-Priolo Earthquake Fault Zoning Map?

As discussed previously, the project site does not include any faults identified as Alquist-Priolo Earthquake Fault Zones. Therefore, the project would not expose people or structures to potential substantial adverse effects from these types of earthquake fault zones.

a) ii. Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving landslides?

The project site generally flat and there is no history of landslides in the vicinity of Discovery Bay. As such, there is a negligible level of risk related to landslides.

b) Would the project have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

The project site would be served by the Town of Discovery Bay Community Services District (TDBCSD). Future development would not rely on septic tanks or other alternative waste water disposal systems, as the urbanized nature of the proposed development necessitates the use of municipal wastewater collection and treatment systems (see **Section 4.16, Utilities**). Therefore no impact would occur.

Discussion of Significant Impacts

Analysis of the project plans and site characteristics shows that there would be a significant impact for four of the five significance criteria. The following discussion presents the evidence in support of this conclusion.

a) iii. Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking?

a) iv. Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failures, including liquefaction?

c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on-or off site landslide, lateral spreading, subsidence, liquefaction or collapse;

Impact GEO-1: Implementation of the project could expose people and developments to adverse effects from strong seismic ground shaking and seismic related ground failure including liquefaction and lateral spreading. (Significant)

Although the project site is not within an officially designated Alquist-Priolo Earthquake Fault Zone, there is a seismic source in the region capable of generating considerable ground shaking at the project site. This could lead to potentially significant impacts resulting from strong seismic ground shaking and seismic-related ground failure including liquefaction or lateral spreading.

With proper design and construction, the geological hazards confirmed on the project site could be successfully mitigated. For example, waterfront bank stabilization walls are proposed by the applicant to confine liquefiable soils and thereby reduce the potential for lateral spreading. Additionally, preliminary geotechnical reports prepared for the project recommend specific criteria and standards for the following components of the project:

- demolition and clearing
- selection of earth materials
- fill removal
- excavation of bays and coves
- the use of bank stabilization walls to control lateral spreading
- treatment of wet soils
- placement of engineered fill
- observation and testing
- shrinkage

- dewatering
- foundation design
- performance criteria for wall systems
- pavement design
- landscape irrigation
- backfilling of utility trenching.

The preliminary geotechnical reports prepared for the project site provided sufficient data to make a preliminary assessment of geological hazards in this draft EIR. However, final design of the project would require future geotechnical analysis and plan review, which is required be performed in conjunction with the processing of construction permits. The County Code make provision for requiring additional geologic and geotechnical studies during the processing of final maps, grading permits, and building permits, as discussed in the mitigation measures below.

The California Building Code (2010) has established guidelines for seismic structural analysis for sites located near active seismic sources. As required by law, the project would be designed in conformance with current applicable residential standards for seismic stability as presented in the 2010 California Building Code, or the version in effect at the time of building permit issuance.

Mitigation Measure GEO-1a: The project applicant shall design structures and foundations to withstand expected seismic sources in accordance with the current version of the California Building Code, as adopted by the County.

Mitigation Measure GEO-1b: At least 60 days prior to recording the Final Map the applicant shall submit updated improvement plans for the project for review by the County's Peer Review Geologist and review and approval by the Zoning Administrator. For the purposes of geologic review, the plans shall provide detailed information on the bank stabilization wall system being proposed along the waterfront residential lots.

Mitigation Measure GEO-1c: Prior to the issuance of building permits, the applicant shall submit an updated geology, soils and foundation report meeting the requirements of the Subdivision Ordinance, Section 944.420 for review by the Peer Review Geologist and review and approval of the Zoning Administrator. The report shall address the specific approach to grading and development indicated by the Final Subdivision Map and Improvement Plans, and shall provide technical data and engineering analysis that addresses the stability of the residential lots.

The project geotechnical engineer shall use the following performance criteria:

- Factor of Safety of a minimum of 1.5 for static conditions,
- Factor of Safety of 1.25 for pseudo-static conditions, and which takes into account the potential for a seismic source in the site vicinity (Great Valley seismic zone) and
- Factor of Safety of 1.3 for rapid draw down.

Mitigation Measure GEO-1d: During the construction of subdivision improvements, the project geotechnical engineer shall provide observation and testing services and issue a grading/shoring wall completion report. The report shall provide documentation on the bank stabilization wall depths and appropriate testing of fill compaction to determine the effectiveness of the bank stabilization measures in preventing lateral spreading failures toward the Kellogg Creek channel.

Significance after Mitigation: Less than significant.

The risk of structural damage from ground shaking is regulated by the building codes and County Grading Ordinance. The California Building Code (2010) requires use of seismic parameters which allow the structural engineering analysis of structures to be based on soil profile types. Compliance with building and grading regulations can be expected to keep risks within generally accepted limits. Peer review of the final design plans and active supervision of the installation of the project's seismic components would ensure compliance with all County approved building requirements.

d) Would the project result in substantial soil erosion or the loss of topsoil?

Impact GEO-2: Development of the project site could result in substantial soil erosion or the loss of topsoil. (Significant)

The project site is approximately 171 acres, of which approximately 80 acres is proposed for development. Construction and/or excavation of associated lots, private streets, and waterways on the project site would temporarily increase the amount of exposed (unvegetated) surfaces. Erosion of these surfaces could lead to increased sedimentation in receiving water bodies (e.g., Kellogg Creek and Indian Slough).

Mitigation Measure GEO-2: The applicant shall submit a Storm Water Pollution Prevention Plan (SWPPP) for review and approval by the Building Inspection Division of the Department of Conservation and Development. The SWPPP shall

be consistent with the terms of the State Construction Storm Water General Permit, the manual of Standards for Erosion and Sedimentation Control Measures by the Association of Bay Area Governments, policies and recommendations of the County and the RWQCB. The County has SWPPP resources available on its website: http://www.co.contra-costa.ca.us/depart/pw/design/swppp/.

With regard to long-term control of sedimentation and protection of water quality, a Storm Water Control Plan (SWCP) C.3 Report (dk Consulting 2006) was prepared for the project and submitted to the County's Public Works Department in order to comply with County water quality requirements. Engineered linear bioretention facilities (dry swales) are the selected stormwater runoff treatment for this project, which are area based storm water treatment facilities.

Significance after Mitigation: Less than significant.

Effective implementation of the provisions within the SWPPP and SWCP would keep construction period and long-term erosion and sedimentation to a practical minimum.

e) Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?

Impact GEO-3: The project could expose structures to substantial adverse effects related to expansive and corrosive soils on the project site. (Significant)

The expansive characteristics of the soils on the project site may cause ground subsidence and/or settlement that would damage the proposed building foundations if not taken into consideration during final design of the project.

Additionally, the soils at the project site contain a moderate to severe degree of sulfate. Sulfate soils are severely corrosive to buried metals. Concrete and metal structures that come into contact with these soils would be at risk for corrosion, which could result structural damage to buildings and infrastructure.

Implementation of **Mitigation Measures GEO-1b** and **GEO-1c** would ensure that the final development plans for the project were peer reviewed and that any issues to the stability of the foundations, etc. were properly engineered given the conditions of the project site. Implementation of **Mitigation Measure GEO-3** would ensure that the corrosivity of the soils was also taken into account.

Mitigation Measure GEO-3: At least 30 days prior to recordation of the final map, the project applicant shall submit a plan for monitoring corrosivity of pads and road beds. The plan shall demonstrate how the results of the study will guide design of concrete and ferrous materials that are in contact with the ground.

Significance after Mitigation: Less than significant.

Peer review of the final design plans would ensure compliance with all County approved building requirements, including those related to expansive and corrosive soils.

4.6.4 CUMULATIVE IMPACTS

Geological hazards related to future development in the project vicinity are site specific and relate to the type of building and building foundation proposed, as well as the soil composition and slope on the site.

The General Plan EIR noted that build out would increase the potential for new development in areas subject to seismic shaking, liquefaction, ground failure and landsliding, thereby increasing the associated risks to persons and property.

As discussed in this section, the project site is not subject to landsliding, liquefaction or ground failure and would not therefore contribute to this identified cumulative impact.

Regarding potential seismic shaking, the site is not located in the vicinity of an active fault line or fault trace and would not therefore be subject to ground rupture. However, because of the seismically active nature of the region, the project is required to conform to all general plan conditions requiring analysis and design to ensure adequate performance during a seismic event. The incorporation of these design requirements ensure that the project would not make a considerable contribution to the increase in population exposed to posed injury, death, or property damage from seismic events in the region.

4.6.5 REFERENCES

California Geological Survey, 2007, Fault Rupture Hazard Zones in California, CGS Special Publication 42.

California Geological Survey. Alquist-Priolo Earthquake Fault Zones. http://www.consrv.ca.gov/CGS/rghm/ap/. Last Accessed July 13, 2010

California Regional Water Quality Control Board (RWQCB)– San Francisco Bay Region. Erosion and Sediment Control Field Manual, August 2002.

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ENGEO, 2006, Geotechnical Exploration, Pantages, Discovery Bay, California (revised October 27, 2006).

ENGEO, 2004, Geotechnical Exploration, Pantages, Discovery Bay, California.

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4.7 GLOBAL CLIMATE CHANGE

This section describes the existing greenhouse gas (GHG) conditions and analyzes the potential GHG emissions that would result from implementation of the project. Emission sources considered include transportation, natural gas combustion, indirect emissions from electrical usage, emissions associated with water conveyance and wastewater treatment.

The impact analysis presented in this section was conducted using guidance adopted by the Bay Area Air Quality Management District (BAAQMD) in June 2010. Operational emissions of GHG were estimated using the URBEMIS 2007 model (version9.2.4), using other BAAQMD emissions factors for area and indirect sources.

The quantitative analysis for greenhouse gas emissions can be found in its entirety in **Appendix A** of this draft environmental impact report (EIR).

There were no public comments related to GHG emissions received in response to the Notice of Preparation (NOP) for draft EIR.

Methodology

The effect of a project on global climate change is calculated by quantifying project emissions of GHG. Carbon dioxide (CO_2) is the "reference gas" for climate change, meaning that emissions of GHGs are typically reported in carbon dioxide equivalents: CO_2e.

According to the BAAQMD, no single land use project could, by itself, generate sufficient GHG emissions to noticeably change the global average temperature (BAAQMD 2010a). Therefore, GHG emissions are recognized exclusively as potential cumulative impacts.

Emissions associated with project construction and operation were calculated in accordance with the California Air Pollution Control Officers Association (CAPCOA) guidance for calculating project emissions. As recommended by the CAPCOA approach, mobile source (vehicle) emissions and area source emissions (e.g., natural gas combustion), and indirect emissions (e.g., emissions associated with production of electricity) were calculated using the URBEMIS2007 model.

Emissions of methane (CH_4) and nitrous oxide (N_2O) were estimated separately based on the URBEMIS2007 estimates of carbon dioxide from vehicles and natural gas combustion. Because these gases are more powerful global warming gases, the emissions were multiplied by a correction factor to estimate CO_2e.

The URBEMIS2007 model does not predict indirect emissions associated with water conveyance, wastewater treatment, or electricity consumed by future users of the project site that are generated off-site. The emissions associated with these activities were calculated as follows:

- GHG emissions related to electricity use were estimated using average annual electrical consumption per residence recommended by the BAAQMD.
- GHG emissions from water conveyance were estimated by multiplying annual water usage by an estimated "embedded" electrical consumption for northern California of 1,450 kilowatt hours per million gallons (kwh/MG), as recommended by the BAAQMD.
- GHG emissions from wastewater treatment were estimated by multiplying annual wastewater generation by an estimated "embedded" electrical consumption for northern California of 2,500 kilowatt hours per million gallons (kwh/MG), as recommended by the BAAQMD.

A more detailed methodology and calculations can be found in **Appendix A** of this EIR.

4.7.1 EXISTING CONDITIONS

Greenhouse gases trap heat in the atmosphere, preventing it from dissipating into outer space. The accumulation of GHGs in the atmosphere has been implicated as a driving force for global climate change. Definitions of climate change vary between regulatory authorities and the scientific community, but in general can be described as the changing of the earth's climate caused by natural fluctuations and anthropogenic activities that alter the composition of the global atmosphere.

Individual projects contribute to the cumulative effects of climate change by emitting GHGs during demolition, construction and operational phases. The principal GHGs are CO_2, CH_4, N_2O, ozone (O_3),[1] and water vapor. While the primary GHGs in the atmosphere are naturally occurring; CO, CH_4, and N_2O are largely emitted from human activities, accelerating the rate at which these compounds occur within the earth's atmosphere.

[1] Ozone is not directly emitted, but is formed from other gases in the troposphere, the lowest level of the earth's atmosphere. Ozone also contributes to the retention of heat.

Emissions of CO are largely by-products of fossil fuel combustion, whereas methane results from off-gassing associated with agricultural practices and landfills. Other GHGs, such as hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride have much greater heat absorption potential than CO_2, and are generated in certain industrial processes.

There is international scientific consensus that human-caused increases in GHGs have and will continue to contribute to global warming, although there is uncertainty concerning the magnitude and rate of the warming. Potential global warming impacts in California may include, but are not limited to, loss in snow pack, sea-level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years (ARB 2006). Secondary effects are likely to include global rise in sea-level, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity.

The California Air Resources Board (ARB) estimated that in 2008 California produced about 478 million gross metric tons (about 527 million U.S. tons) of CO_2e GHG emissions.[2] The ARB found that transportation is the source of 36 percent of the state's GHG emissions, followed by electricity generation (both in-state and out-of-state) at 24 percent and industrial sources at 19 percent. Commercial and residential fuel use (primarily for heating) accounted for 9 percent of GHG emissions (ARB 2010).

In the San Francisco Bay Area (Bay Area), fossil fuel consumption in the transportation sector (on-road motor vehicles, off-highway mobile sources, and aircraft) is the single largest source of GHG emissions, accounting for approximately 36.41 percent of the Bay Area's 95.8 million metric tons of GHG emissions in 2007. Industrial and commercial sources (including office and retail uses) were the second largest contributors of GHG emissions with about 36.40 percent of total emissions. Electricity production accounts for almost 16 percent of the Bay Area's GHG emissions, followed by domestic sources (e.g., home water heaters, furnaces, etc.) at approximately 7 percent. Off-road equipment and farming account for approximately 4 percent of the total Bay Area GHG emissions (BAAQMD 2010b).

California has taken a leadership role in addressing the trend of increasing GHG emissions, with the passage in 2006 of California Assembly Bill 32 (AB 32), the Global Warming Solutions Act. This legislation is discussed below, in **Subsection 4.7.2**, **Regulatory Setting.**

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[2] Because of the differential heat absorption potential of various GHGs, GHG emissions are frequently measured in "carbon dioxide-equivalents," which present a weighted average based on each gas's heat absorption (or "global warming") potential.

4.7.2 REGULATORY SETTING

Federal

In December 2009, in response to a U.S. Supreme Court ruling, the U.S. Environmental Protection Agency (USEPA) made a finding under the federal Clean Air Act (CAA) that current and projected atmospheric concentrations of the six generally recognized GHGs (CO_2, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride) "threaten the public health and welfare of current and future generations," and that emissions of these gases from new cars and trucks "contribute to the greenhouse gas pollution which threatens public health and welfare" (EPA n.d.). While not imposing any regulatory requirements, this "endangerment finding" under the federal CAA is required before USEPA can issue regulations, and will allow the agency to adopt GHG emissions standards that it proposed in September 2009.

In conjunction with USEPA, the National Highway Traffic Safety Administration of U.S. Department of Transportation (DOT) anticipate that joint rulemaking for new heavy-duty engines and vehicles will be proposed in Fall 2010, finalized by July 2011, and would begin with model year 2014 (EPA 2010). DOT has proposed new fuel economy standards that would apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016. The proposed DOT standards require these vehicles to meet an estimated combined average emissions level of 250 grams of CO_2 per mile in model year 2016, equivalent to 35.5 miles per gallon (mpg) if the automotive industry were to meet this CO_2 level entirely through fuel economy improvements (EPA 2009). To address light-duty vehicles, USEPA and DOT will issue a Notice of Intent by September 30, 2010, announcing plans for setting stringent light vehicle standards for model year 2017 and beyond, consistent with the respective statutory authorities (EPA 2010).

The DOT published a Draft Environmental Impact Statement for proposed Corporate Average Fuel Economy (CAFE) Standards; the comment period closed November 9, 2009 (National Highway Traffic Safety Administration 2009). In a related action, in June 2009, EPA granted California a waiver under the federal CAA, allowing the state to impose its own, stricter GHG regulations for vehicles beginning in 2009 as described in more detail below.

State

California has been at the vanguard of state efforts to regulate and reduce GHG emissions and to plan for the effects on global climate change. The state recognizes that "there appears to be a close relationship between the concentration of

greenhouse gases in the atmosphere and global temperatures" and that "the "evidence for climate change is overwhelming." The effects of climate change on California remain uncertain. According to a 2009 California Climate Adaptation Strategy final discussion report prepared by the California Climate Action Team Report,[3] the following climate change effects and conditions can be expected to occur in California over the course of the next century:

- A change in the timing of precipitation, with more falling as rain and less as snow, resulting in a diminishing Sierra snowpack that would threaten the state's water supply;
- Increased average temperatures of up to 4.0-9.0 degree Fahrenheit (°F);
- A 25 to 35 percent increase in the number of days ozone pollution levels are exceeded in most urban areas;
- Increased vulnerability of forests due to pest infestation, increased temperatures, and lighting storms without precipitation;
- Increased challenges for the state's important agricultural industry from water shortages, increasing temperatures, and saltwater intrusion into the Delta;
- Increased electricity demand, particularly in the hot summer months; and
- Increased sea-level rise by 12 to18 inches by 2050 and by 21 to 55 inches by 2100 (Refer to **Section 4.9, Hydrology and Water Quality,** for more detail related to sea level rise).

Current statewide emissions of GHG gases are estimated at 478 million metric tons CO_2e. Transportation is the largest source of GHG emissions in California, creating about 36 percent of the emissions. Electricity generation is responsible for 24 percent of statewide GHG emissions and industrial activities account for another 19 percent. On a per-person basis, GHG emissions are lower in California than most other states; however, California is a populous state, and the second largest emitter of GHG in the U.S., making it one of the largest emitters in the world. Under a "business as usual" scenario (i.e., with no new reduction plans), emissions of GHG in California are estimated to increase to approximately 600 million metric tons of CO_2e by 2020, a 25 percent increase over current emissions.

[3] The "Climate Action Team", a group of state agencies, was set up to implement Executive Order S-3-05. Under this order, the state plans to reduce GHG emissions by 80 percent below 1990 levels by 2050.

State of California Executive Order S-3-05

In June 2005, in recognition of California's vulnerability to the effects of climate change, Governor Schwarzenegger established Executive Order S-3-05, which sets forth a series of target dates by which statewide emission of GHGs would be progressively reduced, as follows: by 2010, reduce GHG emissions to 2000 levels; by 2020, reduce GHG emissions to 1990 levels; and by 2050, reduce GHG emissions to 80 percent below 1990 levels (ARB 2008).

Assembly Bill 32 — The California Global Warming Solutions Act of 2006

In 2006, California passed the California Global Warming Solutions Act of 2006 (Assembly Bill No. 32; California Health and Safety Code Division 25.5, Sections 38500, et seq., or Assembly Bill 32 (AB 32)), which requires the ARB to design and implement emission limits, regulations, and other measures, such that feasible and cost-effective statewide GHG emissions are reduced to 1990 levels by 2020 (representing a 25 percent reduction in emissions).

AB 32 establishes a timetable for the ARB to adopt emission limits, rules, and regulations designed to achieve the intent of the Act. In order to meet these goals, California must reduce its GHG emissions by 30 percent below projected 2020 business as usual emissions levels or about 10 percent from today's levels. On December 11, 2008, ARB approved a Scoping Plan to meet the 2020 GHG reduction limits outlined in AB 32. The Scoping Plan estimates a reduction of 174 million metric tons (about 191 million U.S. tons) of CO_2e.

Transportation Sector Reductions

Approximately 1/3 of the emissions reductions strategies fall within the transportation sector and include the following: California Light-Duty Vehicle GHG standards, the Low Carbon Fuel Standard, Heavy-Duty Vehicle GHG emission reductions and energy efficiency, and medium and heavy-duty vehicle hybridization, high speed rail, and efficiency improvements in goods movement. These measures are expected to reduce GHG emissions by 57.3 million metric tons (63 million U.S. tons) of CO_2e.

Electricity Sector Reductions

Emissions from the electricity sector are expected to reduce another 49.7 million metric tons (55 million U.S. tons) of CO_2e. Reductions from the electricity sector include building and appliance energy efficiency and conservation, increased

combined heat and power, solar water heating (AB 1470), the renewable energy portfolio standard (33 percent renewable energy by 2020), and the existing million solar roofs program.

Other Reductions

Other reductions are expected from industrial sources, agriculture, forestry, recycling and waste, water, and emissions reductions from cap-and-trade programs. Regional GHG targets are also expected to yield a reduction of 5 million metric tons (5.5 million U.S. tons) of CO_2e (ARB 2008).

Applicability to the Project

Measures that could become effective during project implementation pertain to construction-related equipment and building and appliance energy efficiency. Some proposed measures will require new legislation to implement, some will require subsidies, some have already been developed, and some will require additional effort to evaluate and quantify. Additionally, some emissions reductions strategies may require their own environmental review under the California Environmental Quality Act (CEQA) or the National Environmental Policy Act (NEPA). Some applicable measures that are ultimately adopted will become effective during construction and operation of the project and the project would be subject to these requirements.

While ARB has identified a GHG reduction target of 15 percent from current levels for actions by local governments themselves, it has not yet determined what amount of GHG emissions reductions it recommends from local government land use decisions. The Scoping Plan does state that successful implementation of the plan relies on local governments' land use planning and urban growth decisions because local governments have primary authority to plan, zone, approve, and permit land development to accommodate population growth and the changing needs of their jurisdictions. ARB further acknowledges that decisions on how land is used will have large effects on the GHG emissions that will result from the transportation, housing, industry, forestry, water, agriculture, electricity, and natural gas emission sectors. Many of the measures in the Scoping Plan, such as implementation of increased fuel efficiency for vehicles (the "Pavley" standards), increased efficiency in utility operations, and development of more renewable energy sources, require statewide action by government, industry, or both. Some of the measures are at least partially applicable to development projects, such as increasing energy efficiency in new construction, installation of solar panels on individual building roofs, and a "green building" strategy.

California's Regional Transportation and Land Use Planning Efforts (Senate Bill 375)

In addition to policy directly guided by AB 32, in 2008 the legislature passed Senate Bill (SB) 375, which provides for regional coordination in land use and transportation to incorporate a "sustainable communities strategy" into regional transportation plans that will achieve GHG emission reduction targets set by ARB. SB 375 also includes provisions for streamlined CEQA review for some infill projects such as transit-oriented development. The Metropolitan Transportation Commission's (MTC) 2013 Regional Transportation Plan (RTP) will be its first plan subject to SB 375.

SB 375 requires ARB to establish regional GHG reduction targets for GHGs. ARB appointed a 21-member Regional Targets Advisory Committee to recommend factors to be considered and methodologies used in setting the regional goals; this committee provided its recommendations to ARB in September 2009.

Modification to the Public Resources Code (Senate Bill 97)

Pursuant to State Senate Bill (SB) 97, the Governor's Office of Planning and Research (OPR) was required to "prepare, develop, and transmit" the guidelines to the Resources Agency on or before July 1, 2009. OPR transmitted draft guidelines to the Resources Agency in June 2009. In September, 2009, the Resources Agency released draft amendments to the CEQA Guidelines regarding GHG reductions. These draft guidelines were adopted on December 30, 2009 and went into effect on March 18, 2010. These CEQA Guidelines provide direction for determining the significance of impacts from GHG emissions on the environment.

The BAAQMD adopted Air Quality Guidelines on June 2, 2010 that include a significance threshold for GHG emissions within the Bay Area region (BAAQMD 2010a). Refer to **Subsection 4.7.3**, **Analysis of Potential Impacts** for further discussion of the significance thresholds used in evaluating global climate change and GHG emissions for this project.

California's Energy Efficiency Standards for Residential Buildings, Title 24, Part 6, of the California Code of Regulations and California Building Code (Cal Green)

The Energy Efficiency Standards for Residential Buildings were established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. The 2008 Standards went into effect in January 2010. Typically every three years energy efficiency standards are revised to include more stringent performance

requirements. It is expected the 2011 standards would be implemented prior to the development of the project. In addition, new minimum green building requirements are included in the most recent California Building Code update and they will be in effect by January 2011.

Regional

BAAQMD Climate Protection Program

In June 2005, the BAAQMD established a Climate Protection Program to reduce pollutants that contribute to global climate change and affect air quality in the Bay Area. The climate protection program includes measures that promote energy efficiency, reduce vehicle miles traveled, and develop alternative sources of energy all of which assist in reducing emissions of GHG and in reducing air pollutants that affect the health of residents. BAAQMD also seeks to support current climate protection programs in the region and to stimulate additional efforts through public education and outreach, technical assistance to local governments and other interested parties, and promotion of collaborative efforts among stakeholders.

Project Consistency Analysis

The project would be required to comply with any federal and state regulations pertaining to GHG emissions. It is the goal of the state (AB 32) to reduce GHG emissions to previous levels (i.e., 1990 levels by 2020). As discussed in **Chapter 3.0, Project Description**, the project would incorporate approximately 770 trees for landscaping and 44 acres of open space. The project would also include a pedestrian and bicycle path.

4.7.3 ANALYSIS OF POTENTIAL IMPACTS

CEQA Significance Criteria

Appendix G of the CEQA Guidelines identifies environmental issues to be considered when determining whether a project could have significant effects on the environment. As identified in Appendix G, the project would have a significant greenhouse gas impact if it would:

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; or

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

GHG impacts are evaluated in the context of the cumulative condition, since no single land use (during construction or operation) can generate enough project-level emissions to change the global average temperature (BAAQMD 2010a). No project-level impacts are therefore identified.

The BAAQMD adopted the following CEQA thresholds of significance on June 2, 2010 to clarify the evaluation of GHG emissions in the cumulative context:

- 4.6 metric tons of CO_2e /capita/yr;
- 1,100 metric tons of CO_2e /yr; or
- Compliance with a qualified Climate Action Plan.

The project's operational and construction GHG emissions are quantified on a CO_2e basis and compared against the 4.6 metric tons of CO_2e /capita/yr threshold noted above.

In order to meet the definition of a less-than-significant impact, the total annual rate of project emissions divided by the total project population (number of residents) cannot exceed 4.6 metric tons.

The County does not have a Climate Action Plan or other local policies and regulations adopted for the purpose of reducing the emissions of GHG. Therefore, the analysis is based upon whether the project by itself would impede or conflict with the emissions reduction targets strategies prescribed in or developed to implement AB 32.

Discussion of Significant Impacts

a) Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

b) Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

The project would not result in any potentially significant project-level impacts on global climate change. It is generally understood that no single land use project can generate enough GHG emissions to noticeably change the global average temperature (BAAQMD 2010a). GHG emissions are therefore recognized exclusively as cumulative impacts. Refer to **Subsection 4.7.4**, **Cumulative Impacts** for a discussion of the project's cumulative contribution to GHG emissions and their impact on global climate change.

4.7.4 CUMULATIVE IMPACTS

Impact CUM GCC-1: The project would generate GHG emissions in excess of the BAAQMD threshold of 4.6 metric tons of CO_2e per service population per year and would have a considerable contribution on global climate change. (Significant)

The project's incremental increases in GHG emissions associated with traffic, and with direct and indirect energy use, would contribute to regional and global increases in GHG emissions and associated climate change effects. **Table 4.7-1** shows estimated GHG emissions in metric tons per year, and also presents the project's annual generation of CO_2 equivalents per capita. The methodology and assumptions used in calculating GHG emissions are described previously in the "Methodology" subsection and the calculations can be found in **Appendix A**.

The project would emit approximately 5,080 metric tons of CO_2e annually when fully developed. The project would generate 876 new residents, resulting in a per capita CO_2 emissions rate of 5.79 metric tons per person per year. This rate of emission is greater than the adopted BAAQMD threshold of 4.6 metric tons of CO_2e per year.

The emissions in **Table 4.7-1** do not reflect recently-adopted control measures, such as the California Green Building Code, which became effective August 1, 2009, with mandatory compliance becoming effective January 1, 2011. The Green Building Code is a supplement to the California Building Code, and sets standards for energy efficiency, water efficiency and conservation, material conservation and resource efficiency, and environmental quality in the planning, design and construction of buildings. Pursuant to this new code, the project would be required to implement many energy efficiency measures that would reduce the project's CO_2e emissions. Implementation of the following measures would be expected to reduce project GHG emissions by a maximum of 10 percent (i.e., to 5.21 metric tons of CO_2e per capita per year):

- **Water Usage and Quality**: The water usage and quality standards are intended to promote water use reduction by using low-flow toilets, water-saving kitchen and lavatory faucets, use of drought-tolerant native plant material, etc.
- **Energy Performance**: Energy performance standard include energy efficient standards for heating, ventilation, and air conditioning (HVAC) system and other appliances that could be installed in residential units. These appliances include centralized gas fired water heating, reversible ceiling fans to help distribute air in summer and winter, central air conditioning utilizing same ducting system as central heating, and meeting Title 24 requirements for insulation, air infiltration, and natural lighting.

- **Environmental Pollution Reduction**: Environmental pollution reduction standards would include storage and collection recyclables; use of low volatile organic compounds (VOC) paint; etc.

Table 4.7-1 Annual CO_2e Emissions Associated with Project Operation

Source Type	Proposed Project Annual Emissions (metric[a] tons CO_2 per year)	CO_2e per year (per capita[d])
Direct Mobile Sources[b]	3,708	4.23
Direct Area Sources	920	1.05
Indirect Electrical Usage	426	0.49
Indirect Water Conveyance	15	0.02
Indirect Wastewater Treatment	12	0,00
Total[c]	**5,080**	**5.79**

Notes:
[a] Metric tons are equal to 0.9072 U.S. tons
[b] As a conservative approach, emissions from direct mobile sources were calculated using on-road vehicles only. Also, boats and other water vehicles were not included in the direct mobile sources analysis.
[c] No Adjustments for project features or Scoping Plan measures. This is likely a conservative estimate as, prior to project construction, AB 32 will require GHG emission reductions in all sectors. Transportation emission rates will likely decrease due to increased fuel efficiency and lower carbon content in fuels, which is not adequately reflected in the URBEMIS 2007 model used for this analysis. Additionally project green building and energy efficiency measures are also conservatively not factored into the projection. Therefore, actual project CO2 emissions will likely be less.
[d] Service population (per capita) is 876, based on 292 households and 3 residents per household.
Source: Don Ballanti, 2010.

Mitigation Measure CUM GCC-1a: The County shall ensure that the project applicant(s) employs green building techniques in the design of proposed structures within the Pantages Bays project. Specifically, structures shall conform at a minimum to the County and or California Green Building Code or equivalent green building standards.

Mitigation Measure CUM GCC-1b: The applicant has agreed to incorporate the following measures within the proposed project:

- Project landscaping shall include water-efficient native and adaptive plants in combination with high-efficiency irrigation equipment;
- Recycled content shall be included in project building materials, including the use of pre-consumer fly-ash in the concrete for project walkways, driveways, roadways, and non-plant landscape elements;

- To protect regional and indoor air quality, interior paints, carpets, adhesives, sealants, and coatings selected for the project shall have a low concentration of volatile organic chemicals (VOCs);
- The heating, ventilation, and air conditions (HVAC) systems within each single family home shall use environmentally responsible refrigerants (i.e. non CFC-based refrigerants);
- Indoor ventilation systems in each home shall include high-efficiency systems to provide enhanced indoor air quality as potential pollutants would be ventilated through the building at a faster rate;
- The project shall install high efficiency restroom fixtures including low-flow or dual flush toilets to reduce potable water use;
- Wood from sustainably harvested forests (as certified by the Forest Stewardship Council) shall be used in wood materials for the single family homes, including flooring, cabinets, trim, shelving, doors, and countertops; and
- The project shall install water and energy efficient appliances and lighting fixtures, including *EnergyStar* dishwashing and refrigeration equipment.

Significance after Mitigation: Significant and unavoidable.

The URBEMIS 2007 model was used to determine the amount of reduction in area source emissions that would results from the above mitigation measures. According to the URBEMIS 2007 model, implementation of **Mitigation Measures CUM GCC-1a** and **CUM GCC-1b** would reduce total GHG emissions by 10 percent, for a post-mitigation total emission rate of 5.21 metric tons of CO_2e per capita per year, which remains above BAAQMD threshold of 4.60 metric tons of CO_2e per capita per year. The project contribution to global climate change would remain cumulatively considerable.

4.7.5 REFERENCES

Bay Area Air Quality Management District (BAAQMD). 2010a. CEQA Air Quality Guidelines.

Bay Area Air Quality Management District (BAAQMD). 2010b Source Inventory of Bay Area Greenhouse Gas Emissions, Updated: February 2010. Available at: http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/Emission%20Inventory/regionalinventory2007_2_10.ashx. Accessed March 24, 2010.

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National Highway Traffic Safety Administration. 2009. Draft Environmental Impact Statement: Corporate Average Fuel Economy Standards, Passenger Cars and Light Trucks, Model Years 2012-2016. Available at: http://www.nhtsa.dot.gov/staticfiles/DOT/NHTSA/Rulemaking/Rules/Associated%20Files/MY2012-2016_DEIS.pdf. Accessed on March 24, 2010.

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U.S. Environmental Protection Agency (EPA). 2010. EPA and NHTSA to Propose Greenhouse Gas and Fuel Efficiency Standards for Heavy-Duty Trucks; Begin Process for Further Light-Duty Standards: Regulatory Announcement. http://www.epa.gov/oms/climate/regulations/420f10038.htm. Accessed on August 10, 2010.

4.8 HAZARDS AND HAZARDOUS MATERIALS

This section describes hazardous materials existing within the project site and its vicinity, potential impacts related to construction of the project, and mitigation measures to reduce potentially significant impacts. A discussion of policies and regulations related to hazards and hazardous materials is also provided.

The information in this section is based on a Phase I Environmental Site Assessment (ESA) prepared by ENGEO, Inc. in January 2005, and a subsequent third party review conducted by Baseline Environmental Consulting in April 2007. The ENGEO ESA included a review of historical land use information and previous studies conducted, a site reconnaissance, and a review of federal, state, and local regulatory agency files and databases. The ENGEO ESA is included as **Appendix D** of this draft EIR and is available for review at Contra Costa County, Department of Conservation and Development, Community Development Division, 651 Pine Street, Martinez, California.

In response to the Notice of Preparation (NOP) for this EIR, one commenter expressed concern regarding the presence of pesticides on the project site. This comment is addressed in the impact analysis presented in **Subsection 4.8.3**, **Analysis of Potential Impacts** of this section.

Methodology

An ESA was conducted as an initial screening in order to determine the potential for hazardous materials to occur within the project site and its vicinity. The following components listed below were included as part of the ESA.

- **Regulatory Database Review.** A regulatory database review was conducted to identify known historical releases of hazardous materials within the project site and its vicinity. Reported release sites were evaluated with respect to the extent and nature of a given release, the distance of the reported release to the project site, and the location of the reported release site to known or expected local and/or regional groundwater flow directions. Generally, reported release sites located within a 0.25-mile upgradient, within a 0.13-mile cross-gradient, or adjacent downgradient (with respect to groundwater flow direction) could potentially have an effect through migration of contaminated groundwater.

  The regulatory lists searched as part of the database review included: the Federal National Priority List; the Federal Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS); Corrective

Action Report (CORRACTS); the Federal Resource Conservation and Recovery Act (RCRA) Hazardous Materials Generators; Emergency Response Notification System (ERNS); State and Tribal Leaking Storage Tank Sites; and State and Tribal Brownfield sites. Sites that were listed in the regulatory databases, but were not identified as release sites (e.g., hazardous material handlers and/or hazardous waste generators with no accidental or unauthorized releases) were not considered as potential concerns to the project site.

- **Agency File Review.** Nearby sites of concern were further assessed by reviewing local and regional environmental regulatory files. Regulatory files contain information on the migration of contamination from identified release sites, as well as the status of existing remediation plans
- **Site Reconnaissance.** A reconnaissance was conducted on January 12, 2005 to determine whether there were any visible potential environmental hazards on the project site
- **Historical Review.** A review of historical records was conducted as part of the ESA. Historical records included aerial photographs of the project area and surrounding land, historical topographical maps, and County records (e.g., building permits and directories).

4.8.1 EXISTING CONDITIONS

Historical Conditions

Topographic maps of the project area (1916 and 1978 United States Geological Survey (USGS)) were reviewed to determine historical land uses at the project site. Based on a review of these resources, the historical uses on the site include residential, agricultural, and grazing uses. According to the 1916 Byron 15' USGS quadrangle map, there was one structure at the eastern end of Point of Timber Road (PA-03-G05) and one residence in the northeastern corner of the project site, at the end of a minor road leading north from the end of Point of Timber. The 1978 Byron 15' USGS quadrangle map includes both of these structures as well as two additional residences: one residence is located at the end of Point of Timber Road (PA-03-G03) and one residence is located farther west on the north side of Point of Timber Road (PA-03-G04). Refer to **Section 4.4**, **Cultural Resources,** for a discussion of the residential structures on the project site.

The project site was used for irrigated crops (i.e., oats, wheat, and rye grass) and cattle grazing until 1992. In 2003, the Reclamation District 800 (RD 800) also used the site for detention and decanting of dredge spoils as part of a program to remove

sediment build up in Discovery Bay waterways. The dredged spoils were spread over portions of the property outside of the delineated wetland areas, primarily in the central portion of the site.

A 500-gallon underground storage tank (UST) was located along the channel bank near the former residence located in the northeast portion of the project site. This UST was removed by Marcor Remediation under permit with the Contra Costa Environmental Health Division (CCEHD). Laboratory analysis of a soil sample recovered from the UST excavation found no evidence of a fuel release. CCEHD has since closed the site.

Current Conditions

As part of the ESA, the project site was viewed for indications of potential sources of soil or groundwater contamination. Indications of contamination include evidence of hazardous materials storage, surficial staining or discoloration, debris, and stressed vegetation. The site was also inspected for fill/ventilation pipes, ground subsidence, and other evidence of existing or preexisting USTs.

No fuel/chemical storage tanks, pools of potentially hazardous liquid, or odors indicative of hazardous materials or petroleum material impacts were observed on the property. Numerous empty drums and containers were observed around two of the former residence sites. In addition, several drums with apparent solidified material, or residual liquids, were also noted within the area of the eastern residence site. No evidence of spillage, staining, or disposal of chemicals was noted on the property.

Several utility vaults were observed along the existing portion of Point of Timber Road. According to the ESA, the utilities appear to have been installed fairly recently and it is unknown whether or not transformers are present. The ESA notes that if transformers are present, they would not contain polychlorinated biphenyls (PCBs) based on their recent installation date.

Minor areas of stained soil were noted within several areas of the site; however, no areas of stressed vegetation were observed at the time of the reconnaissance. No disposal of solid waste was evident on the site; however, numerous areas of debris accumulation were noted in the northern area of the site. The debris consisted of car parts, wood, demolition debris, tires, sheet metal, plastic pipe, and concrete. No wastewater conveyance was observed on the property, but at least two former domestic water wells were noted. Improperly decommissioned and/or abandoned groundwater wells can represent significant environmental concerns, as the wells

can act as direct conduits to groundwater for agricultural wastes or other pollutants that are washed down with stormwater runoff. Refer to **Section 4.9**, **Hydrology and Water Quality,** for additional discussion of wells.

A records search for well permit applications from 1900 to 2005 for the project site was completed on December 28, 2009, by the Contra Costa Environmental Health Division. Two records were found for soil boring. Soil boring is a process in which a soil sample is extracted from the ground by an auger or mechanical drill to test the soil for contamination. No other information was revealed during the records search.

4.8.2 REGULATORY SETTING

National

The U.S. Environmental Protection Agency (U.S. EPA) is the main federal agency responsible for enforcing regulations relating to hazardous materials and wastes, including evaluation and remediation of contamination and hazardous wastes. The U.S. EPA works collaboratively with other agencies to enforce materials handling and storage regulations and site cleanup requirements. The Department of Transportation (DOT) is authorized to regulate safe transport of hazardous materials.

Primary federal laws pertaining to hazardous materials and wastes include the Resource Conservation and Recovery Act of 1976 (RCRA) and the Comprehensive Environmental Responsibility, Compensation, and Liability Act of 1980 (CERCLA). RCRA includes procedures and requirements for reporting releases of hazardous materials, and for cleanup of such releases. RCRA also includes procedures and requirements for handling hazardous wastes or soil or groundwater contaminated with hazardous wastes. CERCLA delineates the liability for contamination between current property owners and others. The Hazardous Materials Transportation Act is administered by the DOT via its performance of inspections and training, and its issuance of transportation guidelines. The federal government delegates enforcement authority to the states.

Project Consistency Analysis

Activities associated with construction and operations will be required to be in accordance with applicable federal laws, as enforced by state and local agencies.

State of California

State agencies that regulate hazardous materials and contamination include the Department of Health Services (DHS), the Department of Toxic Substances Control (DTSC) and the Regional Water Quality Control Board (RWQCB). The DTSC administers U.S. EPA's standards regarding public health effects of soil contamination, while the RWQCB administers state water quality standards for surface and groundwater. Lead responsibility for remediation depends on the proposed use of a parcel, the character of waste contaminants and the need for site monitoring. Transport of hazardous materials is administered by the California Department of Transportation (Caltrans) and enforced by the California Highway Patrol (CHP).

Relevant state laws that address soil and water pollution, hazardous materials storage, handling, transport and disposal include the State Water Code, Underground Storage Tank Code, Cortese Act (listing of hazardous waste and substances sites) and Proposition 65 (safe drinking water and toxics enforcement).

Project Consistency Analysis

Relevant federal and state regulatory requirements will be implemented for the project at the time of preliminary development plans. Due to the fact that the project does not propose land uses likely to utilize hazardous materials and/or petroleum products, the state laws that regulate the storage, handling, transport and disposal of hazardous materials are not anticipated to be applicable to project operations.

Contra Costa County

The Contra Costa Environmental Health Division (CCEHD) requires a permit for destruction of any abandoned wells and septic tanks. If the existence of such facilities are known in advance or are discovered during construction or other activities, these should be clearly marked, kept secure, and destroyed or abandoned pursuant to CCEHD requirements.

Contra Costa County General Plan

The Safety and the Public Facilities/Services elements of the Contra Costa County General Plan (General Plan) contain the following relevant policies associated with hazards and hazardous materials.

Safety Element

10-61: Hazardous waste releases from both private companies and from public agencies shall be identified and eliminated.

10-62: Storage of hazardous materials and wastes shall be strictly regulated.

10-63: Secondary containment and periodic examination shall be required for all storage of toxic materials.

10-67: In order to provide for public safety, urban and suburban development should not take place in areas where they would be subject to safety hazards from oil and gas wells. Development near oil and gas wells should meet recognized safety standards.

Public Facilities/Services Element

7-80: Wildland fire prevention activities and programs such as controlled burning, fuel removal, establishment of fire roads, fuel breaks and water supply shall be encouraged to reduce wildland fire hazards.

Project Consistency Analysis

The project would be in compliance with the General Plan policies related to hazards and hazardous materials. As discussed in this section, the previously existing UST has been removed in accordance with CCEHD policies and General plan policy 10-61. In regard to policies 10-62 and 10-63, it is not anticipated that toxic substances would be stored on site. There are no known oil or gas wells in the project proximity that could cause a potential health threat as noted in policy 10-67, and the project does not require the construction of any new fuel pipelines. The project is also not located in an area typically associated with wildfires and would reduce the potential for contamination by toxic pesticides and herbicides by changing the land from agriculture to residential use and is therefore in compliance with policy 7-80.

As part of the environmental review process and in accordance with policy 10-61, a records search, soil investigations, and an ESA were conducted to identify any hazardous materials or hazardous waste releases in the area, and none were identified.

4.8.3 ANALYSIS OF POTENTIAL IMPACTS

CEQA Significance Criteria

Appendix G of the CEQA Guidelines identifies environmental issues to be considered when determining whether a project could have significant effects on the environment. As stated in Appendix G, the project would have a significant impact related to hazards and hazardous materials if it would:

a) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment;

b) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area;

c) For a project in the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area;

d) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation system;

e) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urban areas or where residences are intermixed with wildlands;

f) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;

g) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment; or

h) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.

Discussion of No Impacts

Analysis of the project details and site characteristics in the context of the eight significance criteria stated above shows that no impacts would result for five of the criteria. The following discussion presents the evidence in support of this conclusion.

a) Would the project to be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment?

A review of regulatory databases maintained by County, state, and federal agencies found that the project site is not included on a list of hazardous material sites compiled pursuant to Government Code Section 65962.5. There is currently no documentation of hazardous materials violations or discharge on the project site or within 1 mile of the project site. However, the Pauline Pantages Trust at 4660 Point of Timber Road, one of the former site addresses, was listed on the HAZNET database of hazardous material generators and the Contra Costa County Site List as a UST site. The site became inactive in July 1998 following closure of the site by CCEHD. Therefore, there would be no impacts related to the project being located on a hazardous materials site list.

b) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?

The project is located approximately 8 miles north of the East County (Byron) Airport. A review of the Contra Costa County Airport Land Use Compatibility Plan indicates that the project site is not located within the airport sphere of influence and is not located within the approach zone for either of the airport's two runways. Therefore, implementation of the project would not result in a safety hazard for construction workers or future residents.

c) For a project in the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?

The Funny Farm Airport, the nearest private airstrip, is located approximately 2.6 miles northwest of the project site in the Brentwood area. No impacts related to safety are anticipated as the project would be an infill development surrounded by similar residential uses to the east, west, and south. The project does not include any towers or other vertical obstructions that could represent a unique hazard to the flight path from this airstrip.

d) Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation system?

The County has not adopted an emergency response plan for the Discovery Bay area, and thus the project would not impair implementation of or physically interfere with such a plan (S. Roseberry, personal communication, September 17, 2009). Additionally, the project is designed to comply with County and fire district standards for roadways and emergency vehicle access and compliance would be verified by both agencies prior to and after construction.

Similarly, the project could not impair implementation of or physically interfere with an emergency evacuation system. The Emergency Alert System and Emergency Digital Information Service are the primary systems used to inform the public of emergencies and threats to health, safety, and welfare. These systems are electronic and are operated by government agencies in conjunction with television and radio stations. In the event of an emergency, these systems are used to broadcast emergency information, such as evacuation alerts, across all radio and television stations in the affected area. Due to the electronic nature of these systems, there is no possibility that they could be impacted by the project.

e) Would the project expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urban areas or where residences are intermixed with wildlands?

The project site is bounded by waterways to the north, south, and east, and lands to the west are developed with single-family residential subdivisions. The General Plan does not identify this project site as a high-risk zone for wildland fires. Therefore, the project would not expose people or structures to a significant loss, injury or death involving wildland fires.

Discussion of Less-than-Significant Impacts

Analysis of the project details and site characteristics in the context of the eight significance criteria stated above shows that less-than significant impacts would result for one of the criteria. The following discussion presents the evidence in support of this conclusion.

f) Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

No hazardous materials would be stored on the project site other than consumer-related home and garden products (e.g., cleansers, paint removers, fertilizers). These hazardous materials are labeled to inform users of potential risk and include instructions for safe handling, storage, and disposal. Residential uses of these types of materials are not considered a potentially significant hazard to the public or the environment.

Demolition activities could potentially result in the disposal of hazardous materials as discussed under **Impact HAZ-1**.

Discussion of Significant Impacts

Analysis of the project details and site characteristics in the context of the eight significance criteria stated above shows that some degree of impact would result for two of the criteria. The following discussion presents the evidence in support of this conclusion.

g) Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Impact HAZ-1: The project could potentially cause the release of hazardous materials into the environment during demolition, grading, and construction activities. (Significant)

RD 800 used the project site for detention and decanting of dredge spoils as part of a program to remove sediment build up in Discovery Bay waterways. The dredged spoils were spread over portions of the property outside of the delineated wetland areas, primarily in the central portion of the site. As part of this process, soil samples from Discovery Bay, Kellogg Creek, and Indian Slough were tested for arsenic, an element commonly found in pesticides. The range of reported arsenic values is below the Delta Dredging and Reuse Strategy's threshold criteria. The soil samples were also tested to determine the potential for arsenic to leach into surface water and/or groundwater. The testing showed that leachable and/or soluble arsenic is not an issue in Discovery Bay, Kellogg Creek, or Indian Slough. Because the level of detectable arsenic in Discovery Bay soil is so low, and because the native

soil is submerged beneath dredge spoils, it can be assumed that there is no arsenic or pesticide residue on the project site. Therefore, it is not likely that grading activities would release pesticide residue into the environment.

The ESA identified several drums, pails, and paint cans onsite, including an area near the channel bank with partially-buried drums and cans. In 2006, Integrated Waste Management (now CalRecycle) was contracted to remove the drums and pails from the project site, and transport them to a hazardous waste processing facility. Although there was no obvious evidence of hazardous materials releases, there is a potential that the discovery of additional drums and/or cans could occur, particularly during construction activities. This is a potentially significant impact.

> ***Mitigation Measure HAZ-1:*** Prior to issuance of grading permits, soil samples shall be collected from the paint disposal area and analyzed for metals, petroleum hydrocarbons, and volatile organic compounds. Soil samples shall be compared to the Environmental Screening Levels (ESLs) as determined by the California Regional Water Quality Control Board San Francisco Bay Region. If soil samples exceed ESLs, the soil shall be investigated and remediated under the oversight of the Contra Costa Environmental Health Division (CCEHD). Additionally, the site shall be inspected by an environmental professional, appointed by the County, during demolition and preliminary grading activities.
>
> In the event that previously unidentified contaminants are discovered, the contamination shall be reported to CCEHD and investigated and remediated under the oversight of CCEHD in accordance with existing regulatory programs.
>
> ***Significance after Mitigation:*** Less than significant.
>
> This mitigation measure ensures all known and unknown potentially hazardous materials will be removed from the project site prior to grading activities. If contaminants are identified on the project site during the site inspection, contamination will be remediated under the oversight of the CCEHD, reducing the impact to a less-than-significant level.

Impact HAZ-2: The project could potentially release hazardous materials during demolition of the existing residence. (Significant)

Prior to the 1980s, building materials often contained asbestos fibers that were used to provide strength and fire resistance. Prior to 1978, lead compounds were commonly used in interior and exterior paints.

According to the ESA, Marcor Remediation Inc. removed asbestos from three of the four existing four residential clusters located on the project site, by demolishing and removing the contaminated portions of each structure. The existing former

residence located to the south of Point of Timber Road in the center of the project site was not included in the asbestos remediation, and demolition of this residence could expose asbestos to onsite construction workers. Additionally, demolition of any of the four existing structures on the project site could expose lead-based paints (LBP) and/or other hazardous materials to construction workers during demolition activities.

Section 19827.5 of the California Health and Safety Code requires that local agencies not issue demolition or alteration permits until an applicant has demonstrated compliance with notification requirements under applicable federal regulations regarding hazardous air pollutants, including asbestos. The Bay Area Air Quality District (BAAQMD) is vested with authority to regulate airborne pollutants through both inspection and law enforcement, and must be notified 10 days in advance of any proposed demolition or abatement work. The U.S. Occupational Safety and Health Administration (OSHA) require that asbestos be handled by properly certified professionals.

Mitigation Measure HAZ-2a: Prior to the issuance of a demolition permit, the applicant shall submit proof to the County that all asbestos-containing materials have been removed at the existing residence located to the south of Point of Timber Road, in compliance with state regulations.

Mitigation Measure HAZ-2b: Prior to the issuance of a demolition permit, the applicant shall submit proof to the County that all lead-based paint (LBP) has been removed at each of the existing former residences on the project site, in compliance with state regulations.

Significance after Mitigation: Less than significant.

Implementation of **Mitigation Measures HAZ-2a** and **HAZ-2b** would reduce the risk of exposing people to hazards associated with regulated building materials by ensuring that materials are removed in accordance with state regulations prior to start of demolition and construction. This would reduce potential hazardous material risk to a less-than-significant level.

h) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;

Impact HAZ-3: Project demolition and construction activities could expose individuals at the Timber Point Elementary School to hazardous emissions or materials. (Significant)

The project site is located a quarter-mile from Timber Point Elementary School. (Other schools in the area, such as Discovery Bay Elementary School and Excelsior Middle School are located more than a quarter-mile from the project site.) As discussed previously, implementation of **Mitigation Measure HAZ-1**, **HAZ-2a**, and **HAZ-2b** would ensure that all potentially hazardous materials, including lead-based paint, asbestos containing materials, and soil contamination from prior use of the site is properly removed and disposed of by a licensed hazardous waste contractor in accordance with state regulations.

Significance after Mitigation: Less than significant.

Implementation of **Mitigation Measures HAZ-1**, **HAZ-2a**, and **HAZ-2b** would ensure that any hazardous material identified on the project site is properly removed and disposed of, reducing the impact of potential exposure of students and school faculty to hazardous materials to a less-than-significant level.

4.8.4 CUMULATIVE IMPACTS

The general plan EIR for Contra Costa County identifies a significant impact related to risk of accidental release of hazardous materials associated with heavy industry and other land uses requiring the use, transport, and storage of hazardous materials. The EIR also notes that new residential and commercial development would increase the number of people in proximity to these uses thereby increasing their risk of exposure. The EIR identifies petroleum and other chemical industries along the San Joaquin River as hazardous lands uses and also identifies the East County (Byron) airport as a hazardous land use.

Hazardous materials are strictly regulated by local, state and federal laws specifically to ensure that they do not result in a gradual increase to toxins in the environment. The County general plan includes policies that reinforce these regulations by requiring construction and operation pursuant to applicable standards and regulations, submittal of hazardous materials business plans, risk management and prevention program information, secondary containment, and creation of buffer zones for adjacent development. Implementation of these policies occurs as part of the development review and construction permitting process and was found to reduce potential impacts related to hazardous materials to a less-than-significant level.

The majority of the projects listed in **Table 4-1** of **Section 4.0, Settings, Impacts, and Mitigation Measures,** of this EIR are consistent with the land use designations identified in the general plan of Contra Costa County and the City of Brentwood and were therefore assumed as part of the analysis contained in those documents. The

following 6 projects, including the Pantages Bays project require general plan amendments and were not therefore assumed in the analysis: The Villages at Discovery Bay, Commercial Business Park, Newport Pointe, Neighborhood Church, Sciortino Ranch, and Civic Center.

Although not specifically assumed in the general plan EIR analysis, these projects are residential or office/retail projects that do not routinely involve the use of hazardous or acutely hazardous materials, and would not represent a new significant hazard to the public or the environment that was not already analyzed in the general plan EIR.

The Pantages Bays residential project is not located in proximity to the identified hazardous land uses along the San Joaquin River or Byron Airport and would not therefore contribute to the cumulative impacts identified in the General Plan EIR associated with proximity to such uses and potential health risk during accidental release of hazardous materials.

4.8.5 REFERENCES

ENGEO, Inc. 2005. Phase One Environmental Site Assessment: Pantages at Discovery Bay, Contra Costa County, California.

Roseberry, S. Contra Costa County Office of Emergency Services. Personal Communication. September 17, 2009.

4.9 HYDROLOGY AND WATER QUALITY

This section describes surface water, groundwater resources, and flooding characteristics on the project site and its vicinity, and evaluates the potential impacts of the project on these elements. Additionally, the regulatory agencies and permits associated with surface hydrology and water quality are also described.

The impact analysis is based on information gathered from the following reports for the project:

- Numerical Modeling. Evaluation of Pantages Bays Project (RMA 2006)
- Geotechnical Exploration (Engeo 2006)
- Storm Water Control Plan C.3 (dk Consulting 2006)
- Additional Hydrology Impacts Memorandum (PWA 2010)

These reports have been incorporated into this analysis and are available for review at Contra Costa County, Department of Conservation and Development, Community Development Division, 651 Pine Street, Martinez, California.

In response to the Notice of Preparation (NOP) for this environmental impact report (EIR), the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) submitted a comment letter recommending the inclusion of information related to a number of potential impacts on the water quality of Discovery Bay. In response to the concerns raised by NMFS, the following items are addressed throughout this section:

- Storm water treatment systems:
  - design criteria
  - discharge
  - maintenance
- Construction techniques for the creation of bays and coves
- Impacts from increased boating traffic (i.e., erosion from wake wash)
- Detailed hydrodynamic analysis for the circulation patterns of the Discovery Bay waterways

4.9.1 EXISTING CONDITIONS

Regional Characteristics

The project site is located in Contra Costa County (County) within the southwest edge of the Sacramento-San Joaquin Delta (Delta). Water that falls in the Great Central Valley of California and in most of the Sierra Nevada Mountains ultimately flows to the Pacific Ocean via the Delta and along the shorelines of the County. More than half of California's water needs (and a large portion of the County's) are met with water pumped from the Delta. The project site and its vicinity are considered part of the East County Drainages watershed.

Naturally occurring, rich soils in the area have attracted the agricultural industry to this region. Flood control infrastructure was constructed to protect farmland, and irrigation canals crisscross the land to channel water through the region. Delta islands are generally kept dry by peripheral levees, while major levee breaks have created new water bodies such as Franks Tract and Big Break (Contra Costa County 2003).

Water quality in the Delta is affected by numerous factors including upstream reservoir releases, tidal changes, the discharge of agricultural diverters, and the uptake rates of the California State Water Project (SWP) and the Central Valley Project (CVP). Today the CVP, operated by the U.S. Bureau of Reclamation, is one of the world's largest water storage and transport systems. Its 22 reservoirs have a combined storage of 11 million acre-feet of water, of which approximately 7 million acre-feet is delivered per year. In comparison, the SWP's 20 major reservoirs can hold 5.8 million acre-feet, with annual deliveries averaging up to 3 million acre-feet per year. The CVP water irrigates more than 3 million acres of farmland and provides drinking water to nearly 2 million consumers.

Local Hydrology

The project site is bordered by waterways that include the ECCID Dredge Cut to the north, Indian Slough to the northeast, Kellogg Creek to the east, and Old Kellogg Creek to the south (see **Figure 3-3**). Indian Slough is divided into north and south channels by narrow, linear islands (Indian Slough Islands), and is connected at its eastern end to Old River, which then joins the complex of waterways in the southwest Delta. Kellogg Creek and the ECCID Dredge Cut are hydrologically connected to the channels of the wider Delta via Indian Slough. The eastern branch of Discovery Bay has a separate connection to Indian Slough, approximately 1 mile to the east of the Kellogg Creek connection.

A series of 14 pumping stations (siphons) maintain circulation in Discovery Bay waterways. The siphons move water from the individual bays to other parts of the system (e.g., to water the local golf course and agricultural land further to the east of Discovery Bay West communities) and then back into the Delta.

Tidal Hydrodynamics

Indian Slough and Kellogg Creek are subject to the Delta tide cycle. Tidal cycles are the rise and fall of sea levels caused by the combined effects of the rotation of the Earth and the gravitational forces exerted by the moon and the sun. Approximately 8 acres of the project site, mainly along the perimeter of the site, is currently subject to tidal variations.

NOAA publishes tidal data for mean lower low water (MLLW) (i.e., average low tides) and mean higher high water (MHHW) (i.e., average high tides) for various portions of the Delta. NOAA's tidal station at Borden Highway Bridge, Middle River (Station ID 9414835) is the closest station to the project site, and is located approximately 7 miles east-southeast. NOAA reports the current MHHW at the project site is approximately 3 feet (ft) National Geodetic Vertical Datum (NGVD).[1] The County uses this MHHW level in determining the appropriate elevations of a proposed development, such that risks related to flooding can be reduced.

Tidal cycles also influence the residence times of water flow, which is amount of time a body of water is held in one location. As the water rises and falls during the ebb tides, fresh water enters the bays and coves of Discovery Bay, and the old water is slowly flushed out. In general, the residence time in Discovery Bay is a function of this tidal exchange and siphon flows.

Flooding

Existing site elevations range from approximately 2 to 8 feet NGVD. The entire project site falls within Special Flood Hazard Area Zone A on the Flood Insurance Rate Map for the County (FEMA 2009), which indicates that the area is subject to flooding during a 100-year storm event in the Delta. The project site is not protected by an outside levee, and is directly adjacent to the Delta's open waterways.

[1] National Geodetic Vertical Datum (NGVD) is a vertical (elevation) unit of measurement similar to mean sea level (msl) that takes into account the local gravitational forces due to astronomical phenomenon, as well as local wind patterns, river stages, and storms. NGVD addresses the fact that local msl is not always equal to zero in all places.

The Base Flood Elevation (BFE) for the 100-year storm event, as defined by FEMA and the County[2], is the elevation that has a 1 percent chance of being equaled or exceeded by floodwaters in any one year. Based on the current MHHW and the flood elevation data from past storm events, the 100-year BFE for the project site is 7.5 feet NVGD. The 300-year BFE is 8.0 feet NGVD.

Sea Level Rise

The current FEMA floodplain maps do not incorporate higher flood elevations related to the potential for rising sea levels related to global climate change. As described in **Section 4.7, Global Climate Change,** rising temperatures can change ecosystems, resulting in sea level rise. See **Section 4.7, Global Climate Change,** for more detail regarding this topic and a description of the greenhouse effect.

Sea level rise increases the potential for damaging floods that could affect coastal and tidal areas. Sea level rise, or the increasing volume of water in the global ocean, is affected by two distinct processes: thermal expansion of warming ocean water and melting of continental ice, including mountain glaciers and land bound polar ice on Greenland and Antarctica.[3] Over the past century, the global sea level has risen by nearly 0.2 meters (8 inches) (PWA 2010).

There have been a number of recent projections on the future magnitude of sea level rise in the San Francisco Bay Area (Bay Area). Each of the projections make different assumptions in relation to the rapid economic growth and large expansions of greenhouse house (GHG) emissions, as well as several other global components that affect sea level rise (i.e., thermal expansion, melting of global ice, oceanic circulation, and vertical land movement).[4] The State of California Resources Agency recommends the consideration of the following sea level rise scenarios for planning purposes in the Delta region and California as a whole:

- Year 2050 scenario – 16-inch rise (equivalent to 1.3 feet or 0.4 meters)
- Year 2100 scenario – 55-inch rise (equivalent to 4.6 feet or 1.4 meters)

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[2] As defined in the Contra Costa County Code Section 82-28.486 – One Hundred –year flood.

[3] San Francisco Bay Conservation and Development Commission. Living with a Rising Bay: Vulnerability and Adaptation in San Francisco Bay and on its Shoreline. April 2009.

[4] The different sources for sea level rise predictions and assumptions are discussed in Attachment 1 of the Draft Additional Hydrology Impact Assessment memorandum (PWA, 2010).

These scenarios have been adopted as policy by the California State Coastal Conservancy and are used by the San Francisco Bay Conservation and Development Commission (BCDC) and other state agencies for planning purposes. As such, these scenarios are appropriate for the assessment of project-related impacts.

Channel Hydrodynamics

In order to model the pre- and post-project hydrodynamics (movement of water) of Discovery Bay, a Delta-wide model was modified to include a detailed representation of the Discovery Bay waters and Indian Slough (RMA 2006). The model was calibrated by collecting existing flow data in and near the Discovery Bay subdivision and the south Delta areas.

Presently, the north end of Kellogg Creek (immediately south of Indian Slough and the ECCID Dredge Cut) is narrow and produces a funnel for relatively high-speed tidal currents. These tidal currents contribute to erosion and scour of the Kellogg Creek banks.[5] Along the northern boundary of Discovery Bay, Indian Slough is divided into a northern and southern channel by a berm.

Levee Erosion

The project site is not currently protected by a levee and no levees are proposed as part of the project. Levees are discussed in this EIR in the context of boat traffic generated by the project that could result in erosion of unarmored levees in the project vicinity.

Approximately 1,100 miles of levees within the Delta protect urban and agricultural areas from inundation due to high water levels. Levees are constructed using a wide range of materials and bank cover is highly variable, including rock or concrete (rip-rap), trees, and vegetation. Levees in Discovery Bay are maintained by Reclamation District 800 (RD 800), and include urban, agricultural, and dry land levees. All levees in RD 800 are completely armored and therefore have significantly reduced the effects of erosional forces.

The erosion of unarmored Delta levees is due to a combination of terrestrial processes, boat wake, channel scour, and geotechnical instability. A series of studies funded by the California Department of Boating and Waterways from 1997-2010 have been conducted to assess the rates of levee erosion in the Delta.

[5] High-speed currents have a greater capacity to carry sediment from the bottom and sides of a creek and/or channel. The removal of sediment from these areas results in erosion and/or scouring.

Preliminary erosion data for several of the closest sites to Discovery Bay (within 5 miles) indicate average horizontal bank change rates of approximately 5 centimeters per year (cm/yr) along portions of unarmored levees (PWA 2010).

Drainage

Except for the emergent marsh located in the northern portion of the site, the project site has been leveled, ditched, drained and disked in the past for use as irrigated cropland and grazing pasture. Several shallow ditches bisect the site, providing further evidence of past agricultural land use.

RD 800 used site for detention and decanting of dredge spoils as part of a program to remove sediment build up in Discovery Bay waterways. The dredged spoils were spread over portions of the property outside of the delineated wetland areas, primarily in the central portion of the site (see **Figure 3-2**). Currently, these piles of dredge spoils are higher in elevation than the surrounding topography.

Existing surface drainage cannot be easily determined due to the extremely flat terrain of the project site. Generally, storm water flow drains towards the topographically lower seasonal wetlands and the emergent marshes on the northern portion of the project site. Ultimately, site drainage reaches Kellogg Creek and Indian Slough. It does not appear that off-site drainage enters the site from any direction

Groundwater

Groundwater beneath the project site was encountered at depths between 3.5 to 13 feet below ground surface. However, groundwater levels on the site are not static and may fluctuate due to seasonal variation in rainfall, tidal action, or other factors not in evidence at the time of the preliminary geological investigations at the project site (see **Section 4.6, Geology and Soils**).

Deeper aquifers located approximately 250 to 350 feet below ground surface are the primary source of domestic water supply to the Discovery Bay Community Services District (CSD). Other aquifers occur at higher levels beneath the project site, but the water quality is poor and unsuitable for domestic consumption. Additionally, a brackish aquifer occurs in the alluvial sands beneath the project site. A more detailed appraisal of water supply can be found in **Section 4.15, Public Utilities**.

The near-surface sediments across the project site primarily consist of eolian, tidal wetland, lacustrine (lake-deposited) and alluvial (water-deposited) deposits. These sediments are typically irregularly stratified, poorly-consolidated deposits of clay, silt and sand. Deep infiltration and groundwater recharge is not feasible at the

project site due to the low permeability of the clay soils. Surface runoff at the project site typically flows into the adjacent waterways before having a chance to permeate into the groundwater table.

According to the Phase I Environmental Site Assessment (ESA) conducted for the project in 2005 (refer to **Section 4.8, Hazards and Hazardous Materials**), there are at least two former domestic groundwater wells on the project site. Improperly decommissioned and/or abandoned groundwater wells can represent significant environmental concerns, as the wells can act as direct conduits to groundwater for agricultural wastes or other pollutants that are washed down with storm water runoff.

4.9.2 REGULATORY SETTING

Clean Water Act

The Clean Water Act (CWA) was enacted by Congress in 1972 and amended several times since inception. It is the primary federal law regulating water quality in the United States, and forms the basis for several state and local laws throughout the country. Its objective is to reduce or eliminate water pollution in the nation's rivers, streams, lakes, and coastal waters. The CWA prescribed the basic federal laws for regulating discharges of pollutants as well as set minimum water quality standards for all "waters of the United States." Several mechanisms are employed to control domestic, industrial, and agricultural pollution under the CWA. At the federal level, the CWA is administered by the U.S. Environmental Protection Agency (EPA). At the state and regional level, the CWA is administered and enforced by the State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCBs). The state of California has developed a number of water quality laws, rules, and regulations, in part to assist in the implementation of the CWA and related federally mandated water quality requirements. In many cases, the federal requirements set minimum standards and policies and the laws, rules, and regulations adopted by the state and regional boards exceed the federal requirements.

Project Consistency Analysis

The project would include a storm water drainage and treatment system to convey runoff into the developed bays, coves, and Kellogg Creek, which are tidally influenced. Linear bioretention facilities would serve as soil filtration and would treat the water to reduce water quality impacts to receiving waters (i.e., Kellogg Creek) (see **Figure 4.9-1)**.

The system will be designed per criteria in the County's C.3 Storm water Technical Guidance Manual and the California Storm water Best Management Practice Handbook to provide a level of treatment that meets or exceeds existing standards, as described in **Chapter 3.0, Project Description,** and elsewhere in this section.

During construction, erosion control and storm water pollution prevention plans would prevent construction-related pollution from contaminating downstream receiving waters consistent with the above mentioned documents. As such, the project would be consistent with the Clean Water Act.

National Pollution Discharge Elimination System (NPDES)

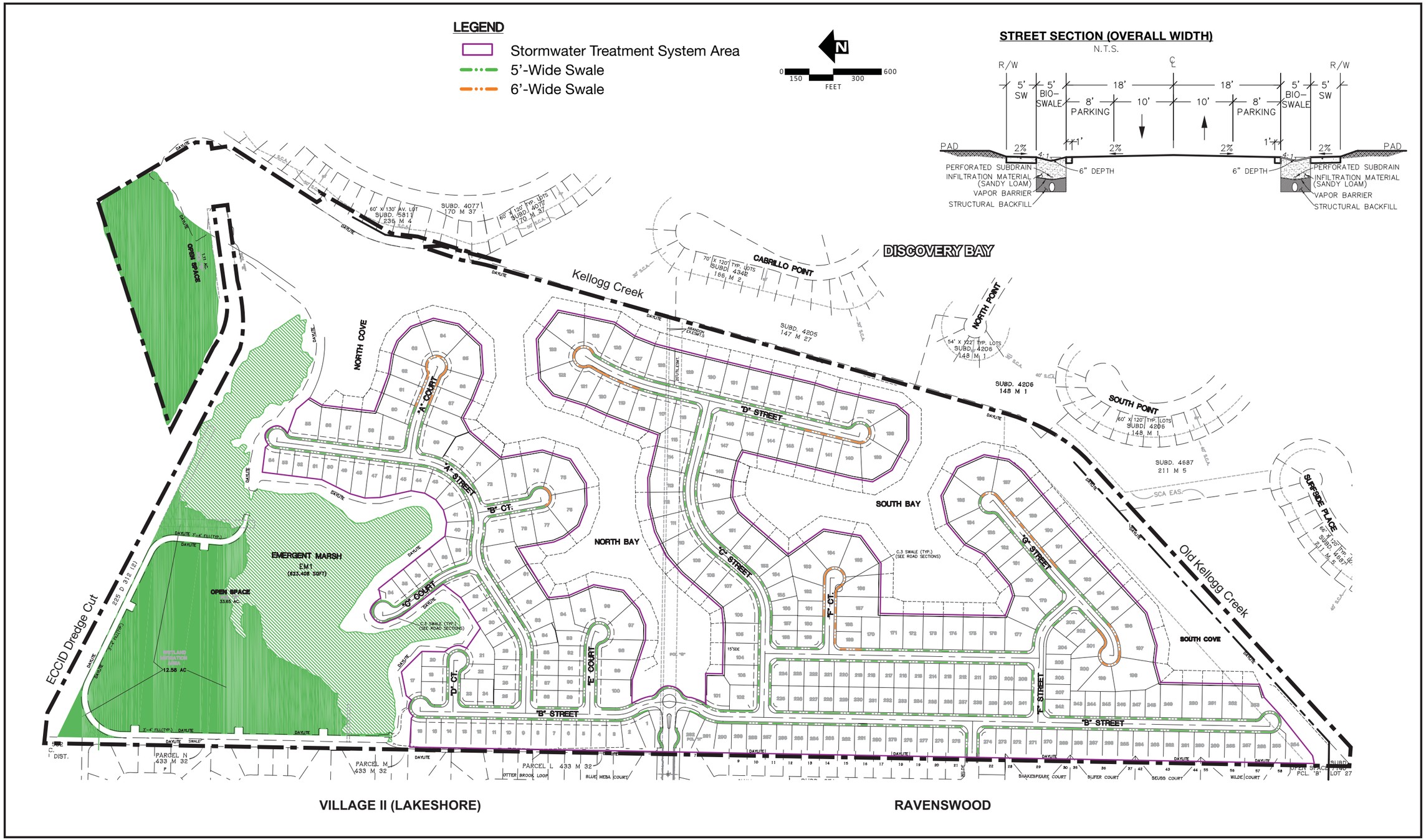
Water runoff quality is regulated by the federal National Pollution Discharge Elimination System (NPDES) program (established by the Clean Water Act of 1972). The NPDES objective is to control and reduce pollutants to water bodies from non-point discharges. RWQCB administers this program throughout the state. The RWQCB issues NPDES point source permits for discharges from major industries and non- point source permits for discharges to water bodies in the Central Valley region for the municipality's other dischargers.

Additionally, improvement projects disturbing more than 1 acre of land during construction are required to file a Notice of Intent (NOI) to be covered under the State NPDES General Construction Permit for discharges of storm water associated with construction activity. A developer must propose control measures that are consistent with the State General Construction Permit. A Storm Water Pollution Prevention Plan (SWPPP) must be developed and implemented for each site covered by the state's General Permit. A SWPPP must include "Best Management Practices" (BMPs) designed to reduce potential impacts to surface water quality through the construction and life of the project.

Contra Costa County Provision C.3 Requirements

The County has the authority to uphold its NPDES permit, and currently exercises this authority in its adopted Provision C.3 requirements. The provisions require the installation of post-construction BMPs for new development as part of the federal NDPES program, and have set standards for their implementation.

In compliance with Provision C.3 of the NPDES Permit and the County's Stormwater Management and Discharge Control Ordinance (Section 1014), projects creating and/or replacing (redeveloping) impervious area exceeding 10,000 square feet shall submit a Storm Water Control Plan (SWCP) for the review and approval of the Public Works Department. The SWCP is a separate document from the SWPPP. Provision



Proposed Storm Water Treatment Systems Figure **4.9-1**

Source: DK Consulting, 2006.

Figure 4.9-1 Storm Water Treatment Systems (back)

C.3 requires these projects to treat storm water runoff with permanent storm water management facilities, and requires projects creating and/or redeveloping impervious area exceeding 1 acre to design such facilities to control runoff rates and volumes (in addition to treatment).

To comply with these requirements, new developments are required to install water quality storm water runoff BMPs that filter or treat rainfall runoff generated from storm events up to approximately the 85th percentile rainfall event (or approximately the 1-inch storm event) before discharging into natural drainage systems. Additional hydrograph modification BMPs are also required so that post-project runoff does not exceed pre-project rates or durations, such an increase could contribute to erosion in receiving waters downstream from the proposed project.

Hydromodification Management Plan

Provision C.3.f in the storm water NPDES permit requires developments to manage increases to peak runoff and increased volume. Erosion of stream channels and banks can cause channel instability and generation of sediments that adversely impact the downstream beneficial uses.

The Hydromodification Management Plan (HMP) gives four options for meeting the hydrograph modification management regulations:

- Option 1 is demonstrating that the project does not produce a net increase in impervious area. This option is for sites that have been previously developed.
- Option 2 is the use of accepted integrated management practices to slow runoff and treat it prior to it leaving the site. The Contra Costa C.3 Guidebook contains information to assist in the sizing and design of these features.
- Option 3 is for applicants who wish to custom design flow-control facilities for their project site. A continuous simulation hydrologic model needs to demonstrate that the post-development flow regime be within certain limits compared to pre-development conditions for a variety of storm events.
- Option 4 is for projects that rely on the receiving channel to handle the impacts of post-development conditions. Within Option 4, there are three sub-options: (a) Low Risk: Applicants must demonstrate that all downstream reaches, from the project site to the Bay/Delta, are enclosed pipes, hardened channels, subject to tidal action, or aggrading; (b) Medium Risk: Applicants must use the methods and criteria in Appendix D to confirm that each reach downstream from the project site to the Bay/Delta meets the criteria for medium risk (or low risk) classification including implementing an in-stream mitigation project to

stabilize stream beds or banks, improve natural steam functions, and/or improve habitat values (the expected environmental benefits of the mitigation project must substantially outweigh the potential impacts of an increase in runoff from the development project); and (c) High Risk: Applicants must implement a comprehensive program of in-stream measures to improve stream channel hydrological and ecological functions while accommodating increased flow.

Project Consistency Analysis

The project must, as a matter of law, comply with the requirements of the regional NPDES Storm Water Discharge Permit for project operation. The applicant would also be required to submit a NOI to the State Board and apply for coverage under the NPDES Construction General Permit. The applicant will be required to prepare a SWPPP and submit it to the RWQCB for review prior to commencing construction. Once grading begins, the SWPPP must be kept on site and updated as needed during construction. The SWPPP details the site-specific BMPs to control erosion and sedimentation and maintain water quality during the construction phase. The SWPPP also contains a summary of the structural and non-structural BMPs to be implemented during the post-construction period, pursuant to the non-point source practices and procedures encouraged by the RWQCB.

This mandatory compliance with the regulatory requirements of the NPDES General Construction and Group Storm Water Discharge Permits will ensure that the development envisioned by the project is consistent with all regulations and the policies and programs of the County General Plan.

In accordance with the C.3 requirements, the project applicant has prepared a SWCP for the project (dk Consulting 2006). The preferred BMP selected to be used exclusively throughout the project site are dry linear bioretention facilities.

The project would include a storm water drainage and treatment system to convey runoff into the developed bays, coves, and Kellogg Creek, which are tidally influenced. As such, the project would demonstrate compliance with the requirement to manage increases in runoff peak flows and durations as included in Option 4a of the HMP. The increases in runoff peaks would not accelerate the erosion of downstream waterways since the storm drain outfall connects directly with tidally influenced areas with direct connections to the Delta. The project's proposed storm water facilities are discussed in greater detail in **Subsection 4.9.3**, **Analysis of Potential Impacts**.

Rivers and Harbors Act

Section 10 of the Rivers and Harbors Act as approved March 3, 1899, prohibits the unauthorized obstruction or alteration of any navigable water of the United States. The construction of any structure in or over any navigable water of the United States, the excavating from or depositing of material in such waters, or the accomplishment of any other work affecting the course, location, condition, or capacity of such waters is unlawful unless the work has been recommended by the Chief of Engineers and authorized by the Secretary of the Army. The instrument of authorization is designated a Section 10 permit.

Project Consistency Analysis

A Section 10 permit from the Corps under the Rivers and Harbors Act (1899) would be required for dredging to connect Kellogg Creek and the Discovery Bay embayment with the new bays and coves of the project. See **Section 4.3, Biological Resources**, for specific information regarding the permit and agency approval required for the removal of bank habitat associated with the project.

State of California – Regional Water Quality Control Board – 401 Certification

Pursuant to Section 401 of the Clean Water Act and EPA 404(b)(1) guidelines, in order for a Corps federal permit applicant to conduct any activity that may result in discharge into navigable waters, the applicant must provide a certification from the RWQCB that such discharge will comply with state water quality standards. The RWCQB has a policy of no-net-loss of wetlands and typically requires mitigation for all impact to wetlands before it will issue water quality certification.

Also, under the Porter-Cologne Water Quality Control Act (California Water Code Sections 13000-14290), the RWQCB is authorized to regulate the discharge of waste that could affect the quality of the state's waters, including projects that do not require a federal permit through the Corps. To meet RWQCB 401 Certification standards, it is necessary to address all hydrologic issues related to a project, including:

- Wetlands
- Watershed hydrograph modification
- Proposed creek or riverine related modifications
- Long term post-construction water quality

Project Consistency Analysis

The discharge of dredge or fill will be considered by the Corps and, if approved, the Corps will issue a 401 permit to the project applicant. Additional requirements regarding 401 certification are discussed in **Section 4.3, Biological Resources,** of this draft EIR**.**

State of California — California Department of Fish and Game

Pursuant to Section 1602 of the California Fish and Game Code, California Department of Fish and Game (CDFG) regulates activities that divert, obstruct, or alter stream flow, or substantially modify the bed, channel, or bank of a stream, which CDFG typically considers to include riparian vegetation. Any proposed activity in a natural stream channel that would substantially adversely affect an existing fish and/or wildlife resource, would require entering into a Streambed Alteration Agreement (SBAA) with CDFG prior to commencing work in the stream. However, prior to authorizing such permits, CDFG typically reviews an analysis of the expected biological impacts, any proposed mitigation plans that would be implemented to offset biological impacts and engineering and erosion control plans.

Project Consistency Analysis

The proposed removal of bank habitat along Kellogg Creek will require a SBAA. Impacts from project development include loss of low, moderate, and high quality bank habitat. Mitigation measures will be necessary to offset the project's impact to bank habitat subject to CDFG jurisdiction as detailed in the **Subsection 4.9.3**.

Contra Costa County General Plan

The Contra Costa County General Plan (General Plan) includes the following policies to manage water resources and flood risk, which are presented in Chapter 7, Public Facilities/Services; Chapter 8, Conservation; and Chapter 10, Safety. The following policies are relevant to the project site hydrology and water quality.

Public Facilities/Services Element

7-45: On-site water control shall be required of major new developments so that no significant increase in peak flows occurs compared to the site's pre-development condition, unless the Planning Agency determines that off-site measures can be employed which are equally effective in preventing adverse downstream impacts expected from the development or the project in implementing an adopted drainage plan.

7-56: All residential and non-residential uses proposed in areas of special flood hazards, as shown on FEMA maps, shall conform to the requirements of County Floodplain management applied to all ordinances, approved entitlements (land use permits, tentative, final, and parcel maps, development plan permits, and variances) and ministerial permits (buildings and grading permits).

Conservation Element

8-23: Runoff of pollutants and siltation into marsh and wetland areas from outfalls serving nearby urban development shall be discouraged. Where permitted, development plans shall be designed in such a manner that no such pollutants and siltation will significantly adversely affect the value or function of wetlands.

8-27: Grading, filling and construction activity near watercourses shall be conducted in such a manner as to minimize impacts from increased runoff, erosion, sedimentation, biochemical degradation, or thermal pollution.

Safety Element

10-33: Areas within the 100-year floodplain shall be considered inappropriate for conventional urban development due to unmitigated flood hazards as defined by FEMA. Applications for development at urban or suburban densities in areas where there is a serious risk to life shall demonstrate appropriate solutions or be denied.

10-41: Buildings in urban development near the shoreline and in flood-prone areas shall be protected from flood dangers, including consideration of rising sea levels caused by the greenhouse effect.

10-42: Habitable areas of structures near the shore line and in flood-prone areas shall be sited above the highest water level expected during the life of the project, or shall be protected for the expected life of the project by levees of an adequate design.

Project Consistency Analysis

The project would include a storm water drainage and treatment system to convey runoff into the developed bays, coves, and Kellogg Creek, which are tidally influenced. Linear bioretention facilities would serve as soil filtration and would treat the water to reduce water quality impacts to receiving waters (i.e., Kellogg Creek) (see **Figure 4.9-1**). The project would not introduce any untreated storm water into the emergent marsh or wetland areas, consistent with policy 8-23.

The system will be designed per criteria in the C.3 Storm water Technical Guidance Manual and the California Storm water Best Management Practice Handbook to provide a level of treatment that meets or exceeds existing standards, as described in **Chapter 3.0, Project Description,** and elsewhere in this section. During construction, erosion control and storm water pollution prevention plans would prevent construction-related pollution from contaminating downstream receiving waters consistent with the above mentioned documents. As such, the project would be consistent with policies 7-45, 8-23, and 8-91.

The project as currently designed greatly exceeds the County requirements for protection from the 100-year flood. Flood control measures include finish floor elevations for waterfront lots at approximately 12.7 feet above mean sea level. This is 3.2 feet about the County's flood design standard, thus complying with policies 7-56 and 10-33.

This section includes an analysis of the potential flooding impacts related to sea level rise (see **Subsection 4.9.3**). A 100-year planning horizon is assumed for the project; therefore, impacts are assessed for current conditions and the 100-year sea level scenario. Flood control measures that address flooding associated with sea level rise would be incorporated into the project under **Mitigation Measure HYD-3**. As such the project would be consistent with policies 10-41 and 10-42.

4.9.3 ANALYSIS OF POTENTIAL IMPACTS

CEQA Significance Criteria

Appendix G of the CEQA Guidelines identified environmental issues to be considered when determining whether a project could have significant effects on the environment. As identified in Appendix G, the project would have a significant impact to hydrology and water quality if it would:

a) Violate any water quality standards or waste discharge requirements;

b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (i.e., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted);

c) Create or contribute runoff water that would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff;

d) Substantially alter the established drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site;

e) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;

f) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;

g) Place within a 100-year flood hazard area structures that would impede or redirect flood flows;

h) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam;

i) Inundation by seiche, tsunami, or mudflow; or

j) Otherwise substantially degrade water quality.

Discussion of No Impacts

a) Would the project violate any water quality standards or waste discharge requirements?

See **Impact HYD-1** and **Impact HYD-2** for construction-related water quality impacts, and the "Water Quality Standards" discussion below regarding operational water quality impacts.

The project would result in wastewater generated by residential uses. The project site would be served by a 10-inch sewer main at Wilde Drive, on the southern portion of the project site, and an 8-inch main at Point of Timber Road. Wastewater from the project would enter the 10-inch sewer main at Wilde Drive, and would flow to a lift station along Newport Drive that pumps the water to the Discovery Bay Wastewater Treatment Facility operated by CSD. The wastewater generated by the project would not violate any wastewater discharge requirement as residential wastewater is accepted and treated by the Discovery Bay Wastewater Treatment Facility.

The Wastewater Treatment Facility is operating in compliance with all RWQCB regulations.[6]

b) Would the project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (i.e., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?

Deplete Groundwater Supplies

According to the Phase I ESA prepared for the project, the project site contains at least two domestic groundwater wells associated with the residential structures on the project site. These wells are currently non-operational. The project is not proposing to drill new water wells or to directly access groundwater on the project site through the existing wells. Therefore, the project would not directly deplete groundwater resources to the extent that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level. However, groundwater is a source of potable water in the Discovery Bay Community Service District, and the availability and provision of groundwater to the project are discussed in **Section 4.15, Public Utilities.**

Interfere with Groundwater Recharge

Deep infiltration and groundwater recharge is not feasible at the project site due to the low permeability of the site's clay soils. Surface runoff at the project site typically flows into the adjacent waterways before having a chance to permeate into the groundwater table. Therefore, the addition of impervious surfaces to the project site is not expected to significantly affect groundwater recharge on site.

c) Would the project create or contribute runoff water that would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?

Implementation of the project would add approximately 70 acres of impervious surface to the project site; the remaining area would be open water and open space. The project includes a storm water drainage and treatment system that

[6] Prior RWQCB Board Orders in 2008 and 2009 related to effluent limitations have all been addressed to the satisfaction of the RWQCB; the CSD does not have any outstanding violations.

collects runoff from individual drainage areas into a series of linear bioretention facilities. Lots, sidewalks, and roadways would drain toward the linear bioretention facilities via overland flow. Treated runoff would be collected into a series of perforated pipe underdrains that would discharge the storm water into the developed bays, coves, and Kellogg Creek, in compliance with Section 401/404 and C.3 standards. The project would not connect to an existing or planned water drainage system and would therefore not contribute or exceed its capacity. See **Impact HYD-1** and **Impact HYD-2** for construction-related water quality impacts, and the "Water Quality Standards" discussion below regarding operational water quality impacts.

Discussion of Less-than-Significant Impacts

d) Would the project violate any water quality standards or substantially alter the established drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on-site?

Water Quality Standards

The water quality standards applicable to the project are described above in **Subsection 4.9.2**, **Regulatory Setting**. The project would be subject to the regional NPDES Storm Water Discharge Permit and County's C.3 requirements during project construction and operation. This subsection describes the operational impacts of the project to water quality. See **Impact HYD-1** and **Impact HYD-2** below for construction-related water quality impacts.

Residential developments like the proposed project typically discharge pollutants from vehicles, landscape maintenance, and pest control into the storm management system. Without proper storm water treatment systems, the project could contribute sediment, heavy metals, oils and greases, nutrients and pesticides into the nearby waterways. These pollutants have the potential to degrade the water quality of local receiving waters.

The project design incorporates a cluster concept for the residential lots, while still allowing water access. A SWCP C.3 Report (dk Consulting 2006) was prepared for the project and submitted to the County's Public Works Department in order to comply with County C.3 water quality requirements for a NPDES permit. Engineered linear bioretention facilities (dry swales) are the selected treatment BMP for this project, which are area based storm water treatment facilities.

The project site has been divided into 51 drainage areas. Linear bioretention facilities would be provided on each side of the streets. In accordance with C.3 requirements, the average linear bioretention facility width proposed throughout the site is approximately 4-feet to 5-feet wide. Some of the larger lots (i.e., at pie-shaped lots at the end of cul-de-sacs) would have more extensive impervious areas. In these areas, additional treatment would be needed, and 6-feet wide linear bioretention facilities would be provided. The design of the linear bioretention facilities would take into account the impervious areas of the roofs, driveways, roadway, sidewalk, and non-self-retaining pervious landscaped yard areas of the residential homes.

Storm water runoff from the individual areas would drain towards the linear bioretention facilities via overland flow. The linear bioretention facilities would serve as soil filtration and would treat the water prior to release into the bays and coves, which are tidally influenced. No storm water runoff would be discharged into the emergent marsh or wetland mitigation areas or over the creek bank enhancement areas. Open areas of the project site would be self-retaining or self-treating.[7]

The linear bioretention facilities would be designed with an 18-inch deep sandy loam soil that contains a high percentage of organic matter and drains rapidly (5 inch/hour). The organic matter in the soil would act as a sponge to absorb the dissolved pollutants. The linear bioretention facilities would have a perforated underdrain that feeds into an underground storm drain system, which then discharges to the various bays and coves throughout the development. To promote infiltration even in clayey soils, the underdrain would be embedded in Class 2 permeable rock placed under the minimum 18-inch loamy sand layer. In this way, water would be given an opportunity to infiltrate between storms.

Routine maintenance of the linear bioretention facilities would be required to insure that storm water flow is unobstructed, that erosion is prevented, and that the systems were actively treating polluted runoff. Ultimately, the cost of operating and maintaining the storm water treatment systems would be borne by the Pantages Bays homeowners as part of a landscaping and lighting district. Until the establishment of the lighting and landscaping district as a permanent funding

[7] The Corps 401/404 permit would not allow for discharge of treated storm water into the wetland mitigation area, because it would adversely affect the required hydrology for the created seasonal wetlands. Storm water discharge over the sloped/benched creek bank habitat enhancement areas is also inconsistent with the required tidal hydrology for that vegetation. For these reasons, the applicant does not intend to introduce any treated storm water into the emergent marsh or wetland mitigation area, or over the creek bank enhancement areas.

mechanism by future homeowners, the project applicant would bear the costs for the operation and maintenance of the storm water treatment systems (dk Consulting 2006).

As required by law, the project applicant would need to receive a water quality certification from the SWRCB and comply with all stated permit conditions. Provided that the project is constructed in adherence to the applicable regulations, operational impacts to water quality would be less-than-significant.

The project's C.3 report also identifies source control measures that would reduce the potential level of pollutants entering the storm water treatment systems. **Table 4.9-1** lists the proposed source control measures.

Table 4.9-1 Sources of Pollutants and Proposed Control Measures

Potential Source	Permanent Controls (BMPs)	Operational Controls (BPMs)
On-site dumping into storm drain inlets	All accessible on-site inlets will be marked with the words "No Dumping! Flows to Bay"	Markings will be periodically repainted or replaced. Inlets and pipes conveying storm water to BMPs will be inspected and maintained as part of BMP Operation and Maintenance Plan.
Landscape/outdoor pesticide use	Final landscape plans will: ▪ Be designed to minimize irrigation and runoff and to minimize use of fertilizers and pesticides that can contribute to storm water pollution. ▪ Specific plantings within bioretention areas, and bioswales that are tolerant of the sandy loam soil and periodic inundation. ▪ Include pest-resistant plants. ▪ Include plantings appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency and plant interactions	Landscape will be maintained using minimum or no pesticides. Integrated Pest Management (IPM) information will be provided to new homeowners.
Vehicle washing	Driveways and parking areas drain to bioretention area, swales, or bioswales.	Distribute storm water pollution prevention information to homeowners.

Source: dk Consulting 2006.

The proposed drainage system has been designed to comply with NPDES and the County's C.3 requirements. As required by law, the project applicant would need to receive water quality certification from the SWRCB and comply with all regulated permit conditions. Provided that the project is constructed in the adherence to the drainage system plan and applicable regulations, operational impacts to water quality would be less than significant.

Open Water Areas

The project would create approximately 47 acres of bays, coves, and open-water areas. As shown in **Figure 3-5**, the open-water areas created by the project would include the widening of Kellogg Creek (17.05 acres), the North Cove (3.16 acres), North Bay (11.97 acres), South Cove (5.01 acres), and South Bay (9.54 acres).[8] Consistent with RD 800 standards, constructed bays and coves would be excavated to a depth of at least 10 feet below msl to allow for safe boat passage at low tide.[9] The project would require approval from the Contra Costa LAFCO for annexation to the RD 800 sphere of influence and corresponding service boundary.

As required by RD 800 standards, Kellogg Creek would be widened to 300 feet at the elevation of 3 feet above msl to provide adequate access for docks on both sides of the channel.[10] At the southern end of the project site, Old Kellogg Creek would be widened from its current width of 60 feet to a maximum of 200 feet to provide adequate access, per RD 800 requirements, to areas with docks on one side. Old Kellogg creek would also be excavated to a depth of 5 to 10 feet below msl.[11]

Improvement to Kellogg Creek and Old Kellogg Creek would be funded and implemented by the project applicant. RD 800 would be responsible to maintain the waterways within and along the project site. In order to establish long-term maintenance, the project applicant will establish an Assessment District prior to selling the residential homes to fund these maintenance activities.

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[8] 17.05 + 3.16 + 5.01 +11.97 + 9.54 = 46.73 acres, personal communication with Catherine Ginn at dk Consulting Inc., December 4, 2009

[9] Personal communication with Jeff Conway, RD 800 District Manager.

[10] RD 800 minimum standards per Jeff Conway.

[11] Old Kellogg Creek would be widened to 200 feet at the opening to the main Kellogg Creek, and would be widened to 60 feet at the westernmost portion.

Residence Times[12]

The excavation of new bays and coves on the project site, in combination with the widening of Kellogg Creek, would result in increased residence times in the Discovery Bay Area. The largest increases would occur at the far south end of the western Kellogg Creek branch. In this area, residence times would increase from 5.7 days to 6.3 days (an approximately 9 percent increase). In the central-south part of the western branch of Kellogg Creek, residence times would increase from 2.5 days to 3.0 days (an approximately 20 percent increase). However, relative to the maximum residence times elsewhere in the Discovery Bay waters (9 days in the eastern branch), these changes are not considered significant (RMA 2006). Residence times in the new bays and coves would be less than 2 days.

Tidal Currents and Erosion

Additional hydraulic analyses were conducted (RMA 2006) to understand the erosion potential that could occur from widening the northern portion of Kellogg Creek on the Indian Slough. As previously discussed, the existing fast tidal currents in Kellogg Creek contribute to erosion and scour of the banks and also pose a hazard for boat users. In order to reduce existing tidal currents, the project would widen the portion of Kellogg Creek and Old Kellogg Creek immediately east of the site. Based on the modeling conducted for post-project hydrodynamics, the widening of Kellogg Creek would have a positive impact on reducing the rapid tidal currents (RMA 2006). Over the tidal cycle, averaged flood velocities (i.e., the speed of water flow) in Kellogg Creek would be reduced by 55 percent.[13]

The principal flow controlling peak flood velocities in Indian Slough is the upstream tidal prism of Kellogg Creek and adjacent bays and coves of Discovery Bay.[14] The excavation of new bays and coves on the project site, in combination with the widening of Kellogg Creek, would increase the tidal prism controlling the peak flood velocities in Indian Slough. With the increased tidal prism from the project, more water would pass through Indian Slough, and small increases in the flood velocities of the north and south channels of Indian Slough would occur. Over the tidal cycle,

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[12] Residence Time is the amount of time a particle spends in a particular system.

[13] The widening of Kellogg Creek would reduce peak ebb velocities from 2.37 feet per second (ft/sec) to 1.06 ft/sec (approximately 55 percent) (RMA 2006).

[14] A tidal prism is the volume of water in an estuary or inlet between mean high tide and mean low tide, or the volume of water leaving an estuary at ebb tide.

peak velocities would increase by 3 percent in the southern channel and 9 percent in the northern channel. However, these small increases would not be enough to result in scour or cause any problems for boaters (RMA 2006).

Overall, it is expected that post-development flow conditions will not create an increase in net erosion rather result in a beneficial impact by reducing erosion and scour of the water banks near the project site and reducing fast tidal currents, which is hazardous for boat users. Additionally, model results also show that the widening of Kellogg Creek would not have an impact on the tidal cycle water levels in Discovery Bay and there would be no impact on the existing siphon flows.

Boat wakes and Levee Erosion

The project would result in an additional 131 new vessels to Discovery Bay; approximately 3,420 new boat trips per year (see **Section 4.16, Transportation and Circulation**). This represents an approximately 3 percent increase in the number of local boat trips within Discovery Bay. At the Delta-wide scale, the project would result in an approximately 0.07 percent increase in boat trips.

Limited data exist to accurately quantify erosion rates of mud levees on a per-boat-passage basis. Observed erosion rates will depend on boat hull size and shape, speed, water depth, channel width, levee material, vegetative cover, and levee geometry. Without information on trip routes originating from Discovery Bay it is difficult to estimate the impact of increased boat trips on levee erosion. However, for the purposes of this analysis, it is assumed that the increase in bank erosion of unarmored levees will be proportional to the increase in number of project boats trips.

Preliminary erosion data for unarmored levee monitoring sites near Discovery Bay (within approximately 5 miles of the project site) indicate an average horizontal erosion rate of approximately 5 centimeters/year (cm/yr). With an increase in boat traffic by approximately 3 percent, the project is only expected to increase erosion rates by 1 millimeter/year (mm/yr) at this location.

Preliminary erosion data for unarmored levee monitoring sites Delta-wide indicate an average horizontal erosion rate of 12 cm/yr. With an increase in Delta-wide boat traffic by approximately 0.07 percent, the project is only expected to increase erosion rates by less than 1 mm/yr.

Given the relatively minor estimated increases in boat traffic and erosion rates associated with the project, and the extent of levee armoring near the project site, this impact is found to be less than significant. Furthermore, boat wakes within the project site will be controlled in a similar manner as for existing waterways within Discovery Bay, through designation as a no wake zone (5 mph).

d) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

The majority of the project site is considered undeveloped and pervious. Storm water generally drains towards the topographically lower seasonal wetlands and the emergent marshes on the northern portion of the project site and ultimately enters Kellogg Creek and Indian Slough. Implementation of the project would add approximately 70 acres of impervious surface to the project site; the remaining area would be open water and open space. The project includes a storm water drainage and treatment system that collects runoff from individual drainage areas into a series of linear bioretention facilities. Lots, sidewalks, and roadways would drain toward the linear bioretention facilities via overland flow. Treated runoff would be collected into a series of perforated pipe underdrains that would discharge the storm water into the developed bays, coves, and Kellogg Creek, in compliance with Section 401/404 and C.3 standards.

The storm drain outlets would be protected with flap gates to prevent water from back-flowing into the streets during very large storm events. During large storm events, water would flow overland into the bays, which are tidally influenced.

As previously described, C.3 requires that certain areas within the County implement a net zero increase in storm water runoff as a result of new impervious surfaces. However, because all surface water runoff from the project site would drain into to a connection point within tidally influenced waterways, the project area does not require a net zero increase in storm water runoff. The project would demonstrate compliance with the requirement to manage increases in runoff peak flows and durations as included in Option 4a of the HMP, described above in **Subsection 4.9.2**, . The increases in runoff peaks would not substantially contribute to off-site flooding since the storm drain outfall would connect directly to tidally influenced areas with direct connections to the Delta.

As the proposed storm drainage would handle all stormwater runoff from the developed portion of the site, on- and off-site flooding would not occur. The increase in surface runoff from the project site is therefore considered less than significant.

e) Would the project place housing within a 100-year flood hazard area as delineated on the Federal Emergency Management Agency (FEMA) Flood Zone Map?

f) Would the project place within a 100-year flood hazard area structures that would impede or redirect flood flows?

The entire project site falls within Special Flood Hazard Area Zone A on the Flood Insurance Rate Map for Contra Costa County (FEMA 2009), which indicates that it is subject to flooding during a 100-year event in the Delta. The Base Flood Elevation (BFE) for the 100-year storm event, as defined by FEMA and the County[15], is the elevation that has a 1 percent chance of being equaled or exceeded by floodwaters in any one year. Based on the current mean higher high water MHHW (i.e., average high tides) and the flood elevation data from past storm events, the 100-year BFE for the project site is 7.5 feet NGVD. The 300-year BFE is 8.0 ft NGVD.

In locations subject to tidal variations (such as the project site), the County's flood design standard requires a minimum of 2 feet of freeboard (a factor of safety expressed in feet above a known flood level) between the finished floor elevation of a home and the BFE of the 100-year flood event. Given that the 100-year BFE for the project site is 7.5 feet NGVD, finished floor elevations must be at least 9.5 feet NGVD.[16]

The project site is not protected by an outside levee because it is directly adjacent to the Delta's open waterways. To ensure adequate flood protection, the applicant has conservatively designed the project to exceed the BFE of the 300-year storm event. The finished floor elevations of all waterfront lot homes would be 12.7 feet NGVD,[17] which is a full 3.2 feet above the County's flood design standard for the BFE of the 100-year flood event.[18]

For the purpose of flood protection calculations, the project development is divided into three groups of homes as shown in **Table 3-3** of this EIR. As shown in the table, the waterfront homes located on lots adjacent to water and subject to tidal variation would have a minimum finished floor elevation of 12.7 feet NGVD, which is

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[15] As defined in the Contra Costa County Code Section 82-28.486 – One Hundred –year flood.

[16] Contra Costa County Code Section 82-28.1002, 3A.

[17] Finished floor elevation is calculated under the assumption that a 10- inch thick Post Tension Concrete Slab ("PT Slab") is utilized. If instead a pier and grade beam foundation is utilized, the finished floor elevation would be higher.

[18] 300-year base flood event is .5 feet higher than the 100-year event in this location, per the Sacramento-San Joaquin Delta Special Study Hydrology, dated February 1992, and as confirmed by Chris Neudeck, engineer for Reclamation District 800.

5.2 feet above the 100-year BFE and 4.7 feet above the 300-year BFE at high tide. Interior lots would have a finished floor elevation of at least 11.5 NGVD, which is 4.0 feet above the 100-year BFE and 3.5 feet above the 300-year flood elevation.

Based on the current estimated 100-year BFE, the proposed finish floor elevations of the project would meet the County's flood design standards, reducing potential risks from flooding to a less-than significant level.

g) Would the project expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

Dam safety is regulated by the State Department of Water Resources, Division of Safety. All large reservoirs in the County have been investigated for potential failures, and many have been strengthened. Further, the Office of Emergency Services has produced inundation maps and emergency plans covering various scenarios of dam failure in the County.

The closest reservoir is Los Vaqueros, located approximately 7.5 miles to the west. The project site is located along the eastern edge of the inundation area. The Contra Costa Water District recently completed an environmental analysis for the expansion and upgrading of the Los Vaqueros facility. The EIR prepared by the Contra Costa Water District included a less than significant impact related to downstream flooding associated with the risk of dam failure, based on the conservative design of the facility that ensures it can withstand a maximum credible earthquake, and the policies and procedures that guide the monitoring of operations of the facility, ensuring that if needed, emergency "drawdown" of water levels can be implemented to reduce the level of inundation. As such, potential risks related to dam failure are considered less than significant.

h) Would the project expose people or structures to inundation by seiche, tsunami, or mudflow?

Tsunamis are long sea waves, generated by displacements associated with earthquakes. These waves can reach great heights when they encounter shallow water. The project site is located approximately 80 miles from the ocean and the potential for tsunamis affecting it from this source is remote. Tsunamis can also be generated in sheltered near shore waters due to landslides and underwater land movements.

Seiches are caused by seismically-induced ground motions imparted to bodies of water which cause them to oscillate from side to side. There is no known evidence of these near-field tsunami and seiches sources and they are not considered a risk to the project. In any case, the fire department uses a fire boat to respond to

emergencies within the waterways adjacent to the project site. The fire department also works with the coast guard and Sheriff Marine Patrol division to responds to water-related emergencies.

The project site is nearly flat and would thus not be subject to mudflows related to landslides.

Discussion of Significant Impacts

i) Would the project otherwise substantially degrade water quality?

Impact HYD-1: Construction activities would alter the existing drainage patterns resulting in erosion, sedimentation, and contamination of storm water runoff which could degrade water quality in adjacent water bodies.

Construction will involve earth moving activities, with a large portion being wet excavation associated with excavating the bays and coves. Demolition, clearing and site preparation would be performed utilizing excavators/front-end loaders, tracked dozer with disk, and trucks for debris removal. Rainfall could carry loose soils into adjacent waterways, resulting in increased sedimentation and degradation of water quality. Concentrated flow due to grading in some areas would increase the potential for erosion and potentially increase sediment transport into the adjacent areas. Construction equipment debris and fuel could also further degrade the quality of storm water runoff if fueling activity and maintenance products are not handled properly. This contamination could impact nearby waterways (i.e., Kellogg Creek) and the on-site marsh lands and wetlands.

The waterfront development would be constructed by excavating bays and waterways and creating elevated building pads adjacent to a vertical reinforced shoring wall. Removal of material to depths of up to 10 feet would be required to excavate the proposed bays and construct the shoring walls. The wet excavation of bays, coves and the dredging of Kellogg Creek would produce large quantities of suspended sediment that could impact the water quality in Kellogg Creek.

Excavation of the Bays

Excavation of the South and North Bays would occur in conjunction with the widening of Kellogg Creek (described below). The bays would be excavated from within the proposed development area of the project site. Excavated soils from the bays would be primarily “wet” (i.e., material from below the water table that is pulled out in a wet or moist condition). The material would be dried on site before being reused as engineered fill for the project.

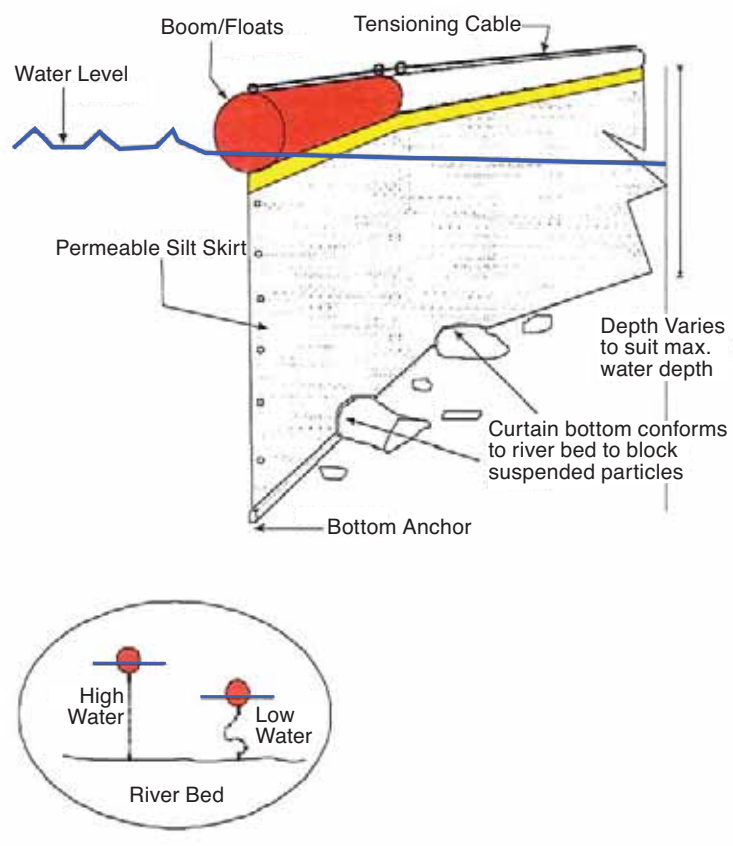
Initially, the mouth of each bay would remain closed by an approximately 100-foot-wide earthen barrier (soil plug). The soil plugs would separate the excavation operations from Kellogg Creek so that sediment and silt would be prevented from entering Discovery Bay waterways. With the soil plugs in place, the bays would fill with water through natural groundwater equalization (i.e., through the ground) or via gravity flow through an installed culvert pipe. Water would eventually fill the excavated bays until water levels are equal to Kellogg Creek. Sediment in the bays would settle to the bottom over a period of one to two days. Once the sediment has cleared, a small, engineered breach in each of the soil plugs would be created to allow waters from the bays and Kellogg Creek to mix and stabilize. Once the waters of Kellogg Creek and the bays were stabilized, the entire soil plug would be removed.

Turbidity barriers (see **Figure 4.9-2**) would be placed within Kellogg Creek to provide an approximately 5-foot buffer around the soil plug as it is breached and removed. The turbidity barriers would consist of a floating top boom section attached to an anchored curtain made of tightly woven nylon, plastic, or other non-deteriorating material. The curtain would allow water to flow between the excavation areas and Kellogg Creek, while preventing sediment and other larger materials from entering the Discovery Bay waterways. A qualified hydrologist on the project team would determine the optimum position of the turbidity barriers. The turbidity barrier would be removed once all sediment from the construction site has settled.

Widening of Kellogg Creek and Old Kellogg Creek

Working north to south along the project site, the banks of Kellogg Creek and Old Kellogg Creek will be excavated to a maximum depth of 10 feet in order to widen the Discovery Bay waterways and create the onsite shoring (bank-stabilization) walls. Turbidity barrier installation (as described above for the creation of the bays) and excavation would be undertaken in the three segments: (1) northern segment, which is the north cove; (2) central segment between the North Bay and South Bay; and (2) southern segment between the North Bay and South Bay.

Back hoe and related excavation operations for the creek widening would be staged from the landward side of the project site—atop the shoring wall location that would be created with the engineered technique referred to as “cement deep soil mixing” in a previous phase. Any wet excavated materials would be dried on site prior to subsequent use as engineered fill for the project. The enhanced habitat on the newly formed creek banks along Pantages Island, the northerly side of North Cove, and at the end of Old Kellogg Creek would also be created as part of this phase of work (see **Section 4.3, Biological Resources,** for a detailed description of the bank habitat restoration).



Example Turbidity Barrier Figure **4.9-2**

Source: InSite, 2010.

Onsite activities from excavation, grading, and general construction could pose a potentially significant impact to stormwater quality and water quality in the surrounding waters of Kellogg Creek and Discovery Bay. **Mitigation Measures HYD-1a** through **HYD-1c** would reduce this impact to a less-than-significant level.

Mitigation Measure HYD-1a: A qualified hydrologist on the project team shall perform, at minimum, weekly monitoring of the water quality in Kellogg Creek adjacent to the turbidity barriers to determine whether adjustments to their position or depth are required. Monitoring shall be more frequent, as needed, to accurately assess water quality degradation.

Mitigation Measure HYD-1b: The applicant shall submit a Storm Water Pollution Prevention Plan (SWPPP) for review and approval by the Building Inspection Division of the Department of Conservation and Development. The SWPPP shall be consistent with the terms of the State Construction Storm Water General Permit, the manual of Standards for Erosion and Sedimentation Control Measures by the Association of Bay Area Governments, policies and recommendations of the County and the RWQCB. The County has SWPPP resources available on its website: http://www.co.contra-costa.ca.us/depart/pw/design/swppp/.

Mitigation Measure HYD -1c: To prevent pollution of receiving waters due to equipment fueling, storage, and maintenance, the contractor shall develop a detailed set of guidelines to follow. Final plan notes, and contractor bid documents shall include the following specifications:

1. Space in the staging area shall be reserved for storage of maintenance materials, and refueling purposes.
2. The staging area shall be graded to prevent any runoff so that any contaminants such as spilled fuel, oil, or grease will not reach the receiving waters.
3. If heavy-duty construction machinery is left overnight in an area that is not protected from direct runoff to receiving waters, drip pans shall be placed beneath the engine block and hydraulic systems.

Significance after Mitigation: Less than significant.

Weekly monitoring of the water quality adjacent to the turbidity barriers during project construction would ensure that potential water quality impacts to Kellogg Creek are avoided, thereby reducing the impact to a less-than-significant level. Preparation of a SWPPP would include compliance with RWQCB guidelines, an erosion control plan addressing control of sediment, stabilization

of erosion, and protection of water quality, and soil stabilization techniques. These measures would ensure that construction activities would not degrade water quality, thereby reducing the impact to a less-than-significant level.

Impact HYDRO-2: Abandoned groundwater wells on the project site could act as direct conduits to groundwater for hazardous waste.

According to the Phase I ESA prepared for the project (see **Section 4.8, Hazards and Hazardous Materials**), the project site contains at two domestic groundwater wells. The wells can act as a direct conduit for pollutants that are washed down with storm water runoff if they are not properly decommissioned. This is considered a potentially significant impact to groundwater quality.

Mitigation Measure HYD-2: Prior to the issuance of grading permits, the project applicant shall coordinate with Contra Costa Environmental Health Division (CCEHD) to identify and survey the existing and abandoned groundwater wells on the project site.

The identified groundwater wells shall be properly decommissioned and/or retrofitted under permit from CCEHD. CCEHD shall inspect the decommissioned wells for approval.

Significance after Mitigation: Less than significant.

Properly decommissioned and/or retrofitting the existing groundwater wells on the project site would ensure that pollutants would not be able to seep into the groundwater through the well sites, thereby reducing the impact to a less-than-significant level.

f) Would the project place housing within a 100-year flood hazard area as delineated on the Federal Emergency Management Agency (FEMA) Flood Zone Map?

Impact HYD-3: The project site is located within areas of projected tidal inundation due to sea level rise, which would place people and structures within a flood hazard associated with long-term sea level rise. (Significant)

The entire project site falls within Special Flood Hazard Area Zone A on the Flood Insurance Rate Map for Contra Costa County (FEMA 2009), which a 100-year BFE for the project site of 7.5 feet NGVD. The 300-year BFE is 8.0 feet NGVD. The flood risk to the project site is expected to increase with future sea level rise. As previously discussed in **Subsection 4.9.1**, **Existing Conditions**, global sea level is predicted to rise by approximately 1.3 feet over the next 50 years and 4.6 feet by 2100. A

relative sea level rise of 4.6 feet over the next 100 years would increase the project's existing 100-year BFE of 7.5 feet to 8.8 feet NGVD in Year 2050, and to 12.1 feet NGVD in Year 2100.

Residential Units

The residential structures are currently designed to account for the 2050 sea level rise scenario. Therefore, impacts associated with long-term flooding hazards are considered less-than-significant through 2050. However, to satisfy the 2100 sea-level rise scenario, the minimum finished floor elevation with a concrete slab foundation would have to be 14.1 feet.

As described in **Chapter 3.0, Project Description**, the project applicant is proposing to account for the Year 2100 scenario for sea level rise by redistributing the finished grades as part of the final grading plans. This design element is not currently reflected in existing project plans and is therefore added as a mitigation measure to reduce long-term water flooding impacts to a less-than-significant level.

Street Elevation

The minimum proposed street elevation for the project is 9 feet NGVD. Under the existing conditions, the proposed elevations of the streets would provide 1.5 feet of freeboard above the 100-year BFE. However, under the 100-year sea level rise conditions, the streets and storm drainage systems would be below the 100-year flood event by 3.1 feet. This is considered a significant impact.

The County requires that all subdivision proposals have public utilities located and constructed to minimize flood damage.[19] Per County requirements, the project applicant should perform an assessment to minimize any other flood damage due to this level of street flooding.

> ***Mitigation Measure HYD-3a:*** The final map and improvement plans, including grading plans shall include, at minimum, a finished floor elevation of residential units at 14.1 feet.
>
> ***Mitigation Measure HYD-3b:*** The final map and improvement plans, including grading plans shall include, at minimum, a finished street level elevation of 12.1 feet.

[19] Contra Costa County Code, Section 82-28.1006,4.

Significance after Mitigation: Less than significant.

Implementation of the **Mitigation Measures HYD-3a** and **HYD-3b** would require the applicant to design the project to meet 2100 sea-level rise scenario predictions. This would reduce long-term flooding impacts to a less-than-significant level.

4.9.4 CUMULATIVE IMPACTS

Water Quality

The 2005 General Plan update identified that an increase in urban runoff due to urban development would contribute pollutants and sediments to the surface waters of the Delta. The General Plan determined that this increase in pollutants was a significant impact to the water quality of the Delta. The discharge of stormwater runoff from new development in California is highly regulated by local, state, and federal laws specifically to ensure that they do not result in the gradual degradation of water quality. The General Plan includes policies that specifically reinforce these regulations by establishing the County's active role in water quality programs. The General Plan policies also establish support for water quality standards that are adequate to protect human health in important areas like the Delta estuary. Point sources of pollution are required to be identified and controlled in order to protect adopted beneficial uses of water. Implementation of these policies occurs as part of the development review and construction permitting process and were found to reduce potential impacts to a less-than-significant level. Therefore, the project in conjunction with the development proposed as part of the General Plan would not result in significant cumulative impacts related to water quality.

Flooding and Sea Level Rise

The 2005 General Plan update identified that future development within the 100-year floodplain would increase the number of persons and amount of property potentially exposed to flood conditions, including risks from flood hazards caused by sea level rise and levee or dam failure. As such, the General Plan includes policies that require all development proposed in areas of special flood hazards to conform to the County's flood-resistant design requirements related to building elevations, drainage requirements, etc. The project has been proactively designed with building pad elevations that conform to the conservative estimates for sea level rise

in 2050 and 2100. The project would not therefore increase the number of persons or amount of property potentially exposed to flood conditions and would result in a considerable contribution to this cumulative impact.

The General Plan policies also require that the review of development proposals occur in conjunction with the most recent dam failure inundation maps in order to determine evacuation routes. As noted earlier in this section, the project is located at the eastern edge of the inundation area for Los Vaqueros reservoir. As such the project would be subject to the same evacuation routes identified for the entire Town of Discovery Bay that have already been established.

4.9.5 REFERENCES

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4.10 LAND USE AND PLANNING

This section describes the existing land uses and land use designations on the project site and in the project vicinity. Land use designations are defined by the 2005-2020 Contra Costa County General Plan (General Plan) and Zoning Ordinance (Title 8 of the Contra Costa County Code). This section also evaluates project consistency with applicable General Plan policies. Information regarding land use and planning in Contra Costa County was obtained from site visits, the General Plan, Zoning Ordinance, and communication with the County's Community Development Division.

No comments related to land use and planning were received in response to the Notice of Preparation (NOP) for this Environmental Impact Report (EIR).

4.10.1 EXISTING CONDITIONS

Regional Land Uses

The project site is within the Discovery Bay area in the eastern portion of Contra Costa County (County). Contra Costa is adjacent to Alameda, San Joaquin, Sacramento, and Solano counties in Northern California. According to the General Plan, the County covers 805 square miles, including approximately 732 square miles of land and 73 square miles of water.

The County is comprised of three areas: West County, Central County, and East County. The project site is located within East County, which includes the communities of Pittsburg, Antioch, Brentwood, and Oakley. East County also includes the unincorporated areas of Discovery Bay, Bethel Island, Knightsen, and Byron. The East County has experienced rapid growth over the past 20 years as agricultural lands have transitioned to urban uses. Agricultural lands still predominate along the eastern boundary of the County, while urban uses (residential, commercial, retail, and education) have continued to develop within incorporated cities.

Project Site Land Uses

The approximately 171-acre project site consists of 162 acres of land owned by the project applicant, and 9.2 acres of land owned by the ECCID, including Pantages Island and land along the East Contra Costa County Irrigation District Dredge Cut/Intake Channel (ECCID Dredge Cut).

The project site is comprised of 10 assessor parcels that are designated Agricultural Lands (AL), Delta Recreation (DR) and Water (WA) by the General Plan and are zoned General Agricultural District (A-2) and Heavy Agricultural District (A-3). The project site is within the Urban Limit Line (ULL), as established by the voters of the County, and is identified for future urban development. Land uses beyond the ULL are primarily agricultural, including lands to the northeast of the project site, beyond Indian Slough (see **Figure 3-1**).

The project site is currently vacant, and has not been cultivated and irrigated since 1992. The site is disked annually and seeded with a grass mixture. A small number of cows (approximately 10) graze the site, as a hobby of the current tenant. The site is vegetated with 80 trees and low-lying non-native annual grasslands, and also contains three abandoned residential structures, including one residence and associated outbuildings near the center of the site, and one barn on the eastern portion of the site. Several shallow irrigation ditches bisect the site.

Surrounding Land Uses

Figure 3-1 depicts the land uses surrounding the project site.

The ECCID Dredge Cut forms the northern project boundary, and lands to the northeast remain in agricultural production.

The Discovery Bay community, located east and south of the site, is comprised of 3,700 residences, a golf course, marina and harbor, commercial uses, a church, and Discovery Bay Elementary School. Several communities are located west of the project site. The Ravenswood development includes 181 single-family residential units and 22 duets as well as Ravenswood Park. A second subdivision, known as Discovery Bay West, is comprised of five “Villages” that will total 1,999 units when fully constructed. Village I is located directly west of the Ravenswood development and contains the Timber Point Elementary School as well as Slifer Park. The remaining villages are laid out to the north, and include Village II, commonly referred to as the Lakeshore subdivision; and Villages III, IV, and V, which are known collectively as the Lakes at Discovery Bay.

4.10.2 REGULATORY SETTING

Contra Costa County General Plan

The General Plan provides goals, policies, and specific implementation measures that will guide decisions on future growth, development, and conservation of resources within the County. The current General Plan was adopted in 2005 and provides policies to guide development through year 2020.

As previously noted, the General Plan land use designations for the project site are Agricultural Lands (AL), Delta Recreation (DR) and Water (WA) which are defined as follows:

- **Agricultural Lands (AL)** – The AL designation preserves and protects lands capable of and generally used for the production of food, fiber and plant materials. The uses that are allowed in the AL designation include all land-dependent and non-land dependent agricultural production and related activities.
- **Delta Recreation (DR)** – The DR designation encompasses the islands and adjacent lowlands of the San Joaquin-Sacramento Delta. Agricultural and wildlife habitat is to be considered the most appropriate uses in the area, with limited recreational uses allowed which do not conflict with the predominant agricultural and habitat uses.
- **Water (WA)** – This designation is applied to approximately 68 square miles of water in the San Francisco-San Pablo Bay and Sacramento-San Joaquin River estuary system in the County.

The project applicant is seeking approval for a general plan amendment from AL, DR and WA to the following designations: Single-Family Residential-Medium Density (SM), Single-Family Residential-High Density (SH), Water (WA), Public/Semi-Public (PS), and Open Space (OS).

These land use designations are generally defined in the General Plan as follows:

- **Single-Family Residential-Medium Density (SM)** – The SM designation allows between 3.0 and 4.9 single-family units per net acre. Lot sizes can range up to 14,519 square feet. Population densities would normally range from about 7.5 to about 12.5 persons per acre.
    - Primary land uses include detached single-family homes and associated accessory structures. Secondary land uses considered to be compatible with low density homes may be allowed, including home occupations, small

residential care and childcare facilities, churches and other similar places of worship, secondary dwelling units, and other uses and structures incidental to the primary uses.

- **Single-Family Residential-High Density (SH)** – The SH designation allows between 5.0 and 7.2 single-family units per net acre. Lot sizes can range up to 8,729 square feet. Population densities would normally range from about 12.5 to about 22 persons per acre.
  - Primary and secondary land uses permitted in the SH are the same as described under the SM designation. In addition, in specified areas of the County with conventional zoning, attached single-family units (duplexes or duets) may be allowed.
- **Water (WA)** – As noted above, the WA designation covers approximately 68 square miles of water in the San Francisco-San Pablo Bay and Sacramento-San Joaquin River estuary system located within the County, as well as all large inland bodies of water such as reservoirs.
- **Public/Semi-Public (PS)** – The PS designation includes properties owned by public governmental agencies such as libraries, fire stations, schools, etc. This designation is also applied to public transportation corridors, such as freeways and highways, as well as privately-owned transportation and utility corridors such as railroads, Pacific, Gas & Electric (PG&E) lines, and pipelines.
- **Open Space (OS)** – This OS designation includes publicly-owned, open space lands, such as wetlands and tidelands and other areas of significant ecological resources, or geologic hazards.
  - The OS designation also includes privately-owned properties where development rights have been deeded to a public or private agency. For example, significant open space areas within planned unit developments identified as being owned and maintained by a homeowners association fall under this designation.
  - Resource management, such as maintaining critical marsh and other endangered habitats are appropriate uses within the OS designation. Other appropriate uses are low intensity, private recreation for nearby residents.

Project Consistency Analysis

The project as proposed is not permitted within the agricultural lands (AL) land use designation. The project includes a request for a General Plan Amendment to change the existing land use designations to those that would allow for the type and intensity of development proposed. The type and density of development proposed

is compatible with land uses and densities in the surrounding area, including the Discovery Bay West subdivisions to the west that were approved recently by the County through a similar General Plan Amendment and rezoning process.

The project site and surrounding properties were included within the ULL in 1992 when it was originally adopted. By including properties within the ULL, the County acknowledged the potential for future development of these areas as urban uses, while preserving lands outside the ULL in the agricultural core. The County has, over the past 15 years, processed applications for development within the Discovery Bay ULL, including the Ravenswood, and Discovery Bay West developments.

Zoning Ordinance

Parcels on the site are zoned General Agricultural District (A-2) and Heavy Agricultural District (A-3) by the Zoning Ordinance (Title 8 of County Code). Permitted uses within the A-2 and A-3 districts include:

- All types of agriculture, including general farming, horticulture, and floriculture;
- Other agricultural uses such as sheds and warehouses;
- A stand of agricultural product;
- A detached single-family dwelling;
- A public foster home or family care home; or
- A family day care.

Other uses, such as commercial recreational facilities, medical offices, or churches, may be allowed with a land use permit. In addition, uses must comply with development standards related to lot area, width, depth, and height.

The project is seeking approval of a rezoning to P-1. Permitted uses within the P-1 District include:

- Any land uses permitted by an approved final development plan that are in harmony with each other, serve to fulfill the function of the planned unit development, and are consistent with the general plan;
- A detached single-family dwelling on each legally established lot and the accessory structures and uses normally auxiliary to it.

Project Consistency Analysis

The project would rezone approximately 171 acres from A-2 and A-3 zoning to a P-1 District. The P-1 District is intended to serve large-scale development such as the project, and to allow diversification of uses, buildings, lot sizes and open space while insuring compliance with the General Plan.

The P-1 District classification sets forth the specific development standards of the project, including lot size, width, setbacks, building heights, etc. The project would be consistent with these customized standards.

Subdivision Ordinance and Building Code

The Subdivision Ordinance (Title 9 of the County Code) is intended to guide the adoption of subdivision regulations in accordance with the Subdivision Map Act, Division 2 of Title 7 of the Government Code of the State of California. The Subdivision Ordinance includes development standards related to site improvements, streets and roadways, and utilities.

The Building Code (Title 7 of the County Code) establishes the regulations and standards that apply to all buildings or structures within the County.

Project Consistency Analysis

The project applicant would be required to submit Final Subdivision Maps to the County for approval. Project plans are required to comply with the County's Building Code.

Urban Limit Line – 65/35 Contra Costa County Land Preservation Plan

County voters approved the 65/35 Contra Costa County Land Preservation Plan (Plan) as part of Measure C – 1990, was adopted on November 6, 1990. The Plan limits urban development to 35 percent of land within the County and requires that at least 65 percent of all land within the County be preserved for agriculture, open space, wetlands, parks, and other non-urban uses. According to the General Plan, 168,500 acres (35 percent) of land within the County could potentially be devoted to an urban use under the 65/35 standard [1] (2005 Contra Costa County General Plan update).

[1] Of the 481,430 acres of land in Contra Costa County.

The purpose of the ULL is two-fold:

- To ensure the preservation of identified non-urban agricultural, open space, and other areas by establishing a line beyond which no urban land uses can be designated during the term of the Contra Costa County General Plan, 2005-2020, and
- To facilitate the enforcement of the 65/35 Land Preservation Standard Plan[2].

Project Consistency Analysis

The project site is located within the ULL and no adjustment to the ULL boundary is required. Potential development on the project site is assumed within the 35 percent (168,500 acres) adopted countywide as part of the ULL.

Applicable General Plan Goals and Policies

This section evaluates policies contained in the Land Use Element of the General Plan that are applicable to the project and determines whether the project conforms to those policies. Project consistency with policies in other elements of the General Plan is provided throughout the applicable technical sections of this EIR.

Land Use Element

3-5: New development within unincorporated areas of the County may be approved, providing growth management standards and criteria are met or can be assured of being met prior to the issuance of building permits in accordance with the growth management.

3-8: Infilling of already developed areas shall be encouraged. Proposals that would prematurely extend development into areas lacking requisite services, facilities and infrastructure shall be opposed. In accommodating new development, preference shall generally be given to vacant or under-used sites within urbanized areas, which have necessary utilities installed with available remaining capacity, before undeveloped suburban land are utilized.

[2] The 65/63 Land Preservation Standard limits urban development to 35 percent of land within the County and requires that at least 65 percent of all land within the County be preserved for agriculture, open space, wetlands, parks, and other non-urban uses.

3-47: The Plan directs most of the residential and commercial growth that is anticipated to occur in the unincorporated East County area during the planning period into the Oakley community, with smaller amounts of recreation-oriented development allowed on Bethel Island.

3-49: The density and development of single-family homes in the East County area, in lands designated for residential or other urban uses, shall be related to the service availability criteria.

Project Consistency Analysis

The project site is located within the ULL and is designated for future urban uses. In reference to policy 3-5, the requested general plan amendment would be considered by the County since the subject property is located within the ULL. The project is vacant, and could be considered to be an infill site as it is surrounded by several large existing residential developments. The project is therefore in compliance with policy 3-8.

In regards to policy 3-47, while the project site is not located in the Oakley or Bethel Island communities, the site is located within the adopted ULL and fulfills a pattern of development that has been implemented over the past 15 years. The project would be an extension of the existing Discovery Bay water-oriented residential development. In response to policy 3-49, public water and sewer connections are available within a public utility easement that crosses the project site to serve the existing Discovery Bay development. The project would extend existing connections via project streets subject to LAFCO approval.

4.10.3 ANALYSIS OF POTENTIAL IMPACTS

CEQA Significance Criteria

Appendix G of the CEQA Guidelines identifies environmental issues to be considered when determining whether a project could have significant effects on the environment. As identified in Appendix G, the project would have a significant land use impact if it would:

a) Physically divide an established community;

b) Conflict with any applicable habitat conservation plan or natural community conservation plan; or

c) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.

Discussion of No Impacts

Analysis of the project plans and site characteristics shows that no impact would result for two of the three significance criteria. The following discussion presents the evidence in support of this conclusion.

a) Would the project physically divide an established community?

The project site is currently vacant, and development of the site would not divide an established community. The existence of the Discovery Bay community to the east and recent County approval of subdivisions to the west have resulted in the site becoming an island of vacant land surrounded by residential development to the east, west, and south. Implementation of the project would continue the residential pattern of development that is already defined. There are no impacts related to the project physically dividing an established community.

b) Would the project conflict with any applicable habitat conservation plan or natural community conservation plan?

In October of 2007, Contra Costa County adopted Ordinance No. 2007-53 for the "East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP) Fees and Implementation Procedures." The HCP/NCCP establishes a coordinated process for permitting and mitigating the "incidental take" of endangered species within eastern Contra Costa County.

The project site is located adjacent to but outside of the HCP/NCCP Inventory Area and as a result the project is not eligible for take coverage through the HCP/NCCP. Although the project is located outside the inventory area of the HCP/NCCP, it is expected that the project may be allowed to make a financial contribution to the East Contra Costa County Habitat Conservancy (Conservancy) as mitigation for impacts to federal- and state-listed special status species. The mitigation funding would be determined by state and federal regulatory agencies and agreement from the Conservancy. Further discussion of mitigation funding to the Conservancy is included in **Section 4.3, Biological Resources**. The project would not conflict with any habitat conservation plan or natural community conservation plan and no impact would occur.

Discussion of Less-than-Significant Impacts

Analysis of the project plans and site characteristics in the context of the three significance criteria stated above shows that there would be a less-than-significant impact for one of the three criteria. The following presents the evidence in support of this conclusion.

c) Would the project conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

The project is currently in conflict with the existing zoning and general plan land use designation which identify the site for agricultural uses. The project seeks approval of a general plan amendment from the current designation to Single-Family Residential – Medium Density (SM), Single-Family Residential – High Density (SH), Water (WA), Public/Semi-Public (PS), and Open Space (OS) designations to support the proposed development.

Similarly, the applicant also seeks approval for rezoning from General Agricultural District and Heavy Agricultural District to Planned Unit District. Approval of the general plan amendment and rezoning would ensure that the project is consistent with the applicable land use plan and zoning regulations. If the Board of Supervisors does not approve the requested general plan amendment and rezoning, the project as currently proposed would not be implemented.

The project site is located within the ULL, which identifies the site for potential development with urban uses. As discussed in **Section 4.1, Agricultural Resources**, no Prime Farmland, Unique Farmland, or Farmland of Statewide Importance exists on the project site. The majority of the project site is designated by the Farmland Mapping and Monitoring Program as Urban and Built-up Land with a portion located on the southern end of the project site designated as Farmland of Local Importance and Other Land. The project site is not currently used for agricultural purposes and is completely surrounded by residential development. As concluded in **Section 4.1, Agricultural Resources**, conversion of Farmland of Local Importance to non-agricultural uses is not considered an impact.

The project would be consistent with all other policies related to land use as discussed above. Therefore, the proposed project would not conflict with applicable land use plans, policies, or regulations adopted for the purpose of avoiding or mitigation an environmental effect.

4.10.4 CUMULATIVE IMPACTS

The cumulative context for land use and planning includes development projects listed in **Chapter 4.0, Settings, Impacts, and Mitigation Measures,** and development anticipated under the County's General Plan in Eastern Contra Costa County (East County).

The General Plan EIR noted the change in land use patterns that would occur with implementation of the Urban Limit Line (ULL); namely, a concentration of growth within areas designated for urban development and a preservation of the agricultural core for purely agricultural uses. The General Plan EIR recommended rezoning and other clarifications to address inconsistencies between existing land use designations that conflict with the intent of the newly adopted ULL.

The project site was included within the ULL in 1992, as part of an approximately 6-square-mile island of land designated for urban use. The ULL "island" includes the community of Discovery Bay and lands immediately adjacent to the east, west, and north (See **Figure 3-1**). As shown in **Figure 3-1**, lands in the northwest quadrant of this ULL island have recently been developed with residential subdivisions. Although the zoning for the project site (and all undeveloped lands within the ULL island) was left agricultural, the County's intention for future development of these lands was clearly identified. The ULL was adopted by the voters of the County through the passage of Measure C, which also provided for ongoing financing via a sales tax to support infrastructure improvements for the identified urban areas. All projects listed in **Chapter 4.0, Settings, Impacts, and Mitigation Measures,** have been designated for future urban development as part of the ULL; therefore, the combined development of properties within the ULL is not considered a cumulatively significant land use impact.

4.10.5 REFERENCES

Contra Costa County General Plan 2005. *Contra Costa County General Plan 2005-2020*, January 2005.

Jones & Stokes. *East Contra Costa County Habitat Conservation Plan and Natural Community Conservation Plan*, October 2006.

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4.11 MINERAL RESOURCES

This section describes the existing mineral resources available on and in the vicinity of the project site, and assesses the potential for the project to result in a significant environmental impact to mineral resources. Information regarding mineral resources was obtained from the Contra Costa General Plan, the U.S. Department of Agriculture (USDA), and through personal communications with staff at the Department of Conservation, Mines and Mineral Resources division.

There were no public comments related to mineral resources received in response to the Notice of Preparation (NOP) for this EIR.

4.11.1 EXISTING CONDITIONS

There are no mines or quarries located within the project vicinity. The most valuable mineral resources mined within Contra Costa County include crushed rock in the Concord area, shale in the Port Costa area, and sand and sandstone in the Byron area. There are also regionally significant deposits of diabase, an intrusive igneous rock used as roadbase and rip-rap to prevent streambank erosion, found in the Mt. Zion area near Concord and Clayton (Contra Costa County 2005).

The USDA Natural Resource Conservation Service identified four soils types on the project site. Soil series at the project site include Marcuse Clay, Brentwood Clay Loam (wet), Pescadero Clay Loam, and Sacramento Clay, Alkalai. The southern and northern portions of the project site are Marcuse clay. Both sides of Point of Timber Road are Brentwood Clay Loam (wet). The northeast portion of the project site is Pescadero Clay Loam. The island in the north of the project site is Sacramento Clay, Alkali. Summaries of the USDA soil descriptions (USDA 2010) for each soil series are as follows:

Marcuse Clay is characterized as a deep, very poorly drained soil that formed in alluvium from sedimentary rock. It is subject to ponding, has slow to very slow water runoff and has slow permeability. This soil is used for irrigated pasture, dryland saltgrass pasture, and occasionally row crops.

Brentwood Clay Loam (wet) is characterized as nearly level soil formed in valley fill from sedimentary rocks. This soil is moderately to well drained and runoff is very slow to medium. It has moderately slow permeability. This soil can be irrigated and used for tree fruit, nut crops, vegetables, and field crops. Vegetation includes annual grasses, forbs, and scattered oaks.

Pescadero Clay Loam is characterized as a very deep, poorly drained soil that formed in alluvium from sedimentary rock. This soil type occurs in level basins. Permeability is very slow, and the soil is subject to ponding due to very slow surface runoff. Vegetation commonly found growing on this soil series includes annual grasses, saltgrass, pickleweed and forbs. This soil type is mainly used for livestock grazing.

Sacramento Clay, Alkali is characterized as a nearly level soil located at elevations of near sea level to 60 feet. The soil is very poorly drained and has very slow to slow surface runoff. Uncultivated areas of this soil contain willows, cottonwoods, scattered oaks, and grasses and forbs.

4.11.2 REGULATORY SETTING

California Surface Mining and Reclamation Act of 1975

The California Surface Mining and Reclamation Act (SMARA) was enacted in 1975 and updated in January 2007 to limit new development in areas with significant mineral deposits. SMARA is part of California Public Resources Code (PRC), Division 2, Chapter 9, Section 2710 et seq. Through SMARA, the California Geological Survey (CGS) produces mineral land classification maps and reports to aid in development and land use plans. Natural resources identified within the maps and reports include geologic deposits of valuable minerals used in manufacturing processes and the production of construction materials. SMARA classifies lands into mineral resource zones (MRZs) according to the known or inferred mineral potential.

The criteria for establishing the zones are based on four general categories, discussed below:

MRZ 1 Areas where adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence.

MRZ 2 Areas where adequate information indicates that significant mineral deposits are present, or where it is judged that a high likelihood exists for their presence.

MRZ 3 Areas containing mineral deposits, the significance of which cannot be evaluated.

MRZ 4 Areas where available information is inadequate for assignment to any other MRZ zone.

Project Consistency Analysis

The project is not located within an identified mineral resources area, and would therefore be consistent with SMARA**.**

Contra Costa County General Plan

The Mineral Resource Areas of Chapter 8, the Conservation Element, in the Contra Costa County General Plan contains the following relevant policies related to mineral resources.

Conservation Element

8-54 Mining and quarrying shall be a permitted use in certain privately owned areas which are in an open space designation in the General Plan (e.g. Open Space, Agricultural lands, etc.) and which contain known mineral deposits with potential commercial value. These deposits include, but are not limited to, rocks, gravel, sand, salt, and clay.

8-56 Incompatible land uses shall not be permitted within the mineral resource impact areas identified as containing significant sand and gravel deposits (as shown in Figure 8-4 of the General Plan)

8-57 Incompatible uses are defined as land uses inherently incompatible with mining and/or uses that require high public or private investment in structures, land improvements, and landscaping that prevent mining because of the higher economic value of the land and its improvements.

8-58 Future development in the vicinity of valuable mineral resource zones shall be planned and designed to minimize disturbance to residential areas or other sensitive land uses and to permit the safe passage of quarry trucks.

8-59 Development of compatible land uses shall be encouraged within 1,000 feet of the quarrying sites. Compatible uses include secondary activity related to the quarry operation, recreation facilities, parks, agricultural uses, and permanent open space.

Policy Consistency Analysis

The project is not located within an identified mineral resources area and thus would not cause an incompatible land use near a mine or quarry. Therefore, the project would be consistent with General Plan policies related to mineral resources.

4.11.3 ANALYSIS OF POTENTIAL IMPACTS

CEQA Significance Criteria

Appendix G of the CEQA Guidelines identifies environmental issues to be considered when determining whether a project could have significant effects on the environment. As stated in Appendix G, a project would have a significant impact on mineral resources if it would:

a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state; or

b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

Discussion of No Impacts

Analysis of the project details and project site characteristics in the context of the two significance criteria stated above clearly shows that no mineral resource impacts would result. The following discussion presents the evidence in support of this conclusion.

a) Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

According to the California Geological Survey, the project site is not classified or designated within a mineral resource zone (S. Kohler, personal communication, May 17, 2007). Furthermore, based on General Plan maps of the area, the project site is not within an area of known mineral importance. Therefore, the project would not impact mineral resources

b) Would the project result in the loss of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

Neither the project site nor the project vicinity has a history of mining and the project site is not delineated as a mineral resource recovery site on any known map or plan. Therefore, the project would not result in the loss of a locally important mineral resource recovery site.

4.11.4 CUMULATIVE IMPACTS

The cumulative setting for mineral resources includes the project in combination with the cumulative projects listed in **Table 4-1**. According to the General Plan, none of these projects are within an area of known mineral importance. Therefore, the development of the project in combination with other projects in the area would have no potential to impact state-designated regionally significant mineral resources and there would be no cumulative impact related to mineral resources.

4.11.5 REFERENCES

Contra Costa County. 2005. Contra Costa County General Plan 2005-2020: Conservation Element.

Kohler, Susan, California Geological Survey – Mineral Resources, State of California Department of Conservation. Personal Communication, May 14, 2007.

United States Department of Agriculture (USDA). 2010. National Cooperative Soil Survey. http://soils.usda.gov/partnerships/ncss/.

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4.12 NOISE AND VIBRATION

This section describes existing sources of noise within the project site and vicinity and evaluates whether construction and operational noise generated by the project would exceed applicable noise standards. The section also evaluates potential vibration impacts associated with project construction.

Information presented in this section was obtained from noise measurements and modeling conducted by Rosen, Goldberg, Der & Lewitz as part of an *Environmental Noise Study for Pantages Bays* (see **Appendix E**). The environmental noise study that has been incorporated into this analysis is available for review at Contra Costa County, Department of Conservation and Development, Community Development Division, 651 Pine Street, Martinez, California

To determine the existing noise environment, sound level meters were deployed at four locations on and around the project site to record fluctuations in sound over extended periods. Noise measurements were made on April 22 through 26, 2010. See **Subsection 4.12.2**, **Existing Conditions** for a complete description of the noise monitoring conducted for this analysis.

No comments related to the noise environment were received in response to the Notice of Preparation (NOP) for this environmental impact report (EIR).

4.12.1 NOISE AND VIBRATION CONCEPTS

Noise

Noise can be defined as unwanted sound and is commonly measured with an instrument called a sound level meter. The sound level meter “captures” sound with a microphone and converts it into a number called a sound level. Sound levels are expressed in units called decibels (dB).

To correlate the microphone signal to a level that corresponds to the way humans perceive noise, the A-weighting filter is used. A-weighting de-emphasizes low-frequency and very high-frequency sound in a manner similar to human hearing. The use of A-weighting is required by most local agencies as well as other federal and state noise regulations (e.g., the California Department of Transportation, U.S. Environmental Protection Agency, U.S. Department of Labor, Occupational Safety & Health Administration and U.S. Department of Housing and Urban Development). The abbreviation dBA is often used when the A-weighted sound level is reported.

Because of the time-varying nature of environmental sound, there are many descriptors that are used to quantify the sound level. Although one individual descriptor alone does not fully describe a particular noise environment, taken together, they can more accurately represent the noise environment. There are four descriptors that are commonly used in environmental studies: the maximum instantaneous noise level (L_{max}), equivalent noise level (L_{eq}), sound level exceeded 90 percent of the time (L_{90}), and community noise equivalent level (CNEL).[1]

The maximum instantaneous noise level (L_{max}) is often used to identify the loudness of a single event such as a car pass-by or airplane flyover. To express the average noise level, the L_{eq} is used. The L_{eq} can be measured over any length of time but is typically reported for periods of 15 minutes to 1 hour. The background noise level (or residual noise level) is the sound level during the quietest moments. It is usually generated by steady sources such as distant freeway traffic. It can be quantified with a descriptor called the $L_{90,}$ which is the sound level exceeded 90 percent of the time.

To quantify the noise level over a 24-hour period, the CNEL is used. The CNEL is an average like the $L_{eq,}$ except it includes a 10-dBA penalty for noises that occur during nighttime hours and a 5-dBA penalty during evening hours to account for increased sensitivity during these time periods.

In environmental noise, a change in the noise level of 3 dBA is considered a just noticeable difference. A 5-dBA change is clearly noticeable, but not dramatic. A 10-dBA change is perceived as a halving or doubling in loudness.

Traffic Noise

The source level of traffic noise depends on four primary factors, including the volume of the traffic, speed of the traffic, number of trucks in the flow of traffic, and the condition of the road surface. Generally, the loudness of traffic noise is increased by higher traffic volumes, faster speeds, a greater number of trucks, and rougher pavement. Noise generally increases 3 dB with each doubling of traffic volume (all else being equal) and 6 dB with each doubling of speed (all else being equal). Higher ratios of trucks and rougher pavement do not have as direct of an effect on the noise levels.

Noise Attenuation

Most noise sources can be classified as either point sources (e.g., stationary equipment), or line sources, such as a roadway. Sound generated by a point source nominally diminishes (attenuates) at a rate of 6 dBA for each doubling of distance away from the source. For example, a 60 dBA noise level measured at 50 feet from

[1] CNEL can also be expressed as the Day/Night Average Sound Level (Ldn or DNL).

a point source would be 54 dBA at 100 feet from the source and 48 dBA at 200 feet from the source. Noise from a line source normally attenuates at 3 dBA per doubling of distance.

Sound levels can also be attenuated by man-made or natural barriers. Solid walls, berms, or elevation differences typically reduce noise levels by 5 to 10 dBA. Closed windows can reduce interior levels anywhere from 20 to 40 dBA (or higher for very specialized windows), while buildings with partially open windows can reduce interior noise levels around 15 dBA.

Vibration

Ground vibrations are small oscillatory disturbances to the soil, which are transmitted outwards from their source and reduce in magnitude with increasing distance. The vibration source stimulates the adjacent ground, creating vibration waves that travel through the various soil and rock strata to the foundations of nearby buildings. The vibration then travels from the building foundation throughout the remainder of the building structure. Vibration levels are expressed in units called peak particle velocity (ppv), which is defined as the maximum instantaneous peak of the vibration amplitude.

The vibration of floors and walls may cause perceptible vibration, rattling of items such as windows or dishes on shelves, or a rumble noise. The rumble is the noise radiated from the motion of the room surfaces. In essence, the room surfaces act like a giant loudspeaker. This is called ground-borne noise.

Ground-borne vibration is harder to perceive by people who are outdoors. Although the motion of the ground may be felt, the motion does not provoke the same adverse human reaction without the effects associated with the shaking of a building. In addition, the rumble noise that usually accompanies the building vibration can only occur inside buildings (FRA 2005).

4.12.2 EXISTING CONDITIONS

Noise Environment

A series of land uses have been deemed “sensitive” by the State of California. These land uses require a serene environment as part of the overall facility or residential experience. Many of these facilities depend on low levels of sound to promote the well being of the occupants. These uses include, but are not necessarily limited to schools, hospitals, rest homes, long term care facilities, mental care facilities, residential uses, places of worship, libraries, and passive recreation areas.

The closest sensitive land uses to the project site are the residential communities of Discovery Bay and the Ravenswood and Lakeshore subdivisions. Timber Point Elementary School and Regatta Park are located farther to the west, in the Village I portion of Discovery Bay West.

There are several sources of noise in the study area, including vehicular traffic on Point of Timber Road, airplanes from the local private air strip, and motorized boats and personal watercraft (e.g., jet skis) on Kellogg Creek. Distant noise at the site is also audible from traffic along Bixler Road and Newport Drive.

Noise Measurements

Existing CNEL noise levels at the project site are between 45 and 53 dBA, reflecting the vacant state of the property.

Analysis of the existing and future noise environments was based on technical reports, noise monitoring, and noise prediction modeling. Noise measurements were made on and around the project site to quantify the existing noise environment on April 22 through 26, 2010, including two long-term, 4-day noise measurements (Location A and B) and two short-term, 15-minute measurements (Locations 1 and 2).

Figure 4.12-1 illustrates the measurement locations. **Figure 4.12-2** illustrates the hourly noise levels at the long-term Locations A and B. **Table 4.12-1** lists the results of the short-term measurements. The measurements span both weekdays and weekends.

Table 4.12-1 Short-term Noise Measurement Results – April 2010

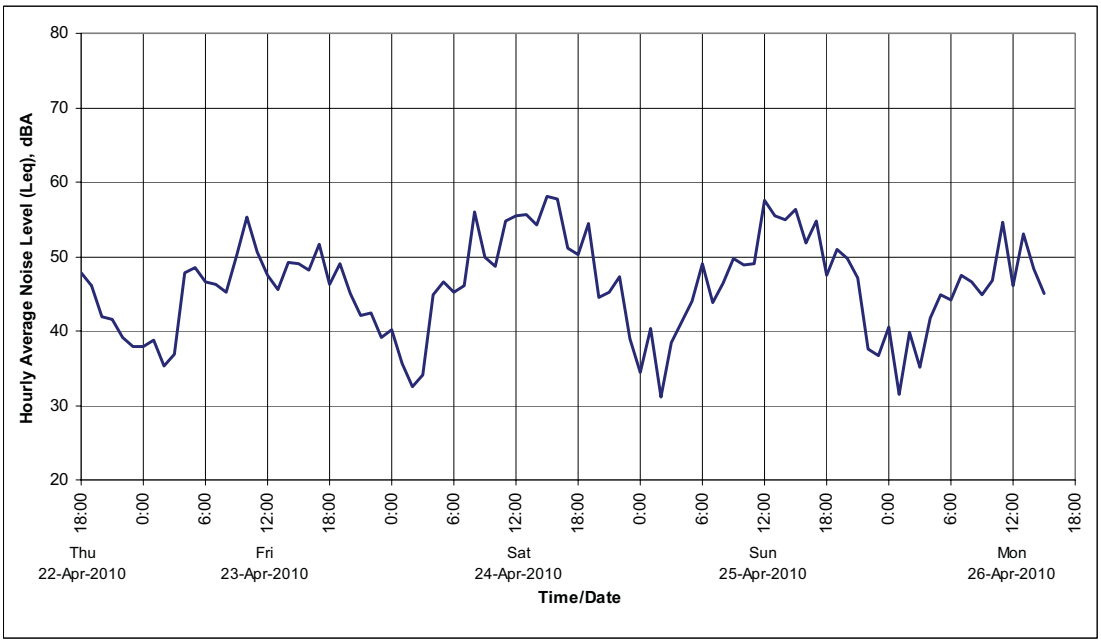
Location		Time/ Date	A-weighted Sound Levels, dBA				
			L_{eq}	L_{10}	L_{50}	L_{90}	CNEL
1	West property line of project site, adjacent to existing homes. 160 feet north of Point of Timber Road, 5 ft elevation	**3:45 P.M. - 4:00 P.M. (4/22/10)**	45	49	41	36	53
2	Along Kellog Creek 5 feet elevation	**4:15 P.M. - 4:30 P.M. (4/22/10)**	43	47	39	35	45

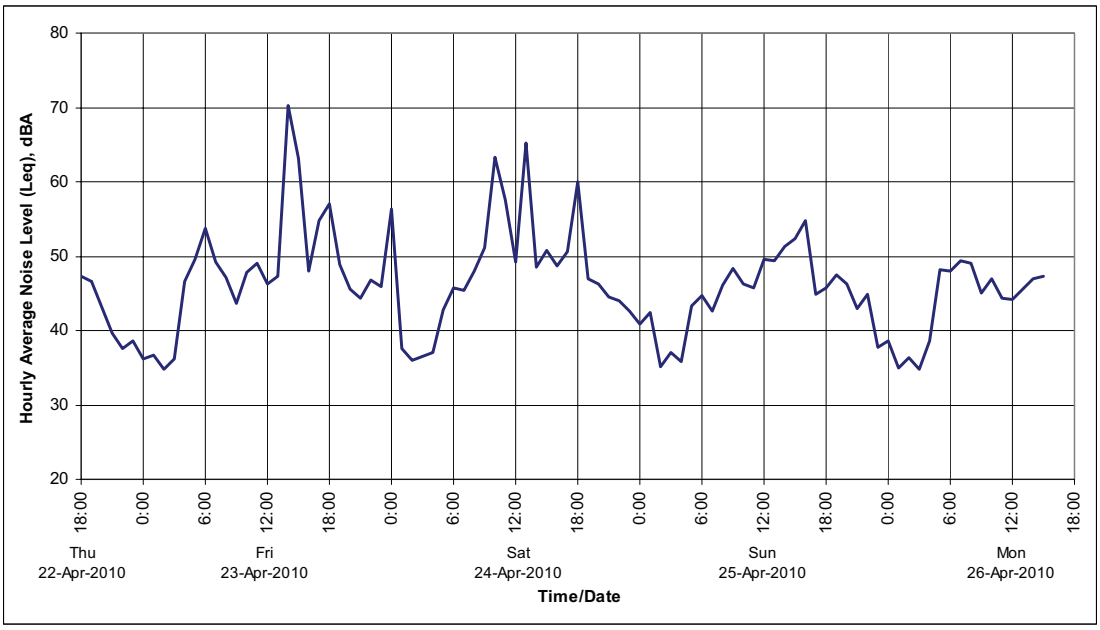
Source: Rosen, Goldberg & Der 2010.
Note: Estimate of CNEL based on comparison of short-term measurements with results of long-term measurement

Noise Measurement Locations

Figure 4.12-1

Source: Rosen, Goldberg, Der & Lewitz, Inc.; Google Earth, 2010.





Long-Term Noise Measurement Results

Figure 4.12-2

Source: Rosen, Goldberg, Der & Lewitz, Inc., 2010.

Watercraft

As stated above, watercraft create noise at the project site and at the existing homes along the east side of Kellogg Creek. The data from the noise monitor at Location A was reviewed to quantify the watercraft noise over the two weekend days of long-term noise measurements. There were 36 distinct boat passbys on Saturday and 58 on Sunday. The typical watercraft produced an L_{max} of between 60 and 70 dBA. The loudest L_{max} was 79 dBA. The measured noise levels shown in **Figure 4.12-2** are average noise levels that are dominated by other noise sources such as distant traffic and construction. The CNEL due to watercraft alone is less than 50 dBA. These results are representative for both the project site and for the adjacent homes in Discovery Bay.

Aircraft

Several airplane overflights were observed during the long-term noise measurements including jets and smaller general aviation aircraft. The infrequent nature and relatively low noise levels means that they are not a significant contributor to the average noise at the project site.

Traffic Noise

The main sources of traffic noise in the study area are from traffic along Point of Timber Road, Bixler Road, and Newport Drive (see **Figure 4.16-1**). **Table 4.12-2** shows the calculated existing noise levels along these roads, which provide access to the project site.

Table 4.12-2 Existing CNEL for Roads Surrounding Project Area

Road	Segment	Existing CNEL (dBA) (50 feet from centerline of roadway)
Bixler Road	Balfour Road to Point of Timber Road	64
	Point of Timber Road to Marsh Creek Road	66
	Marsh Creek Road to State Route 4	66
Point of Timber Road	Byron Highway to Bixler Road	56
	Just east of Bixler Road	55
	Just west of project Site	51
Newport Drive	Bixler Road to Slifer Drive	57
	Slifer Drive to Newport Lane	55
	Newport Lane to State Route 4	56

Source: Rosen, Goldberg & Der 2010.

4.12.3 REGULATORY SETTING

California Code of Regulations

California's Model Community Noise Ordinance (Construction Noise)

The State of California's Model Community Noise Ordinance (Office of Noise Control 1977) contains noise level limits of 75 dBA for mobile construction equipment and 60 dBA for stationary construction equipment at single-family residential areas.

Project Consistency Analysis

Although these standards have not been adopted by the County, the noise study used the California's Model Community Noise Ordinance limits to assess the construction noise impacts at residences. The County does not have quantitative noise performance standards for construction activities.

Without mitigation, project construction would cause a temporary increase in noise levels that would have significant noise impacts on the surrounding residential development. Implementation of **Mitigation Measures 1a – 1b** would impose specific hours for construction and would include other measures to attenuate sound during the construction period such as temporary barriers, truck routing, and location of stationary equipment. Implementation of these measures would ensure consistency with California's Model Noise Ordinance. See **Subsection 4.12.4**, **Analysis of Potential Impacts** for a complete discussion of the project's potential noise impacts.

Harbors and Navigation Code Section 654.05

The California Harbors and Navigation Code (Code) requires all motorized watercrafts to have a muffling system that is in good working condition, and brings the vessel into compliance with the noise limits. In accordance with Section 654.05 of the Code, the owner of a motorized watercraft cannot operate a vessel in or upon the inland waters in a manner that exceeds the following noise levels.

1. For engines manufactured before January 1, 1993, a noise level of 90 dBA when subjected to the Society of Automotive Engineers Recommended Practice SAE J2005, Stationary Sound Level Measurement Procedure for Pleasure Motorboats.
2. For engines manufactured on or after January 1, 1993, a noise level of 88 dBA when subjected to the Society of Automotive Engineers Recommended Practice SAE J2005, Stationary Sound Level Measurement Procedure for Pleasure Motorboats.

3. A noise level of 75 dBA measured as specified in the Society of Automotive Engineers Recommended Practice SAE J1970 (Shoreline Sound Level Measurement Procedure). However, a measurement of noise level that is in compliance with this paragraph does not preclude the conducting of a test of noise levels under paragraph (1) or (2).

Project Consistency Analysis

Owners of the motorized vessels for future residents of the project traveling within adjacent waterways will be required by law to comply with the Harbors and Navigation Code. Marine law enforcement officials regularly use a standardized method of testing for motorboat noise.

Contra Costa County General Plan

The major objective of the Noise Element of the General Plan is to provide guidelines to achieve noise/land use compatibility. The Noise Element contains the following policies designed to meet this objective

Noise Element

11-1 New projects shall be required to meet acceptable exterior noise level standards as established in the Noise and Land Use Compatibility Guidelines [shown in **Figure 4.12-3**].

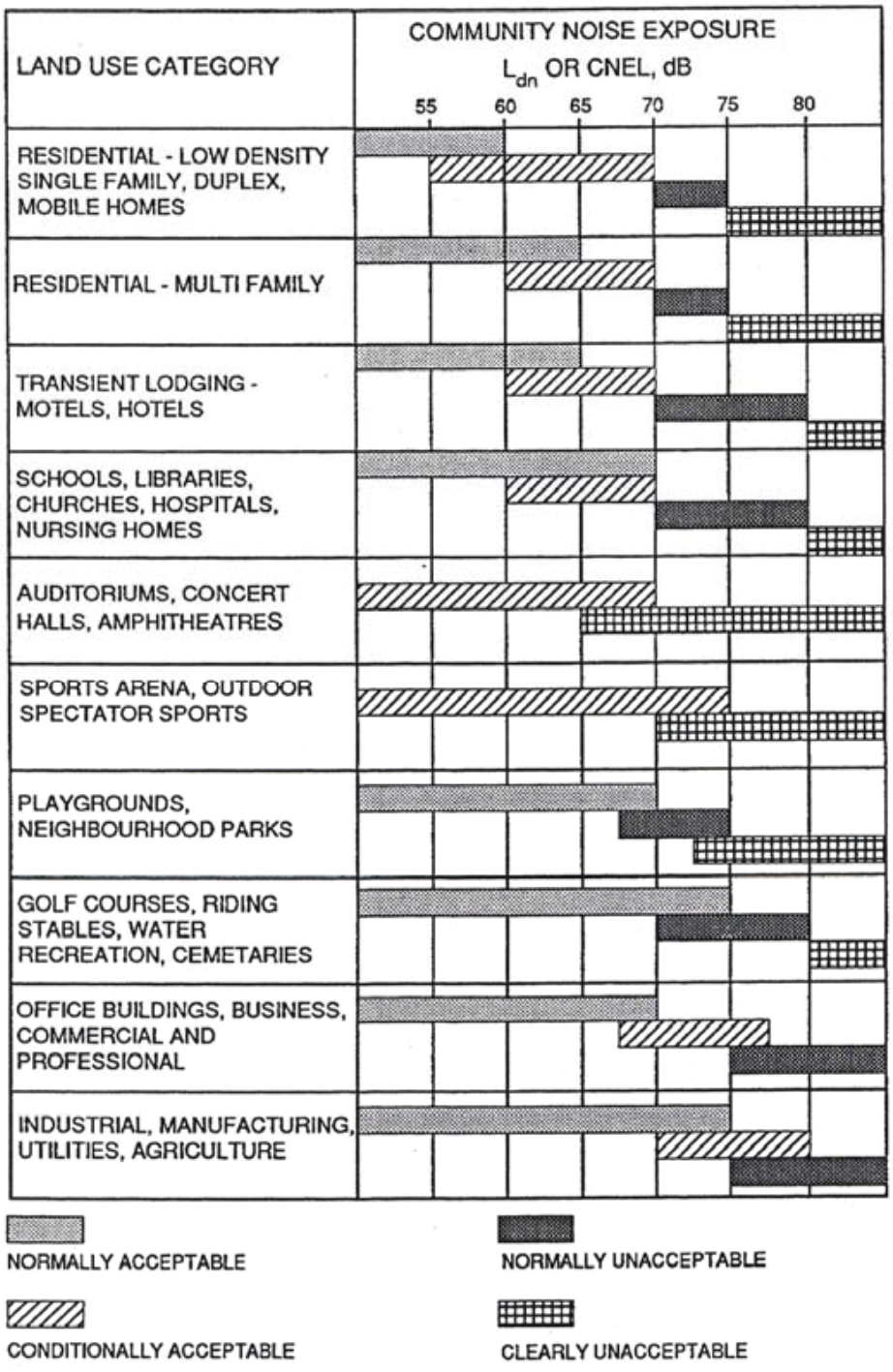
11-2 The applicable standard for outdoor noise levels in residential areas is a CNEL of 60 dBA. However, a L_{dn} of 60 dBA or less may not be achievable in all residential areas due to economic or aesthetic constraints.

11-6 If an area is currently below the maximum “normally acceptable” noise level, an increase in noise up to the maximum should not be allowed necessarily.

11-8 Construction activities should be concentrated during the hours of the day that are not noise-sensitive for adjacent land uses and should be commissioned to occur during normal work hours of the day to provide relative quiet during the more sensitive evening and early morning periods.

11-9 Sensitive land uses shall be encouraged to be located away from noise areas, or the impacts of noise on these uses shall be mitigated.

11-11 Noise impacts upon the natural environment, including impacts on wildlife, shall be evaluated and considered in review of development projects.



Land Use Compatibility for Community Noise Environments

Figure 4.12-3

Source: Rosen, Goldberg, Der & Lewitz, Inc., 2010.

Policy Consistency Analysis

As discussed in **Subsection 4.12.4**, the project would not result in a substantial permanent increase in ambient noise levels, and would generally maintain the noise level standards identified in policies 11-1, 11-2, and 11-6.

Without mitigation, project construction would cause a temporary increase in noise levels that could have a significant noise impact on surrounding residential development. Implementation of **Mitigation Measure NOI-1a** described below would include restrictions on the hours of construction, consistent with policy 11-8.

The project site is located within an existing residential area that does not experience high noise levels. As such, the project would be consistent with policy 11-9.

The residential land uses proposed on the project site would not introduce significant increases in noise levels that could impact the natural environment. However, temporary increases in noise levels due to the construction of the proposed improvements could have an effect on nesting birds and other sensitive wildlife, which is inconsistent with policy 11-11. Potential noise impacts to the natural environment, including impacts on wildlife, are further discussed in **Section 4.3, Biological Resources**. Implementation of pre-construction nesting surveys, as identified in **Mitigation Measures BIO-8, BIO-10, and BIO-11** would reduce potential noise impacts to the natural environment to a less-than-significant level, consistent with policy 11-11.

4.12.4 ANALYSIS OF POTENTIAL IMPACTS

CEQA Significance Criteria

Appendix G of the CEQA Guidelines identifies environmental issues to be considered when determining whether a project could have significant effects on the environment. As stated in Appendix G, the project would have a significant impact related to noise if it would result in:

a) For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, exposure of people residing of working in the project area to excessive noise levels;

b) For a project within the vicinity of a private airstrip, exposure of people residing or working in the project area to excessive noise levels;

c) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;

- For this study, an increase of less than 5 dBA from existing conditions is considered less than significant, while an increase of 5 dBA or greater is considered significant.

d) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;

e) Exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels; or

f) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above existing levels existing without the project.

Discussion of No Impacts

Analysis of the project plans and site characteristics shows that no impact would result for two of the six significance criteria. The following discussion presents the evidence in support of this conclusion.

a) For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

The project is located approximately 8 miles north of the East County (Byron) Airport. The Contra Costa County Airport Land Use Compatibility Plan indicates that the project is not within the airport sphere of influence and is not located within the approach zone for either of the airport's two runways. The project is too distant from the airport for there to be airport-related noise impacts.

b) For a project within the vicinity of a private airstrip, would the project expose residing or working in the project area to excessive noise levels?

The Funny Farm Airport, the nearest private airstrip, is located approximately 2.6 miles northwest of the project site in the Brentwood area. This airport services small private aircraft. Several airplane overflights were observed during the long-term noise measurements including jets and smaller general aviation aircraft. The infrequent nature and relatively low noise levels means that they are not a significant contributor to the average noise at the project site. Given the relative distance to the project site and the types of aircraft associated with the airstrip, no airstrip-related noise impacts are anticipated.

Discussion of Less-than-Significant Impacts

Analysis of the project plans and site characteristics shows that there would be a less than significant impact for three of the six significance criteria. The following discussion presents the evidence in support of this conclusion.

c) Would the project expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

d) Would the project result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

According to the General Plan, a community noise exposure level of up to 60 dBA is considered normally acceptable for single-family residential uses. There are several sources of noise in the study area. These include vehicular traffic on Point of Timber Road and in the adjacent subdivisions, airplanes overhead, and motorized watercraft such as boats and personal watercraft (e.g., jet skis) on Kellogg Creek. Distant noise at the site is also audible from traffic along Bixler Road and Newport Drive. Noise measurements indicate that the existing CNEL is between 45 and 53 dBA. The existing environment therefore maintains a sound level of less than 60 dBA and would not subject the proposed residents to unacceptable levels of sound as defined by the General Plan.

Residential developments typically do not cause substantial increases in noise. However, the project would slightly increase noise in the vicinity of the project site due to greater numbers of automobiles and motorized watercraft, as described in more detail below. As described in **Chapter 3.0 Project Description**, the project includes a Medivac helicopter landing to provide emergency air-lift services for boating accidents. The landing would only be used for emergency situations to transport accident victims from the project area to nearby hospitals. The noise associated with this operation would be temporary and sporadic, and would not result in a permanent change to the ambient noise environment. Therefore, the proposed helicopter landing would result in a less-than-significant impact to the existing and future noise environment.

Traffic Noise

Project-generated traffic has the potential to increase noise on roadways in the area. These roadways include Point of Timber Road, Bixler Road, and Newport Drive. Future noise levels were estimated based on the traffic volumes contained in the traffic study prepared for the project (Fehr & Peers 2010). **Table 4.12-3** shows the predicted CNEL for the project condition and summarizes the resulting increase in noise.

Table 4.12-3 Existing and Future CNEL for Roads Surrounding Project Area

Road	Segment	CNEL at 50 feet from Centerline of Roadway		
		Existing	Existing Plus Project	Increase in CNEL
Bixler Road	Balfour Road to Point of Timber Road	64	64	0.1
	Point of Timber Road to Marsh Creek	66	67	0.9
	Marsh Creek Road to State Route 4	66	67	0.5
Point of Timber Road	Byron Highway to Bixler Road	56	59	2.2
	Just east of Bixler Road	55	57	1.9
	Just west of project Site	51	54	3.6
Newport Drive	Bixler Road to Slifer Drive	57	58	1.1
	Slifer Drive to Newport Lane	55	56	1.0
	Newport Lane to State Route 4	56	57	0.4

Source: Rosen, Goldberg & Der 2010.

The greatest increase in noise due to project traffic occurs on Point of Timber Road. The "existing plus project" noise levels are 2.2 to 3.6 dBA greater than the existing conditions. Since this increase is less than the 5 dB threshold of significance, this is a less-than-significant noise impact. (The future noise level with the addition of project traffic would also remain below 60 dBA.)

Watercraft Noise

The project would increase the number of watercraft passbys along Kellogg Creek, which is a major thoroughfare for Discovery Bay. To predict the increase in noise for adjacent Discovery Bay residents, the estimated increase in watercraft trips was based on the proposed number of homes with docks, and ownership rates for non-waterfront lots.

The project would construct 116 waterfront lots with deepwater access and 176 interior lots. The analysis assumes one boat per waterfront household, and also assumes additional boats pursuant to County-wide ownership rates for interior lots. Based on this methodology, the project is estimated to contribute an additional 131 new vessels to Discovery Bay. Based on an average trip rate of 26.1 trips per year (PWA 2010), Pantages Bays would contribute approximately 3,420 new boat trips per year, an increase of approximately 2.8 percent in the number of local boat trips within Discovery Bay.

The type of watercraft resulting from the project is expected to mirror the existing environment; therefore, the maximum sound level from individual boat passbys (L_{max}) would be the same. The estimated 2.8 percent increase in the number of watercraft is estimated to result in an increase in watercraft-generated CNEL of less than 1 dBA, which is not considered a significant increase in ambient noise levels.[2]

Owners of the motorized vessels for future residents of the project traveling within adjacent waterways will be required by law to comply with the Harbors and Navigation Code, which regulates maximum engine noise levels from boats (see **Subsection 4.12.3**, **Regulatory Setting** above).

Marine law enforcement officials stationed on site would use a standardized method of testing for motorboat noise, when applicable (see subsection Harbors and Navigation Code Section 654.05 above). Furthermore, boat noise within the project site will be controlled in a similar manner as for existing waterways within Discovery Bay through designation as a no wake zone (5 mph). The speed requirements would be clearly specified in the homeowners association's covenants, conditions, and restrictions (CC&Rs) which would stipulate that marina privileges may be suspended if a speeding citation is received.

e) Would the project expose persons to or generate excessive ground borne vibration levels?

The creation of bays, coves, and waterways around the homes would require the permanent stabilization of creek banks through the installation of shoring walls. Cement Deep Soil Mixing (CDSM) is the method proposed for installing shoring walls along the project's waterfront. The CDSM method introduces and mixes cement-type materials with local soils by drilling overlapping columns and mixing soil-cement in place. To resist lateral forces on the soil-cement columns, steel reinforcement is installed in the form of steel I-beams. The steel is lowered into each column while the soil-cement mixture is still in a fluid state. Once the columns solidify other phases of grading can occur to form the completed bank. This operation involves approximately two large tractor/cranes, pumping equipment to deliver the soil-cement mixture, and small work trucks to move personnel and equipment around the job site.

The project does not include any components that would generate excessive ground borne vibration levels during construction activities such as deep dynamic compaction. The CDSM method includes drilling columns into the ground, but control of the drilling speed would render any vibration from the construction area negligible.

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[2] This increase in noise level was calculated by using the standard formula of 10 times the logarithm of the ratio of the number of future boats to the number of existing boats.

Discussion of Significant Impacts

Analysis of the project plans and site characteristics shows that there would be a significant impact for one of the six significance criteria. The following discussion presents the evidence in support of this conclusion.

f) Would the project cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity above existing levels existing without the project?

Impact NOI-1: Project construction would cause a substantial temporary increase in ambient noise levels. (Significant)

Noise from the construction of the residential improvements would occur from site preparation, foundation work, framing, and interior work. In addition, the project would involve extensive excavation and dredging by bulldozers, scrapers, etc., to create the bays, coves, and waterways around the homes.

Table 4.12-4 shows equipment noise levels for various construction equipment and activities, including estimated sound levels at a distance of 50 feet and 300 feet from the source.

The 50-foot distance is representative of the homes along the western property boundary (in Ravenswood and Village II, Lakeshore). The 300-foot distance is representative of the homes across Kellogg Creek in Discovery Bay.

As shown in **Table 4.12-4**, construction activities at the project site would result in noise levels exceeding 75 dBA at a distance of 50 feet. Noise levels decrease at a rate of 6 dBA per doubling of distance from the source.

Earthmoving activities, such as excavation, grading, would occur over a two-year period, and construction of the homes is expected to occur over a five year period. Due to the complexities of the grading sequences, including time constraints on grading Kellogg Creek and the size of the project site, earthmoving activities would not occur over the entire site for the entire two year period. Site work will progress systematically throughout the site as different sequences of grading are commenced and completed. Home construction would also progress systematically throughout the site. It is anticipated that the custom waterfront lots would be built out at a slower rate than the interior lots. Similar to the earthmoving activities, home construction would occur during specific windows of time during the 8-year construction period, in specific areas of the project site, not the entire site at once. Based on these assumptions, the noise levels at adjacent residences to the west could exceed 75 dBA during particular activities in close proximity to the project's western boundary. This is considered a significant, but short-term impact.

Table 4.12-4 Construction Equipment Noise Levels

Construction Equipment	Maximum Noise Level (L_{max}) dBA at 50 feet	Maximum Noise Level (L_{max}) dBA at 300 feet
Backhoe	78	63
Compactor (ground)	83	68
Compressor (air)	78	63
Concrete Mixer Truck	79	64
Concrete Pump Truck	81	66
Crane	81	66
Dozer	82	67
Dump Truck	76	61
Excavator	81	66
Front End Laoder	79	64
Generator	81	66
Paver	77	62
Pneumatic Tools	85	70
Pumps	81	66
Roller	80	65
Scraper	85	70

Source: FHWA Roadway Construction Noise Model User's Guide, 2006 (FHWA-HEP-05-054)

Bank Stabilization, Excavation and Widening of Kellogg Creek

The creation of bays, coves, and waterways around the homes would require excavation and the permanent stabilization of the banks through the installation of shoring walls. As previously stated, the preferred method for installing shoring walls along the project's waterfront is CDSM. The noise levels from CDSM are primarily due to the drill/crane unit, cement silo, and a generator. Therefore, where CDSM is used, the noise levels would be no more than the 'generator' noise levels (as seen in **Table 4.12-4**).

Based on the noise levels that would be generated by the equipment used in CDSM method, noise from the installation of steel I-beams would be well below the state standards at 240 feet from the noise source, which is the distance of the closest homes in Ravenswood and Lakeshore to the CDSM construction. Across Kellogg Creek at the closest Discovery Bay homes (approximately 150 feet), construction noise levels associated with bank stabilization and excavation are expected to range up to 75 dBA.

Implementation of the following mitigation measures would reduce impacts related to construction noise at adjacent residences to a less-than-significant level.

Mitigation Measure NOI-1a: All noise generating construction activities shall be limited to the hours of 7:30 AM to 5:30 PM, Monday through Friday, and shall be prohibited on state and federal holidays on the calendar dates that these holidays are observed by the state or federal government as listed below:

- New Year's Day (State and Federal)
- Birthday of Martin Luther King, Jr. (State and Federal)
- Washington's Birthday/Presidents' Day (State and Federal)
- Lincoln's Birthday (State)
- Cesar Chavez Day (State)
- Memorial Day (State and Federal)
- Independence Day (State and Federal)
- Labor Day (State and Federal)
- Columbus Day (State and Federal)
- Veterans Day (State and Federal)
- Thanksgiving Day (State and Federal)
- Day after Thanksgiving (State)
- Christmas Day (State and Federal)

For specific details on the actual day the state and federal holidays occur, please visit the following websites:

- Federal Holidays: http://www.opm.gov/Operating_Status_Schedules/fedhol/2011.asp
- California Holidays: http://www.ftb.ca.gov/aboutFTB/holidays.shtml

Signs shall be posted at the construction site that include permitted construction days and hours, a day and evening contact number for the job site, and a day and evening contact number for the County in the event of problems.

An on-site complaint and enforcement manager shall be available to respond to and track complaints. The manager will be responsible for responding to any complaints regarding construction noise and for coordinating with the adjacent land uses. The manager will determine the cause of any complaints and coordinate with the construction team to implement effective measures (considered technically and economically feasible) warranted to correct the problem. The telephone number of the coordinator shall be posted at the

construction site and provided to neighbors in a notification letter. The manager will be trained to use a sound level meter and should be available during all construction hours to respond to complaints.

At least one week prior to commencement of grading or construction activities for each major phase of construction the applicant shall prepare a notice that grading or construction work will commence. The notice shall be posted at the site and mailed to all the owners and occupants of property within 300 feet of the exterior boundary of the project site as shown on the latest equalized assessment roll. The notice shall include a list of contact persons with name, title, phone number and area of responsibility. The person responsible for maintaining the list shall be included. The list shall be kept current at all times and shall consist of persons with authority to indicate and implement corrective action in their area of responsibility. The names of individuals responsible for noise and litter control, tree protection, construction traffic and vehicles, erosion control, and the 24-hour emergency number, shall be expressly identified in the notice. The notice shall be re-issued with each phase of the project and a copy shall be mailed to the Contra Costa County Department of Conservation and Development.

Mitigation Measure NOI-1b: The project applicant shall prepare a detailed construction noise mitigation plan for review and approval by the County. The goal of the plan is to provide a framework for notifying neighbors of the extent of the noise that can be expected during particular phases of the project grading, what mitigation will be applied, and who to call if there are noise-related complaints. Submission of this construction noise mitigation plan shall be required as part the building permit application.

The construction noise mitigation plan shall use the California Model Community Noise Ordinance limits of 75 dBA for mobile equipment and 60 dBA for stationary equipment as the primary noise mitigation goals.

Information in the plan shall include but not be limited to the following:

- Construction schedule showing dates and location of activities.
- List of equipment to be used during each major construction phase and sound level estimates for each phase.

  Height, length, and location of any recommended noise barriers. The barriers can be constructed out of wood or other materials as long as they have a minimum surface weight of approximately 2.5 pounds per square foot. Possible materials include 1-1/8-inch-thick plywood or fully overlapping 1x redwood boards (1-1/2-inch-thick total). The barriers would likely be 6 to 8 feet tall but this would be refined as part of the construction noise control plan. Issues to consider when determining the ultimate

height, length, and location of the barriers are the actual construction practices, including equipment to be used and the location and duration of noisier activities. The topography will also need to be considered in the final determination of barrier heights and effectiveness.

- Truck routing to minimize noise at existing noise sensitive locations. The project applicant shall limit trucks to routes, hours, and days of the week set by Contra Costa County.
- Location of stationary equipment as far from residents as is practicable and/or enclose noise sources.
- The project applicant shall require the contractor to use electric or hydraulically powered rather than diesel or pneumatically powered equipment and construction tools as feasible.
- Provide intake silencers and "resident-type" exhaust mufflers on vehicles and equipment and/or acoustically shroud or shield impact tools as feasible.

Mitigation Measure NOI-1c: The project applicant shall construct temporary noise barriers along the western property line neighboring the existing residences at the Ravenswood and Discovery Bay West subdivisions. Noise barriers shall provide noise reductions in the range of 5 to 10 dBA.

Significance after Mitigation: Less than significant.

The implementation of restricted days and hours of construction, notification, sound attenuating barriers, and restrictions on certain activities to summer months would result in the greatest feasible reduction in temporary sound levels associated with construction.

4.12.5 CUMULATIVE IMPACTS

The General Plan EIR noted that build-out would result in increased ambient noise levels related to roadway traffic and construction, as well as airport activity, industrial activity and the extension of BART. The project is not located in the vicinity of an airport, industrial site, or BART extension, and would not contribute noise to any of these identified cumulative impacts.

The cumulative impact area for noise includes areas where noise from the project could be heard and could combine with noise from adjacent land uses. As all of the surrounding land uses would continue to be residential and/or agricultural, the main source of cumulative noise would be from local roadways.

The following analysis concludes that the project would not result in a cumulatively considerable contribution to increases in roadway noise.

Cumulative noise levels are based on the forecasted traffic growth in the County, which was calculated using the Contra Costa Transportation Authority (CCTA) *Decennial Travel Demand Model* (see **Section 4.16, Traffic and Transportation**). **Table 4.12-5** identifies the predicted CNEL increase due to cumulative traffic noise with and without the project.

As shown in **Table 4.12-5**, cumulative increases in noise levels would not exceed the 5 dBA DNL threshold with the exception of a segment of Point of Timber Road (between Byron Highway and Bixler). This segment of roadway would experience an increase of 6.3 dBA DNL in the cumulative scenario and an additional 0.7 dBA DNL with the project, increasing the current ambient noise level of 57 dBA DNL to 63 dBA DNL in the cumulative plus project condition. The project's contribution (0.7 dBA DNL) is less than 1.0 dBA and is not a cumulatively considerable contribution to this impact.

Moreover, the area of impact is zoned for agricultural uses, which is subject to a "normally acceptable" range of sound up to 75 dBA. As noted above, the future sound level with cumulative development would be 63 dBA DNL, 12 decibels below the normally acceptable limit. While the cumulative increase exceeds the 5 decibel threshold, it is worth noting that the future sound level would be well within the acceptable limits established for this type of land use.

Table 4.12-5 Predicted CNEL Increases Due to Cumulative Traffic Noise

		Increase in CNEL (Dba) with respect to the Existing Conditions			
Road	Segment	Existing plus Project	Cumulative	Cumulative plus Project	Future Sound level
Bixler Road	Balfour Road to Point of Timber Road	**0.1**	**0.5**	**0.6**	**64.6**
	Point of Timber Road to Marsh Creek Road	**0.9**	**2.0**	**2.5**	**68.5**
	Marsh Creek Road to State Route 4	**0.5**	**3.3**	**3.5**	**69.5**
Point of Timber Road	Byron Highway to Bixler Road	**2.2**	**6.3**	**7.0**	**63.0**
	Just east of Bixler Road	**1.9**	**1.0**	**2.6**	**57.6**
	Just west of project Site	**3.6**	**1.1**	**4.4**	**55.4**
Newport Drive	Bixler Road to Slifer Drive	**1.1**	**3.0**	**3.6**	**60.6**
	Slifer Drive to Newport Lane	**1.0**	**4.2**	**4.6**	**59.6**
	Newport Lane to State Route 4	**0.4**	**3.3**	**3.5**	**59.5**

Source: Rosen, Goldberg & Der, 2010

4.12.6 REFERENCES

Contra Costa County General Plan, Noise Element.

Federal Railroad Administration (FRA)(2005). *High-speed ground transportation noise and vibration impact assessment.*

Fehr and Peers. June (2010). *Pantages Bays EIR Transportation Analysis*.

Kings County Farm Bureau v. City of Hanford (1990). 221 Cal.App.3d 692,720.

Rosen Goldberg Der & Lewitz, Inc. July (2010). *Environmental Noise Study for Pantages Bays.*

PWA (2010). Draft Additional Hydrology Impact Assessment Memorandum.

4.13 POPULATION AND HOUSING

This section describes and evaluates the project's effects on population and housing. The analysis includes the existing and projected demographics of Discovery Bay based on the most current data available from the Contra Costa County General Plan (General Plan), the U.S. Census, and estimates from the Association of Bay Area Governments (ABAG) *Projections* 2009. For the purposes of this analysis, the project is anticipated to be fully operational by 2018. The following discussions focus on the most current population, employment, and housing projections data available. This section also describes relevant policies from the General Plan related to population and housing, and evaluates the project's consistency with those policies.

In response to the Notice of Preparation (NOP) for this Environmental Impact Report (EIR), a comment was received requesting that the draft EIR quantify the County's regional housing needs allocation from ABAG and include the numbers of low, very low, and moderate housing units that would be provided by the project. The County's regional housing needs allocation is shown in **Table 4.13-2** below. However, the project application was deemed complete prior to the implementation of the County's Inclusionary Housing Ordinance in 2006, which requires 15 percent of units in any new residential development be marketed as affordable. The Inclusionary Housing Ordinance does not therefore apply to the project, and the project is not required to provide affordable units.

4.13.1 EXISTING CONDITIONS

Population

The project site is located in the community of Discovery Bay, which is an unincorporated community located in eastern Contra Costa County (County) near the cities of Brentwood and Oakley, and the unincorporated communities of Bethel Island, Knightsen, and Byron. Within the larger framework of unincorporated County lands, the community of Discovery Bay is part of the Rural East Contra Costa County subregional study area (SSA) as designated by ABAG, which includes Bethel Island, Byron, and other small rural communities in the eastern part of the county. **Table 4.13-1** details current population and housing statistics as well as projections through 2020. Based on the projections, the population of the Rural East Contra Costa County SSA (Rural East County) in 2005 was estimated at 16,200. (ABAG 2009)

ABAG estimates that by 2010 the population of the Rural East County will increase by 11.7 percent, to 18,100, and by 2020 the population will be 19,400. The estimated increase represents a growth rate of 20 percent between 2005 and 2020 in Rural East County, similar to the 20 percent increase for the County as a whole during the same time period.

Table 4.13-1 County and Rural East County Population and Household Information

Jurisdiction	2005	2010	2015	2020
Contra Costa County				
Population	1,023,400	1,049,250*	1,130,700	1,177,400
Households	368,310	375,364*	407,250	424,340
Average Household Size	2.75	2.77*	2.75	2.75
Rural East County				
Population	16,200	18,100	18,800	19,400
Households	6,090	6,830	7,050	7,330
Average Household Size	2.63	2.61	2.62	2.61

Source: ABAG 2009

* 2010 data is drawn from the 2010 U.S. Census.

Housing

The total number of households in the Rural East County is expected to keep relative pace with the rest of the County. As shown in **Table 4.13-1**, the total estimated number of households in 2005 was 6,090. According to *ABAG Projections 2009,* the number of households is expected to grow to 7,330 by 2020 (a 20 percent increase), similar to the 20 percent increase in the total number of households Countywide during the same period.

Average Household Size

The number of persons per household in Rural East County in 2005 was 2.63 persons, slightly lower than the countywide estimate of 2.75 persons per household. In order to account for growth based on the larger-size homes that characterize development in much of Discovery Bay, a conservative multiplier of 3.0 persons per household is assumed for the project, compared to the ABAG estimate of 2.61 persons per household in 2020 for Rural East County. (Nelson 2007)

Regional Housing Need Determination

In 2008, ABAG released the regional housing needs allocation (RHNA), which projects each community's share of the region's future growth and housing demand based on forecasts from *San Francisco Bay Area Housing Needs Plan 2007-2014.* According to the Contra Costa County Updated Housing Element, and as illustrated in **Table 4.13-2**, the total number of RNHA allocation for the County was 27,072 units. The unincorporated areas were assigned approximately 13 percent of the growth (3,508 units). The balance of the units was assigned to incorporated cities throughout the County. Between 2007 and 2009, the County provided 1,350 RHNA units, 38 percent of the County's total RHNA units to be constructed by 2014.

Table 4.13-2 Share of Regional Housing Needs for 2007-2014

Income Group	Total RHNA Allocation for Contra Costa County	RHNA Allocation for Unincorporated Areas	RNHA units provided in Unincorporated Areas (2007-2009)
Very Low	6,512	815	88
Low	4,325	598	34
Moderate	4,996	687	320
Above Moderate	11,239	1,408	908
Total	27,072	3,508	1,350

Sources: ABAG 2008; Contra Costa County Updated Housing Element 2009; Annual Housing Element Progress Report 2009.

Employment

Table 4.13-3 illustrates the number of jobs projected for the Rural East County and Contra Costa County.

According to ABAG, employment in the County is projected to decrease between 2005 and 2010, a reflection of the wider economic downturn. However, ABAG projects economic expansion from 2010 through 2020, as 69,520 jobs are projected to be added to the countywide economy, an increase of 18 percent.

Rural East County creates approximately 1 percent of the jobs within the County as a whole, and this ratio is expected to remain relatively constant throughout the next 10 years. ABAG projects an increase of 790 jobs in Rural East County from 2010-2020, representing an increase in employment in of approximately 20 percent from 2010 to 2020.

Table 4.13-3 Rural East County and Contra Costa County Employment Projections

	2005	2010	2015	2020
Rural East County				
Total Jobs	3,910	3,870	4,290	4,660
Contra Costa County				
Total Jobs	379,030	376,030	409,650	445,550

Source: ABAG 2009.

4.13.2 REGULATORY SETTING

Contra Costa County General Plan

The Land Use Element of the General Plan contains the following relevant policies related to population and housing.

Land Use Element

3-21 The predominantly single-family character of substantially developed portions of the County shall be retained. Multiple-family housing shall be dispersed throughout the County and not concentrated in single locations. Multiple-family housing shall generally be located in proximity to facilities such as arterial roads, transit corridors, and shopping areas.

3-23 A diversity of living options shall be permitted while ensuring community compatibility and quality residential development.

3-24 Housing opportunities shall be improved through encouragement of distinct style, desirable amenities, attractive design, and enhancement of neighborhood identity.

3-25 Innovation in site planning and design of housing developments shall be encouraged in order to upgrade quality and efficiency of residential living arrangements and to protect the surrounding environment.

3-27 Existing residential neighborhoods shall be protected from incompatible land uses and traffic levels exceeding adopted service standards.

3-28 New residential development shall be accommodated only in areas where it will avoid creating severe unmitigated adverse impacts upon the environment and upon the existing community.

Housing Element

An Updated Housing Element was adopted by the County in 2009 and identifies state, regional, and local housing policies, as well as recognized housing needs of the County's residents, housing resources, and housing constraints. As defined by the State Housing Element law, the Housing Element is required to be "An assessment of housing needs and an inventory of resources and constraints relevant to the meeting of these needs."

State law requires that this assessment include an analysis of population, household characteristics, employment trends, regional housing needs, and an inventory of suitable land for residential development. The assessment should also include an analysis of governmental and non-governmental constraints, special housing needs, opportunities for energy conservation, and publicly-assisted housing developments that may convert to non-assisted housing developments. The purpose of these requirements is to develop an understanding of the existing and projected housing needs within the County and to set forth policies that promote preservation, improvement, and development of diverse types and costs of housing throughout the County.

The Updated Housing Element contains the following relevant policies associated with population and housing:

7.1 Establish and maintain development standards that support housing development while protecting quality of life goals.

7.4 Continue to provide for timely and coordinated processing of residential development projects in order to minimize project holding costs and encourage housing production.

Policy Consistency Analysis

The project would be consistent with the applicable General Plan policies of the Land Use and Housing Elements related to population and housing. The project site is located within the Urban Limit Line (ULL), which identifies the project site and surrounding properties for urban development, consistent with policies 7.1 and 7.4.

As the project proposes 292 single-family residential units, it would retain the predominantly single-family character of the County and be consistent with policy 3-21. The project would also comply with Policies 3-23 and 3-24 insofar as it would provide diversity in terms of waterfront living that is distinct from a more traditional subdivision.

In reference to policy 3-27, the proposed single-family detached residential units are designed to be similar to and compatible with the Discovery Bay community, including waterfront lots with deep water access.

The project design also includes preservation of existing wetland and marsh areas on a portion of the property and, as documented throughout this EIR, the project would not create severe unmitigated adverse effects upon the environment and upon the existing community, consistent with Policies 3-28 and 3-25.

4.13.3 ANALYSIS OF POTENTIAL IMPACTS

CEQA Significance Criteria

Appendix G of the CEQA Guidelines identifies environmental issues to be considered when determining whether a project could have significant effects on the environment. As stated in Appendix G, the project would have a significant impact related to population and housing if it would:

a) Displace substantial numbers of existing houses, necessitating the construction of replacement housing elsewhere;

b) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere; or

c) Induce substantial population growth in the area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure).

Discussion of No Impacts

Analysis of the project plans and project site characteristics in the context of the three significance criteria stated above shows that no impacts would result for two of the criteria. The following discussion presents the evidence in support of this conclusion.

a) Would the project displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?

No project-related improvements are proposed that would displace any existing housing. The project site contains three residential structures that are dilapidated and abandoned. Demolition of the dilapidated and abandoned residential structures does not constitute displacement of substantial numbers of housing units since the units are vacant and uninhabitable. Therefore, no impact would occur.

b) Would the project displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

The residential sites on the project site are vacant; therefore, no individuals would be displaced or in need of replacement housing as a result of the project. No impact related to the displacement of people would occur.

Discussion of Less-than-Significant Impacts

Analysis of the project plans and site characteristics in the context of the three significance criteria stated above shows that some degree of impact would result for one of the criteria. The following discussion presents the evidence in support of this conclusion.

c) Would the project induce substantial population growth in the area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?

Direct Growth

The project would construct 292 housing units, which would directly increase the Rural East County population by an estimated 876 people.[1] For the years 2010 to 2020, the 2009 ABAG Projections report an anticipated population increase Countywide of 87,100 and an increase in population in Rural East County of approximately 1,300 (see **Table 4.13-1**).

[1] This number was determined by using the Contra Costa County projected number of 3.0 persons per household for the Discovery Bay area. It is anticipated that some of the residential units would be occupied by persons that already work and/or live in the County.

The ABAG Projections reflect a trend of continued development in Rural East County, and the project is included in the population projections for the next 10 years. Population generated by the project represents approximately 67 percent of the projected growth in Rural East County and 1 percent of the projected growth estimated for the County as a whole for the same period.[2]

The project and surrounding properties were included within the ULL to indicate an intention for future conversion to urban uses. The timing for the development of these areas is speculative and regional population projections have attempted to project a reasonable rate of growth based on market conditions.

Given that the direct population increase associated with the project would be within the ABAG population forecasts, this impact is considered less than significant.

Indirect Growth

The project site is located within the ULL and is identified for potential future urban development. The project would require the extension of utilities and roads to a previously undeveloped area, and such extensions can often indirectly induce growth in adjacent areas. In this instance however, the project is an infill development and adjacent lands are either already developed with residential uses, or are located outside the ULL, which prevents further development. Therefore, indirect impacts related to indirect population growth are considered less than significant.

4.13.4 CUMULATIVE IMPACTS

The cumulative setting for population growth and housing includes eastern Contra Costa County, and the County as a whole. The General Plan EIR stated that build-out of the General Plan could result in up to 145,206 new residents in the County by the end of the planning period (2020). The General Plan EIR also noted that adoption of the General Plan would concentrate population in urban areas, and would preclude development and extension of urban services and facilities outside of the ULL.

The General Plan and adoption of the ULL identified an intended pattern of residential development that included urban development of the area surrounding Discovery Bay. The General Plan EIR did not identify a significant impact related to population growth and therefore a cumulative impact related to population and

[2] The subdivisions currently under construction to the west are assumed to be included in the 2005 and/or 2010 baseline.

housing does not exist. The General Plan EIR noted that build out in accordance with the ULL and in tandem with a program of employment development would create a jobs housing balance that would support a more vibrant and sustainable community.

The project is located within the ULL and would not require an extension of services outside the ULL boundary. The project, as well as the proposed 67-lot residential subdivision (Newport Pointe), and the Villages at Discovery Bay project—which includes 80 townhomes—would require a General Plan Amendment and were not therefore assumed as part of the growth increase discussed in the General Plan because these properties were assumed to stay in agricultural production or commercial uses, and their development therefore represents new growth (see **Figure 4-1**). However, all of these properties are located within the ULL and were therefore identified for future development in accordance with the 65/35 urban limit line.

The ULL effectively limits pressure for indirect growth via extension of utilities. As noted above a cumulative impact relative to population and housing was not identified in the General Plan EIR. The project in conjunction with other projects located within the ULL would therefore not generate a cumulatively significant impact related to direct or indirect growth.

4.13.5 REFERENCES

Association of Bay Area Governments. *Projections*, 2009.

Association of Bay Area Governments. *San Francisco Bay Area Housing Needs Plan 2007-2014*, 2008.

Contra Costa County General Plan, Urban Limit Line Map, November 8, 2006.

Contra Costa County. *Contra Costa County General Plan 2005-2020*, January 2005.

Nelson, Will, Senior Planner, Contra Costa County, personal communication, May 28, 2007.

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4.14 PUBLIC SERVICES AND RECREATION

This section evaluates public services and recreation facilities related to the project, including police and fire protection, schools, parks and recreation, and other public facilities. Information regarding public services and public recreation was obtained primarily through personal communications with service providers, service providers' websites, and the Contra Costa County General Plan (General Plan).

In response to the Notice of Preparation (NOP) for this environmental impact report (EIR), one commenter expressed concern regarding public recreational facilities and access to the Delta. This comment is addressed in the impact analysis presented below in **Subsection 4.14.3**, **Analysis of Potential Impacts**.

4.14.1 EXISTING CONDITIONS

Police Protection Services

Contra Costa County Sheriff's Office

Police protection services in the project vicinity are provided by the Delta Station of the Contra Costa County Sheriff's Office, located at 220 O'Hara Avenue within the City of Oakley. The Delta Station provides police services to the following three geographical areas (commonly referred to as "beats") (Lt. M. Burton February 2010):

- Beat 31: Unincorporated areas of Antioch, Brentwood, and Oakley
- Beat 32: Discovery Bay
- Beat 33: Bethel Island, Knightsen, and Byron

The Delta Station's staffing goal for the Discovery Bay beat is to have one sergeant, three deputies, two resident deputies, and a school resource officer. All areas within Discovery Bay are accessible within a five minute time frame, in most situations (ibid.).

The General Plan includes a sheriff facility standard of 155 square feet of station per 1,000 people within the unincorporated area of the County. As of 2010, the County is meeting this standard.

Marine Services Division

The Marine Services Division of the Contra Costa County Sheriff Reserve provides marine patrol services within the Discovery Bay area. The marine patrol is currently staffed with five full-time deputies, one sergeant, and one lieutenant who are dispatched from an office space at the Lauritzen Yacht Harbor in Oakley and operate from one of the following boat slips (Lt. Wright, July 2011):

- Three boat slips at Lauritzen Yacht Harbor at 115 Lauritzen Lane in Oakley
- Two boat slips at Discovery Bay Marina at 5901 Marina Road in Discovery Bay

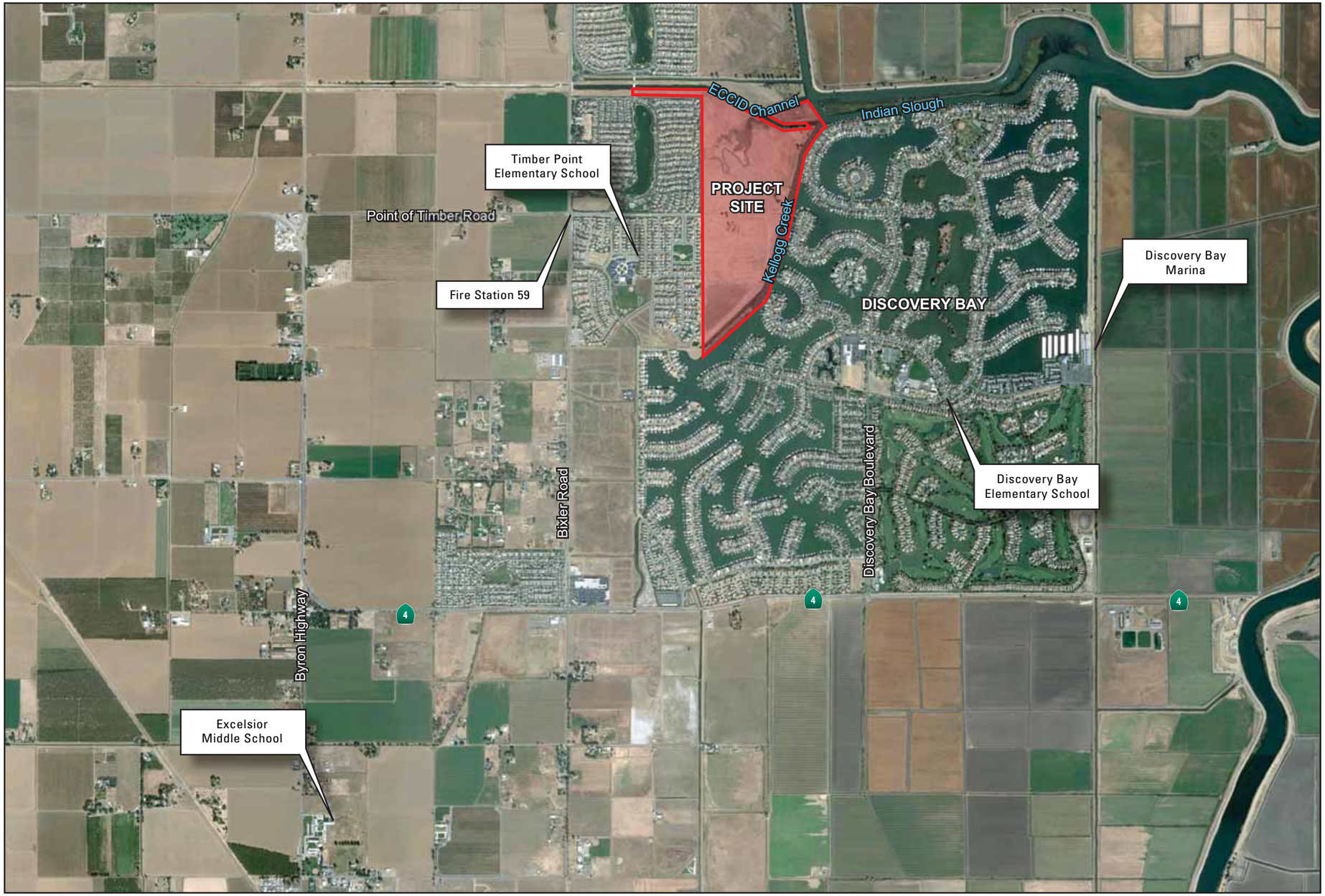
Regularly assigned deputies are occasionally supplemented by additional officers during weekends and holidays, and by reserve officers on an as needed basis. One patrol vessel services the project area on a daily basis, and is deployed from the Discovery Bay Marina (see **Figure 4.14-1**). Typical calls investigated by the Marine Services Division include boating accidents, derelict vessel reports, and speeding (Lt. W. Duke July 2010).

Fire Protection and Emergency Services

Fire protection and emergency medical response services for the project area are provided by the East Contra Costa Fire Protection District (ECCFPD). Fire protection to the project site would be provided by Fire Station 59 at 1801 Bixler Road, Discovery Bay, located approximately 1 mile from the project site (see **Figure 4.14-1)**. According to the Public Facilities/Services Element in the County's General Plan, the County strives to have a minimum of 3 firefighters at each fire station, and to locate a fire station within 3 minutes and/or 1.5 miles of all non-rural areas. In suburban areas, the County strives to achieve a total response time of 5 minutes for 90 percent of all emergency calls.

The ECCFPD currently employs approximately 75 firefighters (career and on-call) (P. Hubbard, July 2011). Fire Station 59 is staffed by three full-time personnel and is equipped with one Type I Engine (basic fire engine) and one Type III wildlands Engine, which is a basic fire engine designed for wildland fire (Chief Henderson February 1, 2011).

Station 59 was funded and constructed as part of the Discovery Bay West Development. Any new development in the service area of Station 59 (such as the Pantages Bays project) is required to pay into a reimbursement fund for construction of the station.



Public Services in the Project Vicinity Figure **4.14-1**

Source: Google Earth, 2010.

Figure 4.14-1 Public Services in the Project Vicinity (back)

The ECCFPD relies mainly on property tax revenue to fund operations. Because of a significant drop in the assessed property values of homes and properties in East County, the ECCFPD Board met on February 27, 2012, and voted to call a special election on June 5, 2012 proposing a special tax of $197 per parcel as a revenue enhancement for the District. The proposed tax will sunset in 2023, unless the voters decide to extend it. (ECCFPD Town Hall meeting Schedule 1/2012, LAFCO Fire Service Update 3/14/12).

Schools

The Byron Union School District (BUSD) (Kindergarten through 8th grade) and the Liberty Union High School District (LUHSD) provide public education services to students in the Discovery Bay area. Students from the neighborhoods surrounding the project site attend Timber Point Elementary School, Excelsior Middle School in Byron, and Liberty High School in Brentwood. **Figure 4.14-1** shows the location of the schools in the project vicinity.

Tables 4.14-1 and **4.14-2** detail the current enrollment and capacity statistics for schools in the project vicinity. In general, schools in the vicinity have experienced fairly steady enrollment rates (B. Nicolaisen, July 14 2010).

Table 4.14-1 Byron Unified School District

School	Distance from Project Site	Current Enrollment	Capacity	Availability
Discovery Bay Elementary	Less than 1 mile	506	720	+214
Timber Point Elementary	Less than 1 mile	583	720	+137
Excelsior Middle School	Approximately 2.3 miles	587	690	+103

Source: Byron Union School District, Gaby Hellier, Chief Business Official, Personal Communication December 13, 2010.

Table 4.14-2 Liberty Union High School District

School	Distance from Project Site	Current Enrollment	Capacity	Availability
Liberty High School	4.6 miles	2,068	2,200	+132
Freedom High School	7 miles	2,472	2,200	-272
Heritage High School	7.5 miles	2,144	2,200	+56
La Paloma High School*	6.5 miles	193	190	-3

* A continuation school.
Source: Wayne Reeves, Director of Project Development, LUHSD. Personal Communication December 2, 2010.

Planned Improvements

Middle School

In June 2006, a Measure C Bond was passed to improve the conditions of BUSD's campuses, including construction of 14 additional classrooms at the Excelsior Middle School. As part of this construction, some of the older classrooms will be removed. The demolition and construction of this improvement at Excelsior Middle School is on hold until BUSD receives matching state funding. It is unknown at this time when BUSD would receive this funding from the state. (G. Hellier, December 2010).

High School

The construction of an additional high school is currently being considered by the LUHSD and an Environmental Impact Report has been prepared and is awaiting certification. The high school would be located at the intersection of Delta and Sellers Avenue in unincorporated Contra Costa County. This high school would not operate as a comprehensive high school, but as a magnet high school that would provide capacity for approximately 700 to 800 students. If the project is approved, it would open in 2014 (Reeves, W. December 2010).

Parks and Recreation

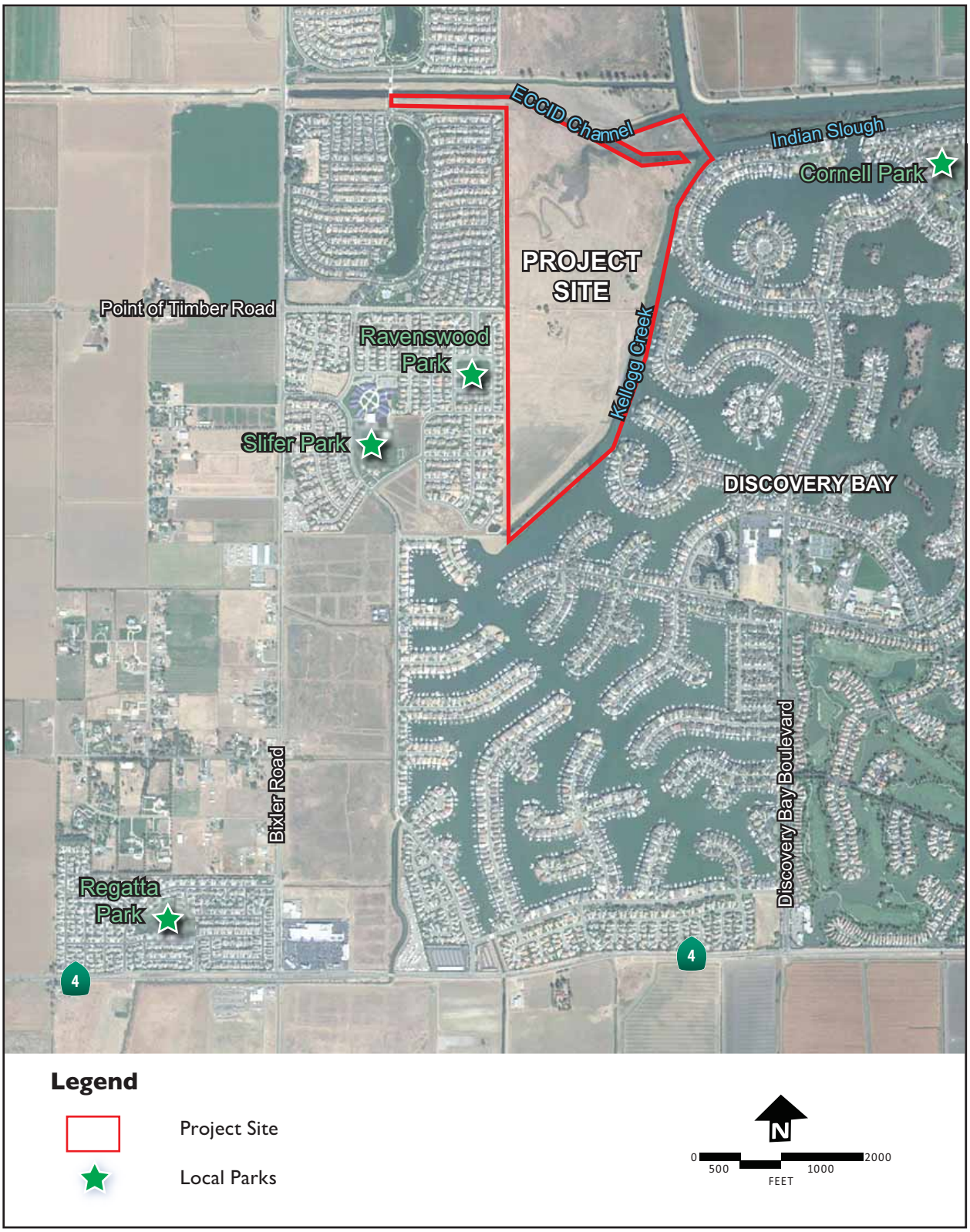
Local Parks

Several local parks are located in the project vicinity as shown in **Figure 4.14-2**. Ravenswood Park is immediately west of the project site on Bronte and Poe Drives. Slifer Park, part of the Discovery Bay West project, is located on the corner of Newport and Slifer Drives. Regatta Park is southwest of the site, just north of Highway 4, located on Sailboat Drive. Cornell Park is located on Discovery Bay Boulevard. **Table 4.14-3** presents information related to each local park.

Table 4.14-3 Local Parks

Park	Size	Distance to Project Site	Amenities
Cornell Park	9 acres	0.75 mile	Basketball and tennis courts, baseball and soccer fields, bocce ball court, picnic tables, children's play areas.
Regatta Park	3 - 5 acres	1 mile	Picnic tables, barbeque pits, playground, pathway, turf.
Ravenswood Park	3 acres	0.05 mile	Picnic tables, barbeque pits, soccer field, playground, pathway
Slifer Park	5 acres	0.25 mile	Playground, basketball court, soccer field, pathway.

Source: Virgil Koehne, General Manager, Town of Discovery Bay, Personal Communication, November 20, 2009.



Local Parks in the Project Vicinity

Figure 4.14-2

Source: Google Earth; Town of Discovery Bay Community Services District, 2010.

Regional Parks

East Bay Regional Parks District (EBRPD) owns and manages several regional parks and trails in Contra Costa and Alameda County. The core mission of the EBRPD is to "acquire, develop, manage, and maintain a high quality, diverse system of interconnected parklands which balances public usage and education programs with protection and preservation of natural and cultural resources."

The closest regional parks to the project site include the Antioch/Oakley Regional Shoreline, Black Diamond Mines Reserve, Contra Loma Regional Park, Morgan Territory, and Round Valley Regional Preserve. **Table 4.14-4** presents information related to each regional park.

Table 4.14-4 Regional Parks

Park	Acreage	Distance to Project Area	Amenities
Antioch/Oakley Regional Shoreline	7.5	14 miles	Pier access, fishing, picnicking.
Black Diamond Mines Preserve	5,375	20 miles	Hiking, camping.
Contra Loma Regional Park	780	15 miles	Boat launch, swimming, picnic areas, trails.
Morgan Territory	4,708	25 miles	Hiking, horseback riding, picnicking, camping.
Round Valley Regional Preserve	1,911	10 miles	Hiking, horseback riding, bicycling.

Source: East Bay Regional Parks District, http://www.ebparks.org, 2008. Accessed November 17, 2009

Park Dedication and Fee Requirements

State law authorizes local governments to require the dedication of parkland or impose a fee (in lieu of land dedication) to offset the additional demand for parks and recreational facilities generated by new development. State law limits dedication requirements to at most 3 acres of parkland per 1,000 residents.

The General Plan Growth Management Element requires new development to provide 3 acres of neighborhood parkland per 1,000 people. Pursuant to the County's dedication requirements, the 292-unit project would require the dedication of 2.6 acres of parkland.

Because the project area is within an unincorporated area within the East County, County Code Section 920-6.602 has established fees which assesses new development projects a fee of $3,142 per single family residential unit to reduce park and recreation impacts. However, because the project application was deemed complete before these new fees were established (new park fees were adopted May 15, 2007) the project is subject to the previous fee of $1,350 per dwelling unit.

The County Code also permits a combination of land dedication and fee payment (Section 920-6.206).

Libraries

Contra Costa Library operates 25 facilities in Contra Costa County, including Brentwood Library, located at 104 Oak Street in Brentwood, approximately 6 miles from the project site. The Brentwood Library opened in 1979 and serves a population of over 40,000 in East County. The Contra Costa Library system is primarily funded by local property taxes, with additional revenue from intergovernmental sources.

Hospitals

Contra Costa County Health Services District (CCCHSD) operates 10 health facilities in the County. CCCHSD is primarily funded by federal and state funding programs, with additional revenue from local tax resources. County health facilities generally serve low-income and uninsured patients. The closest public health center to the project site is the Brentwood Health Center located at 17 Sand Creek Road in Brentwood, approximately 7 miles to the west. The Brentwood Health Center is a family practice with internal medicine, pediatrics, prenatal care, and women's health care departments.

4.14.2 REGULATORY SETTING

Senate Bill 50

The Leroy F. Greene School Facilities Act of 1998, or Senate Bill 50 (SB 50), restricts the ability of local agencies to deny project approvals on the basis that public school facilities (classrooms, auditoriums, etc.) are inadequate. School impact fees are collected at the time when building permits are issued. Payment of school fees is required by SB 50 for all new residential development projects and is considered "full and complete mitigation" of any school impacts. School impact fees are

payments to offset capital cost impacts associated with new developments, which result primarily from costs of additional school facilities, related furnishings and equipment, and projected capital maintenance requirements. As such, agencies cannot require additional mitigation for any school impacts.

Project Consistency Analysis

The project would be developed within the BUSD and LUHSD boundaries, and would be subject to school impact fees for both districts. Pursuant to an agreement between BUSD and Pantages Bays, LLC, Pantages Bays LLC has agreed to pay the BUSD a sum in excess of the standard school impact fees. For the LUHSD, the project applicant would pay the standard developer fees for new housing.

The payment of monetary funds would satisfy local and state laws related to school impacts and school impact fees. Therefore, the project is consistent with SB 50.

Contra Costa County General Plan

The Growth Management Element of the General Plan requires 3 acres of public parks per 1,000 people for all new residential development. The Public Facilities/Services and Open Space Elements of the General Plan contain the following relevant public services and recreation goals and policies.

Public Facilities/Services Element

7-1 New development shall be required to pay its fair share of the cost of all existing public facilities it utilizes, based upon the demand for these facilities which can be attributed to new development.

7-2 New development, not existing residents, should be required to pay all costs of upgrading existing public facilities or constructing new facilities which are exclusively needed to serve new development.

7-4 The financial impacts of new development or public facilities should generally be determined during the project review process and may be based on the analysis contemplated under the Growth Management Element or otherwise. As part of the project approval, specific findings shall be adopted which relate to the demand for new public facilities and how the demand affects the service standards included in the growth management program.

Public Protection

7-57 A sheriff facility standard of 155 square feet of station per 1,000 population shall be maintained within the unincorporated area of the County.

7-58 Sheriff patrol beats shall be configured to assure minimum response times and efficient use of resources.

7-59 A maximum response time goal for priority 1 or 2 calls of five minutes for 90 percent of all emergency responses in central business district, urban and suburban areas, shall be strived for by the sheriff when making staffing and beat configuration decisions.

7-60 Levels of service above the county-wide standard requested by unincorporated communities shall be provided through the creation of a County Service Area or other special government unit.

Fire Protection Policies

7-62 The County shall strive to reach a maximum running time of 3 minutes and/or 1.5 miles from the first-due station, and a minimum of 3 firefighters to be maintained in all central business district (CBD), urban and suburban areas.

7-63 The County shall strive to achieve a total response time (dispatch plus running and set-up time) of five minutes in CBD, urban, and suburban areas for 90 percent of all emergency responses.

7-64 New development shall pay its fair share of costs for new fire protection facilities and services.

7-70 The effectiveness of existing and proposed fire protection facilities shall be maximized by incorporating analysis of optimum fire and emergency service access into circulation system design.

7-75 Fire stations and facilities shall be considered consistent with all land use designations used in the General Plan and all zoning districts.

Open Space Element

9-1 Permanent open space shall be provided within the County for a variety of open space uses.

9-36 To develop a sufficient amount of conveniently located, properly designed park and recreational facilities to serve the needs of all residents.

9-38 To promote active and passive recreational enjoyment of the County's physical amenities for the continued health, safety and welfare of the citizens of the County.

9-39 To achieve a level of park facilities of 3 acres per 1,000 population.

9-40 Major park lands shall be reserved to ensure that the present and future needs of the County's residents will be met and to preserve areas of natural beauty or historical interest for future generations. Apply the parks and recreation performance standards in the Growth Management Element.

9-41 A well-balanced distribution of local parks, based on character and intensity of present and planned residential development and future recreation needs, shall be preserved.

9-47 Recreational development shall be allowed only in a manner which complements the natural features of the area, including the topography, waterways, vegetation, and soil characteristics.

Safety Element

10-70 Applications for private or commercial docks which would encroach into waterways used primarily for recreation boating should be reviewed by the county to evaluate their aggregate impact upon public safety.

Project Consistency Analysis

The project would include the payment of fire impact fees and also includes the construction of a marine patrol substation to ensure conformance with General Plan policies related to emergency service response and staffing. Furthermore, the project is subject to County approval prior to the construction of any docks or waterways to ensure public safety.

Although the project would not create additional parklands, it would comply with the County's dedication requirements through a combination of dedication of a public access trail within the emergent marsh and payment of an in lieu parkland dedication fee to fund future acquisition of County parklands.

4.14.3 ANALYSIS OF POTENTIAL IMPACTS

CEQA Significance Criteria

Appendix G of the CEQA Guidelines identifies environmental issues to be considered when determining whether a project could have significant effects on the environment. As stated in Appendix G, the project would have a significant impact related to public services if it would:

a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause

significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services:

i. Fire Protection;

ii. Police Protection;

iii. Schools;

iv. Parks; or

v. Other public facilities.

Recreation impacts are considered significant if the project would:

b) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated; or

c) Include recreational facilities or require the construction or expansion of recreational facilities, which would have an adverse physical effect on the environment.

Discussion of Less-than-Significant Impacts

Analysis of the project plans and site characteristics in the context of the seven significance criteria stated above shows that a less-than-significant impact would result for six of the criteria. The following discussion presents the evidence in support of this conclusion.

a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services?

Fire Protection

According to the ECCFPD, construction and operation of the proposed project would generate a small increase in the demand for fire protection and emergency medical services; however, it would not require additional staff, acquisition of new equipment, or construction of new facilities (Chief Henderson February 2011).

As previously discussed, fire services would be provided by Station 59. Fire and emergency response times from Station 59 to the farthest proposed residences would be approximately 4 minutes (T. Leach December 2009). Therefore, crews dispatched from Station 59 would be able to respond to emergency calls from the project site within the 5 minute service threshold established by the Public Facilities/Services Element in the County's General Plan. Prior to the issuance of building permits, the project applicant would be required to make a fair share contribution to the reimbursement fund for the developer funded construction of Station 59.

Adequate emergency access to the project site would be available through Point of Timber Road and the project's Emergency Vehicle Access (EVA) road, and would not require the construction of additional roads. The EVA would be constructed in the northwest portion of the project site through the proposed wetland mitigation and open space area. The EVA would connect the northernmost portion of 'A' Street to the northernmost portion of 'B' Street, as illustrated in **Figure 3-3**.[1] In addition, there is a second EVA located in the Ravenswood development connecting Wilde Drive to "B" Street. The cost of maintaining the EVAs and public trails would be borne by the Pantages Bays homeowners as part of a landscaping and lighting district. Furthermore, development of the site would not adversely affect response times to the adjacent residential developments. Therefore, the project would not increase or create unsafe emergency response times (Chief Henderson July 2011).

As discussed, implementation of the project would not require the construction any additional fire facilities, the construction of which could result in environmental impacts. Therefore, there would be a less-than-significant impact related to fire protection services.

Police Protection

According to the Contra Costa County Sheriff's Office, there would be a slight increase in demand for police and marine patrol services.[2] With the project's anticipated development of 116 docks with deep water access, the additional boat traffic generated by the project could exceed the ability of the Marine Services Division to provide adequate enforcement.

[1] Street names will be changed prior to final subdivision map.

[2] Personal Communication with Lt. George Wright, April 29, 2011.

As part of the project, a marine patrol substation is proposed at the northeasterly point of the project site (see **Figure 3-4**). The applicant has consulted with the Office of the Sheriff-Coroner regarding the design of the substation.[3] The substation would include a permanent modular building, a two-boat dock, and related improvements, and would be accessible by the proposed 20-foot EVA. Based on discussions with the Office of the Sheriff-Coroner, the applicant proposes to fund through a P-1 Service District the cost of one deputy, who would perform either marine patrol or land patrol services from this station on an as needed (part-time) basis.

The Sheriff's Marine Patrol Station would serve the residents from the project and surrounding areas, and would significantly decrease response times to Discovery Bay, such that a sheriff would no longer be deployed from the Lauritzen Yacht Harbor in Oakley (Lt. W. Duke July 2010).

The environmental impacts associated with the construction of the marine patrol station are evaluated in the relevant technical sections of this draft EIR (i.e., **Sections 4.3, Biological Resources,** and **4.9, Hydrology and Water Quality**). Implementation of the project would not require the construction of any other police facilities; the construction of which could result in environmental impacts.

The existing staff, equipment, and facilities of the existing Sheriff's Delta Station would be able to provide adequate police services to the project site. Although the Marine Patrol Substation on the project site would not be staffed full-time, the addition of one part-time sheriff deputy would enhance police services on the project site and in the surrounding area. Therefore, impacts related to increases in demand for police services would be less than significant.

Schools

Elementary and Middle School

According to the BUSD, the project would generate 163[4] additional students (K-8). Students generated by the project would attend Timber Point Elementary which has capacity for an additional 137 students, and Discovery Bay Elementary School which has capacity for an additional 214 students. Together, these schools have space for 351 additional students. Middle school students generated by the project would attend Excelsior Middle School, which currently has capacity for an additional 103

[3] Letter from Mark Armstrong to Lt. Will Duke dated March 25, 2008 and response letter from Sheriff Warren Rupf dated May 21, 2008.

[4] According to BUSD, the student generation rate is 0.559 students (K-8) per unit. The project would construct 292 units. 292 units x 0.559 students/unit = 163 students.

students. The elementary schools and middle school serving the project site have adequate capacity to serve the additional students generated by the proposed project.

Implementation of the project would not require the construction of any school facilities; the construction of which could result in environmental impacts. As confirmed by SB 50, payment of standard school impact fees is considered "full and complete mitigation" of any school impacts. Pursuant to an agreement between the BUSD and Pantages Bays LLC, dated September 19, 2006, Pantages Bays LLC agrees to pay school impact fees in excess of the established impacts fees for this district (see **Appendix F**).[5] Payment of school impacts fees as required by SB 50 would reduce the impact of increased elementary and middle school students to nearby schools to a less-than-significant level.

High School

According to student generation rates provided by the LUHSD, the project would generate 73 additional high school students.[6] Liberty High School, the high school that would serve the project site, is currently under capacity by 143 students. Therefore, sufficient capacity exists to serve the project.

Implementation of the project would not require the construction of new high school facilities; the construction of which could result in environmental impacts. Pursuant to SB 50, the applicant would pay school fees as "full and complete mitigation" to LUHSD. Therefore, the project would have a less-than-significant impact to the high schools that serve the project site.

Other Facilities

The project is projected to provide housing for approximately 876 residents (see **Section 4.13, Population and Housing,** for further discussion). This additional population could increase the demand for library services, including facilities and equipment, book or media volumes, and staff time. Neither California nor Contra Costa County has formal library standards for collections or facilities. The Brentwood Library, located at 104 Oak Street, serves the project site and other residents in the area. The Contra Costa Library system is primarily funded by local property taxes, with additional revenue from intergovernmental sources. Currently the library serves a population of over 40,000. The Contra Costa County Library

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[5] See **Appendix F**, Agreement between Byron Unified School District and Pantages Bays LLC.

[6] According to the LUHSD, the Districts "student generation rate" is 0.25 students per household. The project would construct 292 units. Therefore 0.25 x 292 = 73 students generated.

Services (County Library) has a Strategic Plan which accounts for the existing library services in the County and planned improvements and facilities. The construction of a new library is dependent on a needs assessment and available funding. According to the County Library, a population increase would not, in and of itself, require a new or expanded library (V. Zito July 2010) and so is considered to be less than significant.

This additional population could also increase the demand for health services, including facilities, equipment, and staff time. Neither California nor Contra Costa County has formal health service standards for facilities. Given that County health facilities generally only serve low-income populations, and the population generated by the project would not be low-income, the County would not require a new or expanded health facility as result of project implementation (K. Stryker July 2010). Therefore, this is considered a less-than-significant impact.

b) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

There are a number of parks and recreational facilities available for public use in East Contra Costa County including local parks such as Ravenswood Park, Cornell Park, Slifer Park, and East Bay Regional Parks such as Black Diamond Mines Preserve. According to the Contra Costa County Department of Parks and Recreation, Contra Costa County owns approximately 52 acres of parkland and 4 other parks and playgrounds located in east Contra Costa County. Additionally, Black Diamond Mine Preserve, located east of the project site, alone provides 6,286 acres of parkland to the County. Therefore, there is no deficiency in parkland in the County and the existing parks would accommodate the additional 876 new residents generated by the project.

The project applicant would be required to adhere to the County's parkland requirement of 3 acres per 1,000 people as discussed in **Impact PS-1**. Additionally, the project would provide approximately 2.6 acres of public trail on-site, which would be available for use by the new residents generated by the project as well as the public. Therefore, the County has ample public parkland and other recreational facilities to support the project. The project would have a less-than-significant impact related to the substantial deterioration of park facilities that serve the project site.

c) Would the project include recreational facilities or require the construction or expansion of recreational facilities, which would have an adverse physical effect on the environment?

The project would allow the development of a 20-foot wide EVA road in the northwest portion of the project area, through the proposed wetland mitigation and open space area. The EVA road would also serve as a publicly accessible bicycle/pedestrian trail and would include interpretive signage, kiosks, and seating areas. The construction of the public trail and the creation of seasonal wetland and emergent marsh would occur concurrently (see **Chapter 3.0, Project Description**). For a discussion of the impacts of the construction of the trail to the marsh and other biological resources, see **Section 4.3, Biological Resources**.

Discussion of Significant Impacts

Analysis of the project plans and site characteristics in the context of the seven significance criteria stated above shows that some degree of impact would result for one of the criteria. The following discussion presents the evidence in support of this conclusion.

a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services?

Parks

Impact PS-1: The project would be required to provide 2.6 acres of parkland to meet the County's parkland dedication requirement. (Significant)

The project would result in an estimated population increase of 876 persons. Based on the County's parkland requirements of 3 acres of parkland per 1,000 people, the project would be required to provide 2.6 acres of parkland to meet the County's parkland dedication requirements.[7]

[7] **Section 4.13, Population and Housing** calculates a projected increase in population of 876 people. Based on a standard of 3 acres of park per 1,000 people the project would generate a need for 2.6 acres of parkland. 876/1,000 x 3 = 2.6 acres.

To meet this requirement, the project proposes a public trail system through the emergent marsh in the northern portion of the site with two passive recreation locations with tables and seating next to the open water (See **Figure 3-4**). The trail system would provide approximately 2.6 acres of recreational use to the future residents of the Pantages Development and the public for year round use by walkers, joggers and bikers.

The County Code also permits a combination of land dedication and fee payment (Section 920-6.206).

Mitigation Measure PS-1: The project applicant shall, concurrent with the recording of the map, dedicate to the County or other public agency approximately 2.6 acres of public trails and two passive recreation locations with tables and seating next to the open water, including the eight foot side walk leading from Point of Timber Road to the public trails through the preserved open space. The public trail through the open space area also serves as an EVA and must comply with Fire Department standards. In combination with the dedication of the public trail the project shall pay a park dedication fee of $1351 per dwelling unit upon issuance of building permits. The future residence of Pantages would pay for the maintenance of the public trails and passive recreation areas for their use and that of the public.

Significance after Mitigation: Less than significant.

The County has determined that the combination of payment of fees and dedication of land for a public trail represents full and complete mitigation for parkland impacts. Therefore, implementation of **Mitigation Measures PS-1** would reduce the project's impact to a less-than-significant level.

4.14.4 CUMULATIVE IMPACTS

Emergency Services

The cumulative setting for emergency services includes any proposed development within the service districts of the Contra Costa County Sheriff's Office Delta Station and East Contra Costa County Fire Department (ECCCFD) that, in combination with the project, may generate the need for new facilities.

The General Plan EIR noted that buildout of the General Plan would require new stations, equipment and staffing to maintain acceptable service ratios. The implementation of the project in combination with the Discovery Bay projects

identified in **Table 4-1** in **Chapter 4.0, Setting, Impacts, and MItigation Measures,** would increase demands for police and fire services and would contribute to this cumulative impact.

In the Discovery Bay area, the service district of ECCFPD has recently been improved with the construction of Station 59 that would serve the project area. The location of this facility ensures that acceptable service ratios can be maintained in the Discovery Bay area and alleviates the cumulative impact for the provision of fire services within the project's cumulative setting. Furthermore, the project would pay fire impact fees that would help the ECCCFD plan additional facility and staff expansions to serve the East County area.

The ECCFPD relies mainly on property tax revenue to fund operations. Because of a significant drop in the assessed property values of homes and properties in East County, the ECCFPD Board met on February 27, 2012, and voted to call a special election on June 5, 2012 proposing a special tax of $197 per parcel as a revenue enhancement for the District. The proposed tax will sunset in 2023, unless the voters decide to extend it. (ECCFPD Town Hall meeting Schedule 1/2012, LAFCO Fire Service Update 3/14/12).

Regarding sheriff services, the project includes construction of a marine patrol station to augment services in the region. The Delta Station has not identified a need for additional facilities beyond the marine patrol substation, indicating that acceptable service ratios can be maintained in the Discovery Bay area and alleviating the cumulative impact for the provision of police services within the project's cumulative setting.

Parks and Recreation

The cumulative setting to parks and recreation includes any proposed development that could affect parks and recreational facilities within Discovery Bay, which includes the projects in Discovery Bay listed in **Table 4-1**. The General Plan EIR noted that build out of the General Plan would require the designation of substantial additional parkland to conform with adopted park standards.

The General Plan requires that any new development include 3 acres of public parkland per 1,000 people. The County Code also permits a combination of land dedication and fee payment to mitigate park impacts. In conformance with this policy, the project would provide parkland, in the form of the public trail through the open space area as described above and would also pay fees to mitigate impacts to local parks.

Schools

The cumulative setting to schools facilities and services includes any proposed development within the BUSD and the LUHSD. The project in combination with other residential projects in the vicinity, listed in **Table 4-1**, would generate new students and would be required to pay development impact fees to the BUSD and the LUHSD, consistent with the requirements of Senate Bill (SB 50).

Payment of these fees is considered to completely mitigate any impacts to schools. Therefore, cumulative impacts to school facilities or services would be less than significant.

4.14.5 REFERENCES

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Leach, T. Fire Inspector, Contra Costa County Fire Protection District. Personal Communication, December 2, 2009.

Meyer, T. Superintendent, Byron Union School District. Personal Communication, September 28, 2006, and March 8, 2007.

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Williams, Lt. Marine Services Division, Contra Costa County Sheriff Reserve. Personal Communication, April 24, 2007.

Wright, G. Marine Services and Air Support Unit, Contra Costa County Office of the Sheriff. Personal Communication, December 6, 2010, April 29, 2011, and July 28, 2011.

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4.15 PUBLIC UTILITIES

This section describes the utilities serving the project site and the Town of Discovery Bay, including water, wastewater, stormwater, and solid waste. Regulations and policies affecting utilities are also described. As part of this analysis, individual utility providers were contacted and asked to confirm the anticipated demand and their ability to serve the project.

No comments related to utilities and service systems were received in response to the Notice of Preparation (NOP) for this draft EIR.

4.15.1 EXISTING CONDITIONS

Solid Waste

Discovery Bay Disposal Service provides solid waste removal and recycling services in the project area. Solid waste collected by Discovery Bay Disposal Service is transported to the Contra Costa Waste Recycling Center & Transfer Station, located at 1300 Loveridge Road in Pittsburg. From there, solid waste is transported to the Potrero Hills Landfill, located at 3675 Potrero Hills Lane in Solano County. Potrero Hills Landfill has a maximum permitted capacity of approximately 21.5 million cubic yards (mcy) (CalRecycle Facilities 2010). The landfill currently receives 1,900 tons/day (seven days per week) and has remaining capacity of approximately 6 mcy. The expected closure date of the landfill with its current remaining capacity is at the end of 2016 (Dunbar 2010).

An EIR for the expansion of the landfill was certified by a Solano County Superior Court Judge in November 2009, allowing for the facility to be expanded to a capacity of 83 mcy and extended the closure date by 35 years. The court's ruling allows the Potrero Hills Landfill and regulatory agencies that oversee landfill operations to move forward with review of required permits for the expansion.

The California Integrated Waste Management Act of 1989 mandated that cities and counties divert 50 percent of all solid waste by 2000 through source reduction, recycling, and composting activities. Similarly, the Contra Costa County Board of Supervisors adopted on July 8, 2004, Ordinance 2004-16, which requires owners of all construction or demolition projects that are 5,000 square feet in size or greater to demonstrate that at least 50 percent of the construction and demolition debris generated on the jobsite is reused, recycled, or otherwise diverted. According to the Waste Stream Profiles on record with the Department of Resources Recycling and Recovery, unincorporated Contra Costa County achieved a 50 percent diversion rate in 2005 and a 54 percent diversion rate in 2006 (CalRecycle Profiles 2010).

Discovery Bay offers curbside recycling to its residents to encourage waste stream diversion. Curbside recycling is provided by Knightson Curbside, part of the Oakley Disposal Service. Materials collected include a variety of glasses, metals, organics, papers, plastics, motor oil, oil filters, and specialty materials by appointment, such as cathode ray tubes, computers monitors, and televisions (Contra Costa County 2010).

Water Supply

Water would be supplied to the project site by the Town of Discovery Bay Community Services District (TDBCSD). Water supply information and analysis are based on the January 2012 Discovery Bay Water Master Plan (Water MP), prepared by Luhdorff & Scalmanini Consulting Engineers. The TDBCSD Board of Directors formally accepted the Water MP at its public meeting on February 8, 2012.[1] The Water MP is incorporated by reference in this draft EIR and is available for review on the TDBCSD website at: <http://www.townofdiscoverybay.org/>. It is also included as **Appendix H** to this draft EIR.

The TDBCSD water supply system derives all of its water supply from five active groundwater supply wells. Raw water from the wells is delivered and treated at two water treatment plants (WTPs): the Newport WTP and the Willow Lake WTP. Each WTP is equipped with storage tanks, booster facilities pumps, standby generators, and a network of piping to facilitate the distribution of water to the service community.

Approximately 6,865 Equivalent Dwelling Units (EDUs)[2] are currently served by the TDBCSD water supply system. The water use factor for the base unit is approximately 0.37 gallons per minute (gpm) per dwelling unit (0.37 gpm/EDU).[3]

The five active groundwater wells are capable of supplying 7,400 gpm during summer dry years and up to 8,500 gpm during winter wet years.[4] The current maximum day demand (MDD) within the service area is 5,700 gpm and at planning

[1] Howard, Rick, General Manager, Town of Discovery Bay Community Services District. Personal communication, February 16, 2012.

[2] A useful tool in water demand assessment is to represent the demands of each customer type in terms of equivalence to a base unit. The system is comprised of a mixture of water uses consisting of four basic categories; residential, commercial, irrigation and other. By making the base unit equal to one residential unit, the demand of the entire system can be viewed in terms of total number of equivalent residential units being served. This is also known as an Equivalent Dwelling Unit (EDU).

[3] This information is presented on page 2-5, in Section 2.2, Table 2-2, of the Water MP.

[4] This information is presented on pages 3-1 and 3-2, in Section 3.2, and on page 3-4, in Table 3-1, of the Water MP.

horizon in 2020 is estimated to be 7,000 gpm, which suggests that the system is capable of meeting future demand when all wells identified in the Water MP are operating at capacity.[5]

California Department of Public Health Waterworks Standards (Title 22, Chapter 16, California Code of Regulations) require that systems using only groundwater—like the TDBCSD—must be capable of meeting MDD with the highest capacity source well off line (i.e., non-operational).[6] Under these conditions, the total source capacity of the TDBCSD system is reduced to 5,600 gpm. With the current MDD for water in the TDBCSD at 5,700 gpm, the existing source capacity with the highest capacity source well off-line has a current shortfall of 100 gpm. When all committed service connections become active, MDD would increase to 6,000 gpm and the shortfall would be 400 gpm. With all projected growth, MDD would be 7,000 gpm and the shortfall would be 1,400 gpm.[7]

The Water MP identifies projected growth through 2020 within the existing TDBCSD boundaries and through anticipated annexation of in fill adjoining its boundaries. Projected growth within the TDBCSD was identified by TDBCSD staff and the Board of Directors following consultations with the County Department of Conservation and Development.[8] This projected growth includes the 292 single-family units proposed as part of the project. The Water MP includes recommended improvements and programs to meet the projected water demands through 2020.[9]

The improvements and programs in the Water MP would be implemented through a Capital Improvement Plan (CIP) funded by financial mechanisms approved by the TDBCSD. The TDBCSD Board of Directors has approved a capacity fee study, which will be used by the TDBCSD to develop a fair share water supply capacity fee for new development. New development would be responsible for the costs to construct improvements that are necessary only to serve new development (e.g., the new water storage tank described below). A draft capacity fee study is expected to be completed in May of 2012.[10]

The majority of improvements identified in the Water MP are expected be located within the basic footprint of the existing water supply and delivery system, existing

[5] This information is presented on page 2-7 of the Water MP.

[6] This information is presented on page 4-1, in Section 4.1.1, of the Water MP.

[7] This information is presented on page 4-2, in Section 4.1.2, and in Figure 2-2 of the Water MP.

[8] This information is presented on page 2-2, in Table 2-1, of the Water MP.

[9] This information is presented on page 6-9, in Table 6-1, of the Water MP.

[10] Howard, Rick, General Manager, Town of Discovery Bay Community Services District. Personal communication, May 10, 2012.

roadways, and TDBCSD easements.[11] Specific construction details for these upgrades are not all available at this time. The construction and operational details of these improvements would be addressed through subsequent environmental review by the TDBCSD to the extent required by the California Environmental Quality Act (CEQA). Such document would evaluate potential impacts to the physical environment and identify appropriate mitigation measures associated with any planned improvement as necessary. A summary description of the planned and recommended improvements is provided below.

Recommended Water System Improvements

The recommended system upgrades, that enable the TDBCSD to meet the current and projected water demands at planning horizon in 2020, are described below. The water system components include: water source capacity, water treatment, system storage, and distribution system. **Figure 4.15-1** shows the location of these water system improvements.

Source Capacity Recommendations

The following water source capacity improvements are included in the Water MP.[12] Source capacity is also addressed as a CIP item in the Water MP.[13] Ground basin assessment programs are also discussed in this section below.[14]

1. Implement well pump equipment upgrades to the largest well off line to increase production to address the current deficiency of 100 gpm in source capacity.[15]
2. Construct a new water supply well to serve the Newport Water Treatment Plant (WTP). The new water supply well would satisfy source capacity requirements of the system beyond the projected build-out. The new well is needed immediately to provide sufficient capacity to meet its future committed service levels, including this project as well as the existing community within the 10-year planning horizon.[16] It is anticipated that the new well would be

[11] With the exception of two new mainlines installed by directional drilling under Kellogg Creek connecting the Pantages Bays project to Discovery Bay on the other side. This is further discussed in the "Distribution System Recommendations" subsection below.

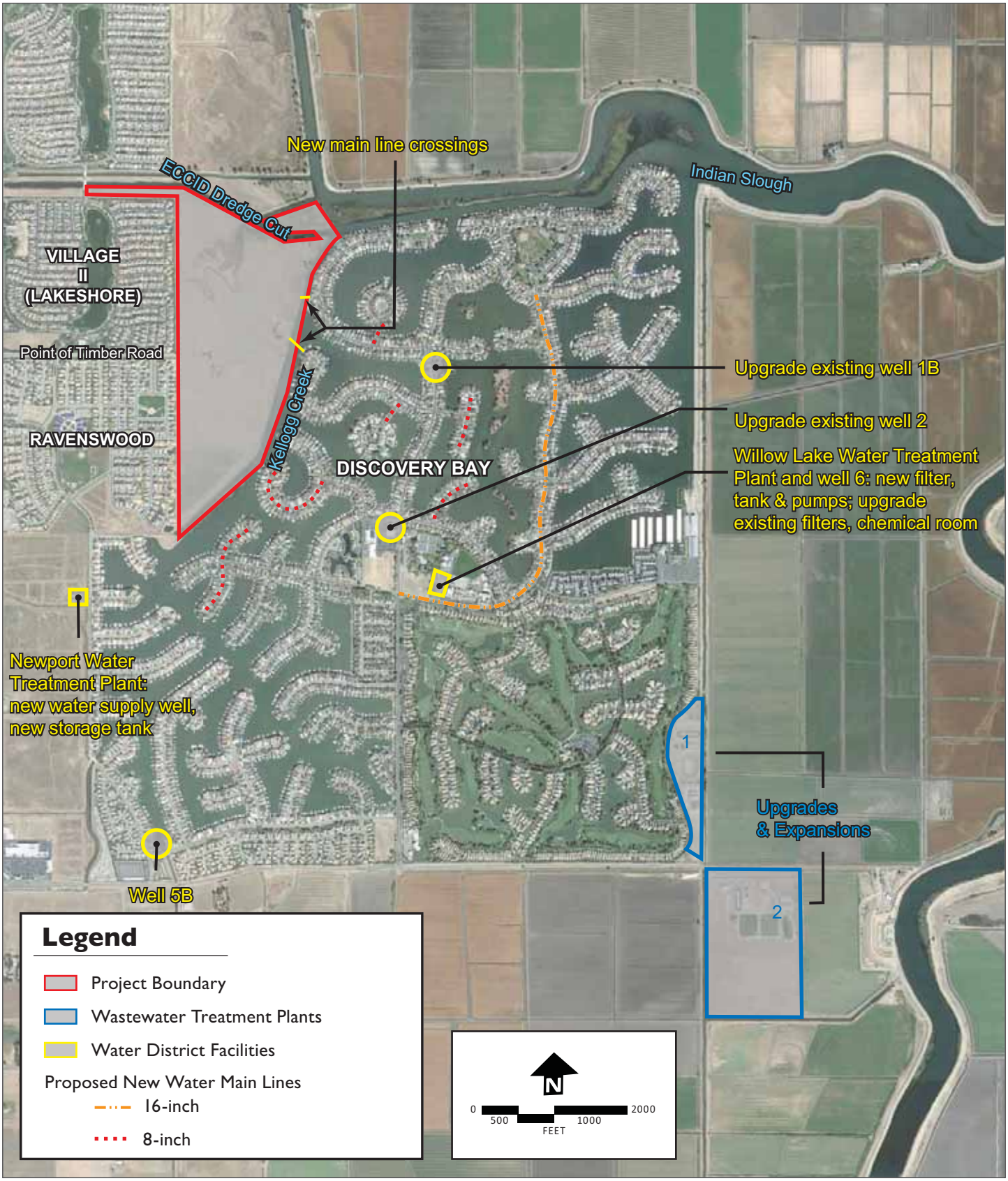
[12] This information is presented on pages 4-1 through 4-4, in Section 4.1, and in Table 6-1 of the Water MP.

[13] This information is presented on page 6-3, in Section 6.4.1, of the Water MP.

[14] This information is presented as a CIP item on page 6-7, in Section 6.4.5, of the Water MP. Ground basin assessment programs are further discussed in Chapter 5 and in Table 6-1 of the Water MP.

[15] This information is presented on page 4-2, in Section 4.1.2 under the "Well Capacity Upgrade" discussion, of the Water MP.

[16] This information is presented on pages 6-2 and 4-3, in Section 4.1.2, of the Water MP.



Locations of Improvements to Water and Wastewater Facilities

Figure 4.15-1

Source: Discovery Bay CSD; Circlepoint, 2011.
Note: *Wastewater Master Plan also calls for improvements to the 14 wastewater pump stations located throughout the community. The locations of the pump stations can be found in the Water Master plan. See Table 2-2*

constructed on the west side of Discovery Bay near Newport Drive. While there are currently no details on the location of the new well site, the TDBCSD would prefer to locate it along its existing raw water line in the vicinity of the RV storage lot, located at 2400 Newport Drive, and in the rear of the homes on Newport Court. Impacts from the new water well would be addressed through subsequent environmental review by the TDBCSD to the extent required by CEQA. [17]

3. Implement a groundwater basin management program.[18]
4. Create a contingency fund for future replacement of an existing well site.[19]
5. Monitor trends in well performance and pump station performance through regular testing.[20]

Water Treatment Recommendations

The following water treatment recommendations are included in the Water MP.[21]

1. Construct a new filter, backwash tank, and recycle pumps at the Willow Lake WTP to meet water demand requirements projected by 2016. Once constructed, the new treatment equipment would satisfy treatment capacity requirements beyond the projected planning horizon.
2. Upgrade the filter-face piping and valves on the existing filters at Willow Lake WTP.
3. Upgrade/remodel the chemical room at Willow Lake WTP to allow all three well pumps to operate simultaneously.
4. Create a contingency fund to replace filter media, upgrade recycle pumps at Newport WTP, and test and upgrade booster pumps at both the Willow Lake WTP and the Newport WTP.

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[17] Keone, Virgil, Water and Wastewater Manager, Town of Discovery Bay Community Services District. Personal communication, May 11, 2012.

[18] This information is presented on page 5-5, in Section 5.5, of the Water MP.

[19] This information is presented on page 4-4, in Section 4.1, of the Water MP.

[20] This information is presented on pages 5-4 and 5-5, in Section 5.4, of the Water MP.

[21] This information is presented as a CIP item on page 6-3, in Section 6.4.2, of the Water MP. Water treatment recommendations are further discussed on pages 4-4 through 4-7, in Section 4.2, of the Water MP.

System Storage Recommendations

The following system storage recommendations are included in the Water MP.[22]

Construct a new 275,000 gallon storage tank at the Newport WTP for the operational and fire safety storage requirements of the treatment plant that are projected by 2014. The new tank would satisfy the storage capacity requirements beyond the projected planning horizon in 2020. This new storage tank would be part of an existing TDBCSD facility.[23] The new storage tank would be located adjacent to the existing tanks at the Newport WTP on land that is to be owned by the District.[24]

1. Maintain the existing emergency standby generators to ensure continued source of emergency storage (supply) in the groundwater aquifer.

Distribution System Recommendations

The following distribution system recommendations are included in the Water MP.[25] These distribution system recommendations address system performance deficiencies during fire flows and initiates a program that replaces the older mainlines. They are collectively referred to as Alternative 2 pipeline improvements.[26]

1. Install two new mainline canal crossings below Kellogg Creek to improve fire flow performance in the system for project build-out conditions.
2. Replace the existing mainline on Willow Lake Road from Beaver Lane south to Discovery Bay Boulevard in order to improve fire flow performance in the system and to begin replacing some older mainlines in the system.
3. Replace the existing mainline on South Point, Surfside Place, Surfside Court, Shell Court, Beach Court, Marina Circle, and Lido Circle in order to improve fire flow performance in the system and to begin replacing some older mainlines in the system.

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[22] This information is presented as a CIP item on page 6-6, in Section 6.4.4, of the Water MP. System storage recommendations are further discussed on pages 4-7 through 4-9, in Section 4.3, and in Table 6-1 of the Water MP.

[23] Plate 6 of the Water MP depicts this proposed storage tank location.

[24] Keone, Virgil, Water and Wastewater Manager, Town of Discovery Bay Community Services District. Personal communication, May 11, 2012.

[25] This information is presented in Chapter 4 of the Water MP.

[26] This information is presented on pages 4-13 through 4-15, in Section 4.4.7 and 4.4.8, of the Water MP. Plate 6 of the Water MP depicts the location of the Alternative 2 pipeline improvements.

Wastewater

Discovery Bay wastewater collection and treatment services are also provided by the TDBCSD. The Discovery Bay WTP is undergoing a phased expansion to provide adequate service and capacity to both existing and proposed developments within its jurisdiction. Over the past decade, the treatment plant has undergone several upgrades and has a current permitted capacity to treat 2.1 mgd[27] of wastewater. The average daily flow to the treatment plant is 1.8 mgd.[28] Wastewater originating from homes in the existing Discovery Bay, Discovery Bay West, and Ravenswood Estates developments currently enters 8-inch mains along residential streets and flows to a series of lift stations that gradually pump water to the Discovery Bay wastewater treatment facility. The project would be served by a 10-inch sewer main at Wilde Drive, on the southern portion of the project site, and an 8-inch main at Point of Timber Road.

The TDBCSD has prepared a Wastewater Master Plan (Wastewater MP) as part of the process to upgrade its wastewater treatment facility. The TDBCSD released the final draft of the Wastewater MP, prepared by Stantec Consulting Services Inc., in October 2011. The Wastewater MP is incorporated by reference in this draft EIR and is available for review on the TDBCSD website at: <http://www.townofdiscoverybay.org/>. It is also included as **Appendix H** to this draft EIR.

The Wastewater MP was formally accepted by the Board of Directors at its public meeting on February 8, 2012.[29] The Wastewater MP includes the same projected growth through 2020 as the Water MP. This projected growth includes the 292 single-family units on the Pantages Bays property proposed as part of the project.[30]

Waste discharge requirements are discussed in Section 8 of the Wastewater MP. As described in Section 8, effluent is discharged to Old River. Discharge is regulated under a National Pollution Discharge Elimination System (NPDES) permit and waste discharge requirements adopted by the California Regional Water Quality Control Board (RWQCB), Central Valley Region. Approximately every five years, the TDBCSD NPDES permit is updated.[31] One objective of the Wastewater MP is to provide

[27] Recent testing by the TDBCSD confirms that the plant's actual operating capacity is 2.0 mgd.

[28] Draft Final Wastewater Treatment Plant Master Plan, October 2011.

[29] Howard, Rick, General Manager, Town of Discovery Bay Community Services District. Personal communication, February 16, 2012.

[30] This information is presented on pages 3-1 and 3-2, in Section 3, of the Wastewater MP.

[31] This information is presented on page 8-1 of the Wastewater MP.

recommendations to assure future compliance with the NPDES permit as it is to be updated. The Wastewater MP summarizes key NPDES permit requirements, plant performance, and compliance strategies.[32]

The improvements would be implemented through a CIP funded by financial mechanisms approved by the TDBCSD. The plan would include a new capacity fee to charge new development for its fair share of wastewater treatment upgrades that are necessary to serve both the existing community and new development. Any improvements required exclusively to serve new development would be paid for by new development. A draft capacity fee study is expected to be completed in May of 2012.[33]

The Wastewater MP includes recommended upgrades to meet the TDBCSD projected wastewater demands through 2020.[34] Wastewater treatment improvements are characterized as: immediate improvements; critical improvements; other certain or likely improvements; reasonably possible or optional improvements; and unlikely improvements.

All improvements provided for in the Wastewater MP is anticipated to be located within the basic footprint of the existing wastewater treatment system. Construction and operational details for these upgrades are not available at this time. The construction and operational details of these wastewater treatment improvements would be addressed through subsequent environmental review by the TDBCSD or the RWQCB, to the extent required by CEQA. Such document would evaluate potential impacts to the physical environment and identify appropriate mitigation measures as necessary.

Recommended system upgrades, that enable the TDBCSD to meet the current and projected water demands through build-out in 2020, are summarized below.

Recommended Wastewater Treatment Improvements

Figure 4.15-1 shows the location of these wastewater treatment system improvements.

- Influent Pump Station Recommendations. As set forth in Section 9 of the Wastewater MP, modifications and upgrades to the Influent Pump Station located at Plant 1 are recommended as immediate improvements in order to mitigate for existing operational issues.

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[32] This information is presented on page 8-4, in Table 8-1, of the Wastewater MP.

[33] Howard, Rick, General Manager, Town of Discovery Bay Community Services District. Personal communication, May 10, 2012.

[34] This information is presented on page 20-3, in Table 20-1, of the Wastewater MP. Table 20-1 of the Wastewater MP identifies specific sections of the Wastewater MP in which the need for particular improvements are discussed.

- Ultraviolet Disinfection Recommendations

  Ultraviolet (UV) disinfection is used at the plant to meet permit requirements for total coliform. Recent improvements have been made to address deficiencies that resulted in permit violations.[35] Additional immediate upgrades for UV system expansion are identified and include: revisions to the UV disinfection weirs to improve flow split to UV channels, and conducting viral bioassay tests to verify existing capacity.[36]

- Secondary Treatment Facilities Recommendations

  To address current deficiencies in the secondary treatment facilities[37], the Wastewater MP identifies several upgrades to the system including: installing a new oxidation ditch and associated facilities at Plant 2 to accommodate for future growth and supply adequate emergency storage; expanding solids-handling capacity; and implementing supervisory control and data acquisition (SCADA) system improvements for better monitoring and more reliable service.[38] All improvements would be constructed at one time.

- Plant Improvement Recommendations

  Additional plant improvements that have been identified in the Wastewater MP as certain or likely in the future include:

  - Installing facilities (new filters or emergency storage facilities) to address secondary effluent equalization to limit peak flows to filters, UV channels, and to the export pump station;
  - Upgrading the plant's UV disinfection system; [39]
  - Adding a pump to the export pump station; [40]
  - Adding a second solar dryer to facilitate Phase 1 solids handling improvements; [41] and
  - Improving the collection system pump for reliable performance.

[35] This information is presented on page 14-1, in Section 14, of the Wastewater MP.
[36] This information is presented on page 14-6, in Section 14.5, of the Wastewater MP.
[37] This information is presented on page 11-1, in Section 11, of the Wastewater MP.
[38] This information is presented on page 4-1, in Section 4, of the Wastewater MP.
[39] This information is presented on page 14-5, in Section 14.4, of the Wastewater MP.
[40] This information is presented on page 7-1, in Section 7, of the Wastewater MP.
[41] This information is presented on page 14-1, in Section 14, of the Wastewater MP.

Stormwater

Except for the emergent marsh located in the northern portion of the project site, the project site has been leveled, ditched, drained and disked in the past for use as irrigated cropland and grazing pasture. Reclamation District 800 (RD 800) also used site for detention and decanting of dredge spoils as part of a program to remove sediment build up in Discovery Bay waterways. The dredged spoils were spread over portions of the property outside of the delineated wetland areas. Currently, these piles of dredge spoils are higher in elevation than the surrounding topography. Several shallow ditches bisect the site, providing further evidence of past agricultural land use.

Existing surface drainage cannot be easily determined due to the extremely flat terrain of the project site. Generally, storm water flow drains towards the topographically lower seasonal wetlands and the emergent marshes on the northern portion of the project site. Ultimately, site drainage reaches Kellogg Creek and Indian Slough. No runoff from the site flows into the East Contra Costa County Irrigation District Dredge Cut/Intake Channel (ECCID Dredge Cut). Off-site drainage is unlikely to enter the project site from any direction.

4.15.2 REGULATORY SETTING

State Assembly Bills 610 and 221

The purpose and legislative intent of Senate Bill 610 (SB 610) and Senate Bill 221 (SB 221) was to preclude projects from being approved without specific evaluations being performed and documented by the local water provider proving that water is available to serve the project. These laws took effect on January 1, 2002.

SB 610 requires the preparation of a Water Supply Assessment (WSA) for large-scale development projects. Both SB 610 and SB 221 apply to a 500-unit residential development or a project that would increase the number of the public water system's existing service connections by 10 percent. SB 221 requires the local water provider to provide "written verification" of "sufficient water supplies" to serve the project prior to approval of a subdivision map. This requires a higher degree of certainty than is required for approval of a WSA.

At 292-units, the project is below the 500-unit threshold and would increase the number water service connections served by the TDBCSD by 5 percent. Therefore, the project does not require the preparation of a WSA and does not need to be separately analyzed.

Assembly Bill 939

Assembly Bill 939 (AB 939), the California Integrated Waste Management Act of 1989, mandated the reduction of solid waste disposal in landfills. The bill mandated a minimum 50 percent diversion of material from landfills by 2000. In 2006, 54 percent of unincorporated Contra Costa County's solid waste was diverted from landfill (CalRecycle 2010).

Contra Costa County General Plan

Policies related to stormwater drainage facilities are discussed in **Section 4.9, Hydrology and Water Quality**. The Growth Management Element of the General Plan identifies policies related to water and sanitary sewer.

Growth Management Element

Water

The County, pursuant to its police power and as the proper governmental entity responsible for directly regulating land use density or intensity, property development and the subdivision of property within the unincorporated areas of the County, shall require new development to demonstrate that adequate water quantity and quality can be provided. At the project approval stage, (subdivision map, land use permit, etc.), the County may consult with the appropriate water agency.

The County, based on information furnished or available to it from consultations with the appropriate water agency, the applicant or other sources, should determine whether (1) capacity exists within the water system if a development project is built within a set period of time, or (2) capacity will be provided by a funded program or other mechanism. Project approvals conditioned on (1) or (2) above, will lapse according to their terms if not satisfied by verification that capacity exists to serve the specific project ("will serve letters"), actual hook-ups or comparable evidence of adequate water quantity and quality availability.

Sanitary Sewer

The County, pursuant to its police power and as the proper governmental entity responsible for directly regulating land use density or intensity, property development and the subdivision of property within the unincorporated areas of the County, shall require new development to demonstrate that adequate sanitary sewer quantity and quality can be provided. At the project approval stage, (subdivision map, land use permit, etc.), the County may consult with the appropriate sewer agency. The County, based on information furnished or available to it from consultations with the appropriate sewer agency, the applicant or other

sources, should determine whether (1) capacity exists within the sewer system if the development project is built within a set period of time, or (2) capacity will be provided by a funded program or other mechanism. Project approvals conditioned on (1) or (2) above, will lapse according to their terms if not satisfied by verification that capacity exists to serve the specific project ("will serve letters"), actual hook-ups or comparable evidence of adequate sewage collection and wastewater treatment capacity availability.

The Public Facilities/Services Element of the General Plan identifies the county-wide policies listed below related to utility services.

Public Facilities/Services Element

7-1: New development shall be required to pay its fair share of the cost of all existing public facilities it utilizes, based on the demand for these facilities which can be attributed to new development.

7-2: New development, not existing residents, should be required to pay all costs of upgrading existing public facilities or constructing new facilities which are exclusively needed to serve new development.

7-4: The financial impacts of new development or public facilities should generally be determined during the project review process and may be based on the analysis contemplated under the Growth Management Element or otherwise. As part of the project approval, specific findings shall be adopted which relate to the demand for new public facilities and how the demand affects the service standards included in the growth management program.

7-19: Urban development shall be encouraged within the existing water Spheres of Influence adopted by the Local Agency Formation Commission; expansion into new areas within the Urban Limit Line beyond the Spheres should be restricted to those areas where urban development can meet all growth management standards included in this General Plan.

7-21: At the project approval stage, the County shall require new development to demonstrate that adequate water quantity and quality can be provided. The County shall determine whether (1) capacity exists within the water system if a development project is built within a set period of time, or (2) capacity will be provided by a funded program or other mechanism. This finding will be based on information furnished or made available to the County from consultations with the appropriate water agency, the applicant, or other sources.

7-26: The need for water system improvements shall be reduced by encouraging new development to incorporate water conservation measures to decrease peak water use.

7-29: Sewer treatment facilities shall be required to operate in compliance with waste discharge requirements established by the Regional Water Quality Control Board. Development that would result in the violation of waste discharge requirements shall not be approved.

7-31: Urban development shall be encouraged within the sewer Spheres of Influence adopted by the Local Agency Formation Commission. Expansion into new areas within the Urban Limit Line but beyond the Spheres of Influence should be restricted to those areas where urban development can meet growth management standards included in this General Plan.

7-33: At the project approval stage, the County shall require new development to demonstrate that wastewater treatment capacity can be provided. The County shall determine whether (1) capacity exists within the wastewater treatment system is a development project is built within a set period of time, or (2) capacity will be provided by a funded program or other mechanism. This finding will be based in information furnished or made available to the County from consultations with the appropriate water agency, the applicant, or other sources.

7-37: The need for sewer system improvements shall be reduced by requiring new development to incorporate water conservation measures which reduce flows into the sanitary sewer system.

7-50: Public access to watercourses shall be required of major new developments when liability, security, and maintenance issues can be satisfactorily resolved.

7-88: Solid waste disposal capacity shall be considered in County and city land use planning and permitting activities, along with other utility requirements, such as water and sewer service.

7-92: Waste diversion from landfills due to resource recovery activities shall be subject to goals included in the County Integrated Waste Management Plan. Public agencies and the private sector should strive to meet these aggressive goals.

Policy Consistency Analysis

Solid Waste: The Potrero Hills Landfill has existing solid waste capacity to serve the project. As required by policy 7-88, the landfill has capacity to serve the project site due to the recent ruling on the expansion of the landfill. As a standard condition of approval, the County would include a requirement that the project be required to divert waste from the landfill through the use of recycle programs for residents. This condition would be in compliance with policy 7-92.

Water Supply: The TDBCSD has completed a Water MP that identifies improvements needed to ensure sufficient capacity for projected growth at planning horizon in 2020. **Mitigation Measure UTIL-1**, identified below, will ensure that the County's Zoning Administrator is provided sufficient information to determine that financing for the required water supply improvements is in place prior to final map recordation of the project. This documentation will also show that the necessary improvements have been completed and actual capacity exists prior to the issuance of certificates of occupancy, which is consistent with policies 7-1, 7-2, and 7-4 of the general plan. Therefore, the project would be in compliance with policy 7-21 which requires that a project demonstrate that sufficient water capacity exists.

Further, as a condition of approval for the project, the County would require the project to incorporate water conservation measures to reduce the daily consumption of water. Implementation of these measures would be consistent with the intent of policy 7-26 to decrease peak water use. Water conservation measures shall include, but not be limited to the indoor and outdoor measures listed below.

Indoor Water Conservation Measures

1. Hot Water Pipe Insulation – Insulation of hot-water pipes, and separation of hot and cold water piping will avoid heat exchange
2. Low Flow Fixtures (i.e., toilets) – Low flow fixtures will be installed in the residential units
3. Water-Efficient Dishwashers – Dishwashers with water saving features, such as water level sensors instead of timed fillers, will be installed in each residential unit
4. Pressure Reducing Valves or Regulators – Residential units will, at a minimum, include a regulator that will maintain pressure thus reducing the volume of any leakage that may occur and preventing excessive flow of water from all appliances and fixtures

Outdoor Water Conservation Measures

1. Water-Efficient Landscaping – The project will utilize drought tolerant plant materials, and require water efficient irrigation systems and controllers
2. Drip Irrigation and/or Misting Systems – Where applicable (i.e., non-turf areas), drip irrigation and/or misting systems will be encouraged

Wastewater: The TDBCSD has completed a Wastewater MP that identifies improvements needed to ensure sufficient capacity for build-out through 2020. **Mitigation Measure UTIL-2,** identified below, will ensure that the County's Zoning Administrator is provided sufficient information to determine that financing for the required wastewater treatment improvements is in place prior to final map recordation of the project. This documentation will also show that the necessary improvements have been completed and actual capacity exists prior to the issuance of certificates of occupancy, which is consistent with policies 7-1, 7-2, and 7-4. Therefore, the project would be in compliance with policy 7-33 which requires that a project demonstrate that sufficient wastewater treatment capacity exists.

The RWQCB approved a maximum operating capacity of 2.1 mgd for average dry weather flows (adfw), per its permit to the TDBCSD dated December 4, 2008. The TDBCSD wastewater treatment facility is currently operating at 1.75 mgd in adwf, with an average annual flow (aaf) of 1.80 mgd and an average day maximum monthly flow (admmf) of 1.98 mgd.[42] As described in **subsection 4.15.3** below, project wastewater flows of 0.1 mgd would increase the amount of wastewater treated by the facility to 1.85 mgd, leaving the facility with a remaining capacity of 0.25 mgd. The remaining capacity, however, is already committed to other planned and approved development (i.e., Hofmann project), and therefore the treatment plant would need to be expanded and the District's NPDES permit would need to be amended to provide capacity for the proposed project.[43]

Further, as a condition of approval for the project, the County would require the project to incorporate water conservation measures to reduce the daily consumption of water. Implementation of these measures would be consistent with the intent of policy 7-37 to decrease peak water use. Water conservation measures would include, but not limited to, indoor and outdoor conservation measures listed above.

Contra Costa Local Agency Formation Commission (LAFCO): The project would require approval from the Contra Costa LAFCO for sphere of influence amendments and corresponding annexation into the TDBCSD service boundary for sewer and

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[42] This information is presented on page 5-8, in Table 5-2, of the Wastewater MP.

[43] Harris, Gregory, Engineer, Town of Discovery Bay Community Services District. Personal communication, May 10, 2012.

water services. As shown in **Figure 3-8** in this draft EIR, a portion of the project site is located within the TDBCSD service boundary; the project includes annexation of the rest of the site into the TDBCSD service area. The site is surrounded by developments serviced by the TDBCSD and is located within the Urban Limit Line (ULL). The project is in compliance with policies 7-19 and 7-31 which discourage expansion into areas beyond the sphere that cannot meet all growth management standards in the general plan.

Access to watercourses: The project would create open water areas, enhance and create creek bank habitat, bays, and coves that would be for public use. Streets would be private, but would allow for public pedestrian and bicycle access on the public trail through the emergent marsh. This would be consistent with policy 7-50, which requires public access to watercourses in major new developments when the related liability, security, and maintenance issues can be resolved.

4.15.3 ANALYSIS OF POTENTIAL IMPACTS

CEQA Significance Criteria

Appendix G of the CEQA Guidelines identifies criteria to be used in evaluating potential impacts related to utilities and service systems. As stated in Appendix G, the Project would have a significant impact upon utilities and service systems if it would:

a) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;

b) Be served by a landfill without sufficient permitted capacity to accommodate the project's solid waste disposal needs;

c) Not comply with federal, state, and local statutes and regulations related to solid waste;

d) Not have sufficient water supplies available to serve the project from existing entitlements and resources, or be in need of new or expanded entitlements.

e) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board;

f) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments;

g) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects; or

Discussion of Less-than-Significant Impacts

a) Would the project result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

The proposed storm drainage system includes natural on-site drainage and human-made detention basins. Stormwater would be handled completely on-site, with treatment either in bio-swales or bioretention basins before release into the area waterways. Impacts to storm water drainage facilities and storm water management issues specific to the project are addressed in **Section 4.9, Hydrology and Water Quality**. The proposed drainage system has been designed to comply with NPDES and the County's C.3 requirements and impacts related to storm drainage facilities would be less-than-significant.

b) Would the project be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

The Potrero Hills Landfill that would serve the project site currently receives 1,900 tons per day of solid waste and has a remaining capacity of 6 mcy. According to CalRecycle, a single family residential unit generates approximately 10 pounds of solid waste per day. The project includes 292 single-family residential units that would generate approximately 2,920 pounds per day. The amount of solid waste generated by the project represents less than 0.1 percent of the daily amount of solid waste processed by the landfill. This is a conservative estimate since recycling was not considered.

The landfill has permitted capacity through 2016 and is in the process of applying for the required permits that would allow the landfill to operate through 2050 and expand to more than three times its current capacity. Based on the landfill's expansion plans for operation through 2050, the landfill would be able to accommodate the project's solid waste disposal needs.

c) Would the project comply with federal, state, and local statutes and regulations related to solid waste?

The project consists of residential land uses that would not result in the generation of unique types of solid waste that would conflict with existing regulations applicable to solid waste disposal. The project would be required to comply with Contra Costa County's solid waste requirements, including the provisions of AB 939.

Furthermore, the project would have to comply with County Ordinance 2004-16, which requires owners of all construction or demolition projects that are 5,000 square feet in size or greater to demonstrate that at least 50 percent of the construction and demolition debris generated on the jobsite are reused, recycled, or otherwise diverted.

In order to comply with Ordinance 2004-16, the project applicant would be required as a condition of approval to prepare and submit a Debris Recovery Plan to the County's Department of Conservation and Development prior to the issuance of a building or demolition permit. The plan would address major materials generated by a construction project of this size, including brush and other vegetative material, dimensional lumber, metal scraps, cardboard, packaging, and plastic wrap, and shall address opportunities to recycle such materials or divert them away from the Potrero Hills Landfill. Prior to final inspection, the project applicant shall submit a Debris Recovery Report that demonstrates that at least 50 percent of jobsite debris was diverted from disposal by providing receipts or gate-tags from facilities or service providers used for recycling, reuse and disposal of jobsite debris. The project would be required to comply with all applicable regulations related to solid waste and this impact would be less than significant.

Discussion of Significant Impacts

d) Would the project have sufficient water supplies available to serve the project from existing entitlements and resources, or be in need of new or expanded entitlements?

Impact UTIL-1: Per the requirements of Title 22 of the California Waterworks Standards, the Town of Discovery Bay Community Services District does not currently have sufficient legal water supply capacity to serve the project. (Significant)

The analysis of adequate capacity uses several measurements, including total water requirements and average day demand, as well as a computation of "peaking factors" such as mdd, and peak hour demand (phd). The peaking factors are expressed in gallons per minute (gpm). The State requires water districts to be able to meet the estimated mdd.[44]

[44] The California Department of Public Health (CDPH) regulations, specifically Section §64554 of the California Waterworks Standards (Title 22, Chapter 16, California Code of Regulations, CCR); state: "at all times, a public water system's water source(s) shall have the capacity to meet the system's maximum day demand (MDD)." The source capacity is the estimated capacity of all sources of supply during the time at which the maximum day demand occurs. Title 22 also states that for water systems using only groundwater, "the system shall be capable of meeting MDD with the highest-capacity source off line."

Total water requirements in Discovery Bay are currently 1,335 million gallons per year (mgy), which equates to an average daily demand of about 3.7 mgd, or about 2,540 gpm. The estimated future water requirements based on the expected infill growth equates to an increase in the total average daily demand to 4.5 mgd, or about 3,100 gpm.

Using those water demands as a basis, the TDBCSD determined the peaking factors—mdd and phd—for water consumption in accordance with regulatory guidelines. For the build-out horizon year 2020, the mdd would be 7,000 gpm. **Table 4.15-1** provides a summary of current and future demand.

As discussed in **Subsection 4.15.1**, the TDBCSD is currently operating with a legal shortfall of 200 gpm.[45] The TDBCSD is not therefore considered to have sufficient capacity to serve its existing connections, nor does it have sufficient capacity to serve the project. Although, the project would result in 292 new residential service connections, the Water MP conservatively assumed 300 residential service connections and 1.2 MGY in irrigation, which is equivalent to 6 residential connections. The Water MP, therefore, assumes the connection of 306 residential units. The project would construct 292 residential units and would require approximately 1.2 MGY in irrigation, and would therefore require slightly less water demand than estimated in the Water MP.

Table 4.15-1 Summary of TDBCSD Demand and Capacity

	Total Annual Requirement	Daily Requirements		Peaking Factors (Regulatory Requirement	
	Million Gallons Per Year (mgy)	Million Gallons Per Day (mgd)	Gallons per minute (gpm)	Million Gallons Per Year (mgy)	Peak hour Demand Gallons per minute (gpm)
Current Demand	1,335	3.7	2,540	5,700	9,150
Projected Growth at Planning Horizon (2020)	1,630	4.5	3,100	7,000	11,200
Increase	295	0.8	560	1,300	2,050

* The TDBCSD's system has a current demand of 5,700 gpm and a current capacity of 7,300 gpm. State regulations require that legal capacity be determined based on a scenario in which the highest-capacity source well is off-line. Under this scenario the TDBCSD's system has a legal capacity of 5,500 gpm, resulting in a legally defined shortfall of capacity of 200 gpm relative to current demand.

[45] Although the District has sufficient physical capacity with all five of its groundwater wells in operation, the State Public Health standards require that capacity be calculated with the highest producing well offline, thus resulting in a shortfall with that well subtracted from the capacity calculation. (Title 22, Chapter 16, California Code of Regulations)

As discussed above in **Subsection 4.15.1** under the "Water Supply" subheading, the TDBCSD operates five active groundwater wells which are capable of meeting future demand when all wells are operating at capacity. Although an adequate water supply is identified to meet current and future demands, the TDBCSD currently lacks the appropriate facilities to ensure the source capacity to draw and distribute the groundwater supplies.

Improvements identified by the TDBCSD to address source capacity issues are discussed in the Water MP and are summarized above in **Subsection 4.15.1** under the "Recommended Water System Improvements" subheading. These improvements are required to meet anticipated service demands through 2020, which includes current demand, project demand associated with the project, and other future development. The TDBCSD would implement the planned improvements over time as demand increases.

The TDBCSD has identified specific facility improvements and upgrades which would address the additional increase in pumping associated with the project. Construction of a new well near Newport Drive would be required to provide the project with water supply; this new well is identified as a priority CIP slated for construction in 2012/2014. Upgrades to Well 1B pump equipment are scheduled for this year (i.e., 2012) and would also facilitate source capacity. Additional water storage capacity with a new tank at the Newport WTP would also be required to serve new development. With the timely construction of these supply improvements along with construction of the new storage tank, there would be sufficient supply to serve projected growth, including the project.

Implementation of a combination of the facility improvements and upgrades discussed above would ensure that an adequate distribution of water to could serve the planned build-out of the project within the margin required by State Public Health standards. However, due to the uncertainty in the timing of these facility improvements and upgrades, the planned improvements may not be constructed at the time the project seeks a new service connection with the TDBCSD. To account for this uncertainty, this EIR conservatively assumes that impacts from inadequate source capacity are significant. The following mitigation would address the event in which the project would outpace available water distribution and would reduce the potential impact to a less-than-significant level.

> ***Mitigation Measure UTIL-1:*** Prior to final map recordation, the applicant shall provide documentation to the County (i.e., Can & Will Serve letter), demonstrating to the satisfaction of the Zoning Administrator that the TDBCSD has identified and secured sufficient financing for the construction of any required improvements outlined in the Water MP to ensure sufficient capacity exists to serve the project.

Prior to the issuance of the first occupancy permit, the Applicant shall provide documentation to the County Zoning Administrator that said improvements needed to serve the project are constructed and operational.

Significance after Mitigation: Less than significant.

Mitigation Measure UTIL-1 would require that the improvements to capacity are in place prior to the project moving forward in the event that the project outpaces available water distribution resources. Further, as a condition of approval for the project, the County would require the project to incorporate indoor and outdoor water conservation measures to reduce the daily consumption of water. This condition of approval, along with **Mitigation Measure UTIL-1** would reduce impacts to a less-than-significant level.

e) Would the project exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

f) Would the project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

g) Would the project require or result in the construction or expansion of wastewater treatment facilities, the construction of which could cause significant environmental effects?

Impact UTIL-2: Town of Discovery Bay Community Services District does not currently have sufficient wastewater treatment capacity to serve the project. (Significant)

Wastewater Conveyance System

The project site would be served by a 10-inch sewer main at Wilde Drive, on the southern portion of the site, and an 8-inch main at Point of Timber Road. Wastewater from the project would enter the 10-inch sewer main at Wilde Drive, and would flow to a lift station along Newport Drive that then pumps the water to the Discovery Bay Wastewater Treatment Facility operated by the TDBCSD. The TDBCSD has indicated that the existing sewer mains that would serve the project site are adequately sized to handle wastewater generated by the project (Howard 2011).

Wastewater Treatment Facility

The TDBCSD Wastewater MP provides a wastewater generation rate of 335 gpd per residence; therefore, the project would generate approximately 98,000 gallons of wastewater per day. The TDBCSD Wastewater Treatment Facility has an operating

capacity of adwf of 2.1 mgd, and is currently operating at adwf of 1.75 mgd. The TDBCSD's Wastewater Treatment Facility has a remaining capacity of adwf of 0.35 mgd.

Project wastewater flows of 0.1 mgd would increase the amount of wastewater treated by the facility to an adfw of 1.85 mgd, leaving the facility would a remaining capacity of 0.25 mgd. The remaining capacity, however, is already committed to other planned and approved developments (i.e., Hofmann project), and therefore the treatment facility would need to be expanded and the District's NPDES permit would need to be amended to provide capacity for the proposed project.

Please refer to **Subsection 4.15.4** for a discussion of the project's contribution to the TDBCSD's planned expansion of its wastewater treatment facility. All improvements would be located within the basic footprint of the existing wastewater treatment system (see **Figure 4.15-2**). Construction and operational details for these upgrades are not available at this time. However, because all improvements to the wastewater treatment plant would occur in the existing footprint, no significant environmental impacts are expected to occur from construction of these improvements (see **Figure 4.15-2**).[46] In addition, the District will need to amend their NPDES permit with the RWQCB to accommodate Pantages. The construction and operational details of these wastewater treatment improvements and NPDES permit amendments would be addressed through subsequent environmental review by the TDBCSD or the RWQCB, to the extent required by CEQA.

Wastewater generated by the project would originate from residential sources; no industrial wastewater would be generated by the project. New sewer lines would be constructed on-site to accommodate the project-generated flows, which would be typical of residential areas, and no changes to the wastewater treatment facility would be required to treat these flows. Treated effluent from the project would not cause the TDBCSD to exceed its operating capacity permitted by RWQCB after their NPDES permit is revised. Improvements required to accommodate the increase in capacity due to projected growth are included in the Wastewater MP Please refer to **Subsection 4.15.4** for a discussion of the project's contribution to cumulative effects related to wastewater treatment. By the time the project is ready for construction, the necessary improvements to increase capacity (such as a new oxidation ditch), if needed to accommodate this project due to the earlier construction of other projected growth, should be completed. Consequently, no impacts related to RWQCB wastewater treatment capacity requirement for the TDBCSD plant would be expected.

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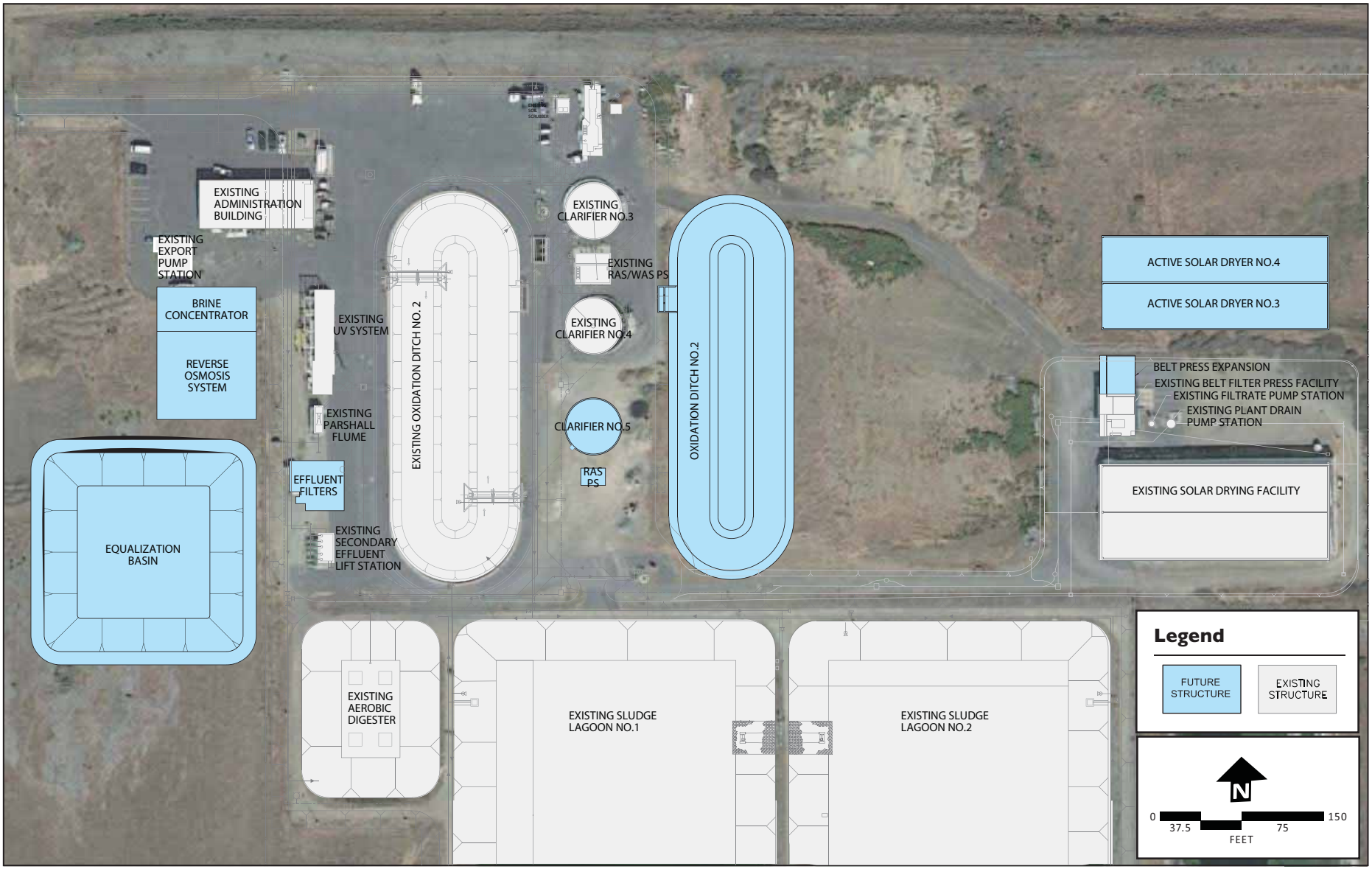
[46] Harris, Gregory, Engineer, Town of Discovery Bay Community Services District. Personal communication, May 10, 2012.



Proposed Expansion of the Discovery Bay Wastewater Treatment Plant

Figure 4.15-2

Source: Stantec, 2011.

The wastewater treatment facility is currently operating in compliance with all RWQCB regulations (See **Appendix G**).[47] Facility operation consistent with the Wastewater MP is expected to continue in compliance with RWQCB regulations.

As part of its compliance requirements, the TDBCSD is obligated to secure RWQCB approval of a Salinity Plan and implement it.[48] The Salinity Plan is necessary due to the 2010 noncompliance with the TDBCSD's limit on electrical conductivity (i.e., its limit on salinity of treated effluent that is discharged into Old River). The TDBCSD has submitted that draft plan to the RWQCB for its review, which is pending.

Per recent monitoring efforts, the TDBCSD engineers believe electrical conductivity in sewage from new development is greater than conductivity in treated sewage as a whole due mostly to general use of salt based water softeners in newer homes and some other older homes in Discovery Bay.[49] Future monitoring would be undertaken to assess the actual impact of such water softeners. Source control is the most effective means for reducing salinity in wastewater. Implementation of TDBCSD regulations to limit the use of salt based water softeners may be needed to reduce electrical conductivity below the RWQCB standard. Alternative water softeners are available that are not salt based and therefore do not cause increased salinity in sewage.

It is anticipated that the TDBCSD may require such a restriction on salt based water softeners in new development like this project. Before a final subdivision map for this project is ready for approval by the County, it is expected that the TDBCSD would secure RWQCB approval of a Salinity Plan designed to keep electrical conductivity below the RWQCB limit in the TDBCSD permit, and that the TDBCSD would be in compliance with RWQCB requirements for the TDBCSD to implement that plan and thus be in compliance with the RWQCB permit for the TDBCSD.

Based on the foregoing information, it is determined that the TDBCSD is likely to have sufficient capacity to serve the project at the time it could seek a new service connection and that serving the project would not exceed the RWQCB requirements for wastewater treatment. In that instance, the TDBCSD would issue the connection and the applicant would pay a capacity fee for its fair share of improvements to the TDBCSD's system. In the unlikely event, however, that sufficient capacity is not available to serve the project in a manner that it would not exceed the RWQCB requirements of the TDBCSD's operating permit, the following mitigation would

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[47] Prior RWQCB Board Orders in 2008 and 2009 related to effluent limitations have all been addressed to the satisfaction of the RWQCB; the TDBCSD does not have any outstanding violations. See **Appendix G** of this draft EIR for RWQCB's NPDES Permit Order No. R5-2003-0067 for the wastewater treatment facility. This information is also presented on page 8-4, in Table 8-1, of the Wastewater MP.

[48] This information is also presented on page 8-4, in Table 8-1, of the Wastewater MP.

[49] This information is also presented on page 8-3, in Section 8.2.3, of the Wastewater MP.

avoid the situation where development would outpace those RWQCB capacity and operating requirements, and thereby reduce the corresponding potential impact to a less-than-significant level:

> ***Mitigation Measure UTIL-2:*** Prior to final map recordation, the applicant shall provide documentation to the County (i.e., Can & Will Serve letter), demonstrating to the satisfaction of the Zoning Administrator that the TDBCSD has identified and secured sufficient funding for the construction of any capacity or treatment improvements outlined in the Wastewater MP and necessary so that serving the project does not exceed the requirements of the RWQCB.
>
> Prior to the issuance of the first occupancy permit, the Applicant shall provide documentation to the County Zoning Administrator that said improvements needed to serve the project are constructed and operational, and that any source control measures are being implemented consistent with the requirements of the RWQCB.
>
> ***Significance after Mitigation:*** Less than significant.

The TDBCSD has completed the Wastewater Master Plan that identifies improvements needed to ensure sufficient capacity for build-out through 2020. Mitigation is included to ensure that financing for the required improvements is in place prior to final map recordation and that actual capacity exists prior to issuance of occupancy permits, which is consistent with policies 7-1, 7-2, and 7-4. Therefore, the project would be in compliance with policies 7-21 and 7-33, which require that a project demonstrate that sufficient capacity exists.

4.15.4 Cumulative Impacts

The cumulative impact for public utilities includes the project area and Town of Discovery Bay. The General Plan EIR noted that future development would cause an increase in long-term water demand that could not be accommodated by existing water agency plans in high growth areas like East County. The EIR also noted that future development may not have access to adequate quantities or quality of domestic water supply.

As noted previously, the TDBCSD has completed a Water MP and a Wastewater MP which are included as **Appendix H** to this draft EIR. Each of these documents identifies specific improvements needed to ensure adequate supply and treatment capacity through 2020.

Both the Water MP and Wastewater MP forecast supply and demand projections to year 2020; there are no other future forecasts included beyond 2020. These projections take into account the potential demand created by the project as well as

the reasonably foreseeable and relevant projects within the TDBCSD service boundary (Discovery Bay/Unincorporated Contra Costa County) included in **Table 4-1** and depicted in **Figure 4-1** of this draft EIR.

Water Supply

Impact CUM UTIL-1: The project, in combination with other reasonably foreseeable projects, would have a considerable contribution to long-term water supplies within the project area.

Similar to the project-level analysis, this cumulative analysis is based on the Water MP prepared by the TDBCSD. Implementation of the project would require approximately 108 gmp of additional water demand from TDBCSD. As demonstrated above, although there would be an adequate water supply identifies to meet current and future water supply demands with the project, TDBCSD lacks the appropriate facilities to ensure capacity to draw and distribute the groundwater supplies. Given this, planned growth identified for the 2020 horizon year, in the Water MP, would result in significant cumulative impact under long-term conditions. Given that the project is included in these forecasts and would require additional demand, the project's contribution to this cumulative impact would be considerable.

Mitigation Measure CUM UTIL-1: The project applicant shall implement **Mitigation Measure UTIL-1**.

Significance after Mitigation: Less than significant.

Implementation of **Mitigation Measure CUM UTIL-1** would require that the improvements to capacity are constructed prior to the project moving forward in the event that the project outpaces available water distribution resources. With the facilities to ensure capacity to draw and distribute the groundwater in place, cumulative impacts to water supply would be less than significant.

Wastewater

Impact CUM UTIL-1: The project, in combination with other reasonably foreseeable projects, would have a considerable contribution to long-term wastewater treatment within the project area.

Similar to the project-level analysis, this cumulative analysis is based on the Wastewater MP prepared by the TDBCSD. Implementation of the project would generate approximately 98,000 gallons of wastewater per day. This additional amount would increase the amount of wastewater treated by the wastewater treatment facility by 0.1 mgd. As demonstrated above, TDBCSD lacks the appropriate facilities to provide wastewater treatment capacity for the project and other forecasted projects without implementation of facility improvements. If the

improvements are not in place at the time the project, in combination with other projects, are operable, implementation of forecasted growth could result in a significant cumulative impact under long-term conditions. Given that the project would increase wastewater flow to the wastewater treatment plant, the project's contribution to this significant impact would be considerable.

Mitigation Measure CUM UTIL-2: The project applicant shall implement **Mitigation Measure UTIL-2**.

Significance after Mitigation: Less than significant.

Implementation of **Mitigation Measure CUM UTIL-2** would require that the improvements to wastewater treatment capacity are constructed prior to the project moving forward in the event that the project outpaces RWQCB capacity and operating requirements. With the facilities to ensure wastewater treatment capacity in place, cumulative impacts to water supply would be less than significant.

Solid Waste

The General Plan EIR also noted impacts related to the siting of solid waste facilities. Future residents of the development would generate demand for additional solid waste capacity. As discussed above, consultation with existing solid waste providers indicated that the project would not result in the need for new solid waste facilities not already planned, and that the existing solid waste facilities would be adequate to serve the project as proposed.

4.15.5 References

http://www.calrecycle.ca.gov. Accessed July 7, 2010.

http://www.co.contra-costa.ca.us/depart/cd/recycle/options/v6073.htm. Accessed July 7, 2010.

Water Master Plan, The Town of Discovery Bay Community Services District, January 2012. www.tdbcsd.ca.gov

Wastewater Master Plan, The Town of Discovery Bay Community Services District, October 2011. www.tdbcsd.ca.gov

Initial Study and Environmental Checklist, Discovery Bay Wastewater Treatment Plant Upgrade, September 3, 2003.

Personal Communication with Jim Dunbar, Potrero Hills Landfill, July 7, 2010.

Virgil Koehne, Town of Discovery Bay Community Service Department. Personal Communication, August 2010, and May 2012.

Rick Howard, Town of Discovery Bay Community Service Department. Personal Communication, August 2011, February 2012, and May 2012.

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4.16 TRANSPORTATION AND CIRCULATION

This section describes the existing traffic and circulation patterns around the project site and its vicinity. The evaluation addresses the potentially significant impacts of the project in terms of trip generation, traffic distribution and assignment, and intersection and roadway levels of service.

A total of 24 intersections and three roadway segments were evaluated using four condition scenarios: Existing, Existing Plus Project, Cumulative No Project, and Cumulative Plus Project. The findings of these evaluations, as prepared in the Traffic Impact Analysis (TIA) by Fehr & Peers Transportation Consultants (2011), are summarized in this section. The TIA is included as **Appendix I** to this draft EIR and is also available for review at Contra Costa County, Department of Conservation and Development, Community Development Division, 651 Pine Street, Martinez, California.

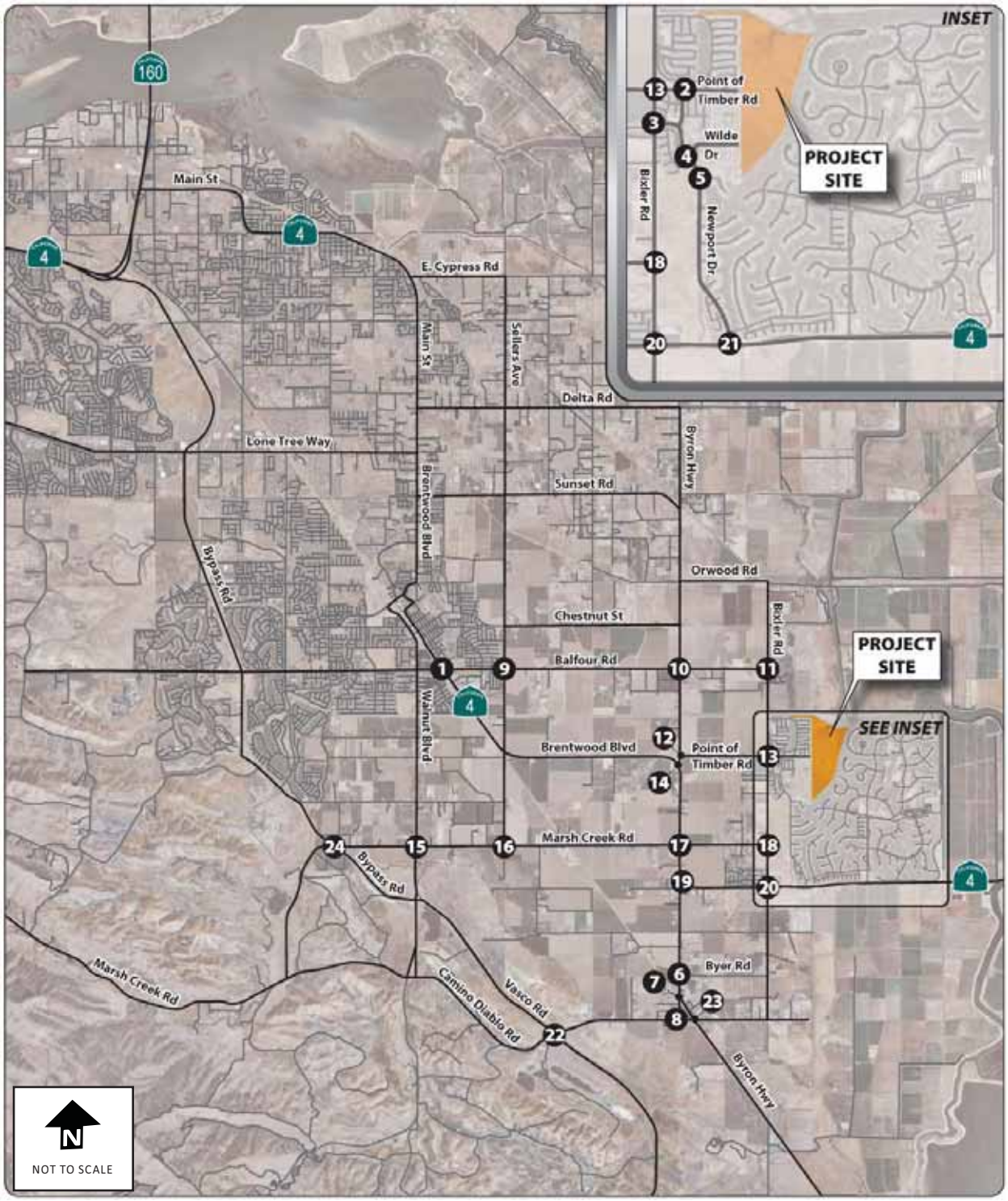
In response to the Notice of Preparation (NOP), the California Department of Transportation (Caltrans) submitted a comment letter requesting that the impacts to the state highway system (i.e., State Route 4 [SR4]) be addressed in the traffic analysis for the project. Potential impacts to SR4 ramp intersections were included in the TIA and are addressed below in **Subsection 4.16.4**, **Analysis of Potential Impacts** of this section.

Caltrans also noted that the project applicant would have to apply for an encroachment permit in the event that traffic control work within the SR4 right-of-way (ROW) is required. The project does not include any work and/or mitigation within the SR4 ROW.

4.16.1 METHODOLOGY

Study Area

Twenty-four intersections and three roadway segments were selected in consultation with Contra Costa County (County) staff. For the purposes of determining whether a project impact is considered significant, these intersections are designated as either Suburban or Semi-Rural. **Figure 4.16-1** shows the location of the study intersections.



Study Intersections and Project Location

Figure 4.16-1

Source: Fehr & Peers, 2011.

Study Intersections:

1. Balfour Road/Brentwood Boulevard (Suburban)
2. Point of Timber Road/Preston Drive/Grand Way (Suburban)
3. Newport Drive/Bixler Road (Suburban)
4. Newport Drive/Slifer Drive (Suburban)
5. Newport Drive/Newport Lane (Suburban)
6. Byer Road/Byron Highway (Semi-Rural)
7. Holway Drive/Byron Highway (Suburban)
8. Camino Diablo Road/Holway Drive (Suburban)
9. Sellers Avenue/Balfour Road (Suburban)
10. Balfour Road/Byron Highway (Semi-Rural)
11. Balfour Road/Bixler Road (Suburban)
12. Point of Timber Road/Byron Highway (Semi-Rural)
13. Point of Timber Road/Bixler Road (Suburban)
14. SR4/Byron Highway (north intersection) (Semi-Rural)
15. Marsh Creek Road/Walnut Boulevard (Suburban)
16. Marsh Creek Road/Sellers Avenue (Semi-Rural)
17. Marsh Creek Road/Byron Highway (Semi-Rural)
18. Marsh Creek Road/Bixler Road (Suburban)
19. SR4/Byron Highway (south intersection) (Semi-Rural)
20. SR4/Bixler Road (Suburban)
21. SR4/Newport Drive (Suburban)
22. Camino Diablo Road/Vasco Road (Semi-Rural)
23. Camino Diablo Road/Byron Highway (Suburban)
24. SR4 Bypass/Marsh Creek Road (Semi-Rural)

Study area roadway segments:

1. Camino Diablo Road west of Vasco Road
2. Marsh Creek Road west of SR4
3. Vasco Road south of Camino Diablo Road

Analysis Scenarios

Traffic Impacts were evaluated for the weekday peak commute periods (i.e., AM and PM) using the following four condition scenarios:

- *Existing* – Existing conditions based upon data collected in 2010.
- *Existing Plus Project* - Existing conditions based on data collected in 2010 plus project-related traffic.
- *Cumulative No Project* – Future (Year 2035) forecast conditions based on the Contra Costa Transportation Authority (CCTA) model.
- *Cumulative Plus Project* – Future (Year 2035) forecast conditions based on the CCTA model plus project-related traffic.

Analysis Method

Transportation engineers and planners use the term level of service (LOS) to qualitatively describe the operations of transportation facilities. Level of service ranges from LOS A indicating free-flow conditions with little or no delay to LOS F representing oversaturated conditions with excessive delays. The analysis methods for each of the transportation facilities evaluated in this section are described below.

Signalized Intersections

Operations of the signalized study intersections were evaluated using Contra Costa Transportation Authority Level of Service (CCTALOS) method. The CCTALOS method uses various intersection characteristics (such as traffic volumes, lane geometry, and signal phasing) to estimate an intersection's volume to capacity (V/C) ratio. **Table 4.16-1** summarizes the relationship between the V/C ratio and LOS for signalized intersections.

Table 4.16-1 Signalized Intersection LOS Criteria

Level of Services	Description	Sum of Critical V/C Ratio
A	Progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.	< 0.60
B	Progression is good, cycle lengths are short, or both. More vehicles stop than with LOS A, causing higher levels of average delay.	0.61 - 0.70
C	Higher congestion may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level, though many vehicles still pass through the intersection without stopping.	0.71 - 0.80
D	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, and/or high V/C ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	0.81 - 0.90
E	This level is considered by many agencies to be the limit of acceptable delay. High delay values generally indicate poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences.	0.91 - 1.00
F	This level is considered unacceptable with oversaturation, which is when arrival flow rates exceed the capacity of the intersection. This level may also occur at high V/C ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be contributing factors to such delay levels.	> 1.00

Source: Fehr & Peers, 2011.

Unsignalized Intersections

For unsignalized (all-way stop-controlled and side-street stop-controlled) intersections, the 2000 *Highway Capacity Manual* (HCM) – *Special Report 209*, Chapter 17 method was used. With this method, operations are also defined by the average control delay per vehicle, based on the delay associated with the stop signs. For side-street stop-controlled intersections, the delay is estimated for movements that must yield the right-of-way.[1] An intersection average delay is estimated for all-way stop intersections. **Table 4.16-2** summarizes the relationship between delay and LOS for unsignalized intersections.

[1] Includes those turning movements from stopped approaches and left-turns from major thoroughfares.

Table 4.16-2 Unsignalized Intersection LOS Criteria

Level of Service	Description	Average Control Delay Per Vehicle (Seconds)
A	Little or no traffic delays	≤ 10.0
B	Short traffic delays	> 10.0 to 15.0
C	Average traffic delays	> 15.0 to 25.0
D	Long traffic delays	> 25.0 to 35.0
E	Very long traffic delays	> 35.0 to 50.0
F	Extreme traffic delays with intersection capacity exceeded	> 50.0

Source: Fehr & Peers, 2011.

Signal Warrant Analysis

Peak hour volume traffic signal warrant analyses were conducted for all unsignalized study intersections not meeting acceptable LOS standards. The signal warrant analysis was conducted using the criteria described in the Federal Highway Administration's *Manual of Uniform Traffic Control Devices* (MUTCD). MUTCD contains eight warrants (i.e., indicators) which identify whether the installation of a signal would improve traffic conditions at an intersection operating at an unacceptable LOS. Generally, meeting one of the signal warrants could justify signalization of an intersection.

Roadway Segments

Roadways identified as Routes of Regional Significance in the *East County Action Plan* were evaluated. The study area roadway segments were evaluated using the Highway Capacity Software (HCS), which applies the two-lane highway analysis methodology from Chapter 20 of the *2000 Highway Capacity Manual* (HCM). **Table 4.16-3** summarizes the relationship between percent time-spent-following (PTSF)[2] and average travel speed with the LOS criteria for the two-lane highway segment analysis.

[2] Percent-time-spent-following (PTSF) is the average percent of total travel time that vehicles must travel in platoons behind slower vehicles due to inability to pass on a two-lane highway. It therefore represents the freedom to maneuver and convenience of travel.

Table 4.16-3 Two-Lane Highway LOS Criteria

Level of Service	Percent of Time Spent Following	Average Speed (mph)
A	≤ 35%	> 55
B	> 35-50%	> 50-55
C	> 50-65%	> 45-50
D	> 65-80%	> 40-45
E	> 80%	≤ 40
F	Applies whenever the flow rate exceeds the segment capacity	

Source: Fehr & Peers, 2011.

LOS Standards

The LOS standards that apply to all study intersections and roadways within the project site and its vicinity are listed in **Subsection 4.16.4**.

4.16.2 EXISTING CONDITIONS

Roadway System

The project site is located east of Bixler Road on Point of Timber Road, in Discovery Bay. A gated entry on Point of Timber Road provides major access to the project site. Local access to the project site is provided by Bixler Road, Byron Highway, Camino Diablo, and Vasco Road. Regional access to the project site is provided by SR4, located approximately 1.5 miles south of the project site.

Highways

SR4 is a two-lane undivided highway that is east-west oriented east of the intersection of Byron Highway (south) and west of the intersection of Byron Highway (north). Between the two intersections with Byron Highway, SR4 and Byron Highway are considered the same highway, and are oriented in a north-south direction. The posted speed limit on this highway is 55 miles-per-hour (mph), and there are paved shoulders.

Byron Highway is a two-lane north-south undivided highway that extends north of Balfour Road and south to the City of Tracy. As described above, Byron Highway intersects SR4 in two locations, and is considered SR4 in between the two intersections. The posted speed limit on this highway varies between 35 mph and 55 mph. Paved shoulders are provided on certain segments of this roadway.

Major Roadways

Bixler Road is a two-lane north-south road that extends north of Balfour Road to south of SR4. This segment of Bixler Road has been improved with paved shoulders, turn-lanes at major intersections, bicycle lanes, and sidewalks adjacent to the existing urban development. The posted speed limit is 50 mph.

Vasco Road is a two-lane north-south roadway that connects the cities of Brentwood and Livermore. Turn-lanes are provided at major intersections. The posted speed limit varies between 45 and 55 mph.

Camino Diablo is a two-lane east-west roadway that connects Byron Highway and Marsh Creek Road. The posted speed limit is 50 mph. There are no paved shoulders on this roadway.

Other Roadways

Other roadways in the project vicinity include Marsh Creek Road, Balfour Road, Walnut Boulevard, Sellers Avenue, and Point of Timber Road, all of which are two-lane rural roads. **Figure 4.16-1** includes a map of the study intersections as they relate to these local roadways.

Existing Traffic and Circulation

Traffic Counts

Intersection turning movement counts were conducted for morning (6:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak periods in January 2010, while County schools were in session.

Typical peak hour traffic counts are taken from 7:00 to 9:00 AM and from 4:00 to 6:00 PM. However, County staff requested that counts to be taken outside typical peak hours to address concerns regarding the actual peak hours of travel for residents of far eastern Contra Costa County. The observed start of the morning peak hour began between 6:30 AM and 7:45 AM, depending on the intersection. The start of the PM peak hour ranged from 4:00 PM to 5:00 PM.

Existing Intersection Operations

Table 4.16-4 summarizes the results of the existing conditions at the 24 intersections that were evaluated. These results are based on both CCTALOS and HCM methods previously discussed in **Subsection 4.16.1**, **Methodology**. All signalized intersections (Nos. 1, 14, 15, 17, 19, 20, 22, and 24) were analyzed using the CCTALOS method.

Table 4.16-4 Existing Intersection Peak Hour Levels of Service

Location	Control[1]	Peak Hour	HCM Method		CCTALOS Method	
			Delay[2,3]	LOS[4]	V/C Ratio	LOS[4]
1. Balfour Road/ Brentwood Boulevard	Signal	AM	n/a	n/a	0.52	A
		PM	n/a	n/a	0.50	A
2. Point of Timber Road/Preston Drive Way/ Grand Way	AWS	AM	8.3	A	n/a	n/a
		PM	7.7	A	n/a	n/a
3. Newport Drive/Bixler Road	SSS	AM	5.9 (19.6)	A (C/WB)	n/a	n/a
		PM	2.6 (13.7)	A (B/WB)	n/a	n/a
4. Newport Drive/Slifer Drive	SSS	AM	3.1 (9.3)	A (A/WB)	n/a	n/a
		PM	3.1 (9.1)	A (A/WB)	n/a	n/a
5. Newport Drive/ Newport Lane	SSS	AM	0.4 (8.9)	A (A/WB)	n/a	n/a
		PM	0.6 (9.0)	A (A/WB)	n/a	n/a
6. Byer Road/Byron Highway	SSS	AM	3.0 (14.4)	A (B/WB)	n/a	n/a
		PM	0.8 (16.8)	A (C/WB	n/a	n/a
7. Holway Drive/Byron Highway	SSS	AM	0.9 (13.9)	A (B/EB)	n/a	n/a
		PM	10.4 **(31.2)**	A **(D/EB)**	n/a	n/a
8. Camino Diablo Road/Holway Drive	SSS	AM	6.8 (12.5)	A (B/EB)	n/a	n/a
		PM	5.5 (26.9)	A (D/NB)	n/a	n/a
9. Sellers Avenue/ Balfour Road	AWS	AM	10.0	A	n/a	n/a
		PM	10.4	B	n/a	n/a
10.Balfour Road/Byron Highway	AWS	AM	10.0	A	n/a	n/a
		PM	9.2	A	n/a	n/a
11. Balfour Road/Bixler Road	AWS	AM	8.8	A	n/a	n/a
		PM	8.9	A	n/a	n/a
12.Point of Timber Road/Byron Highway	SSS	AM	5.6 (10.4)	A (B/WB)	n/a	n/a
		PM	3.2 (10.0)	A (A/WB)	n/a	n/a

Location	Control[1]	Peak Hour	HCM Method		CCTALOS Method	
			Delay[2,3]	LOS[4]	V/C Ratio	LOS[4]
13. Point of Timber Road/ Bixler Road	SSS	AM	9.9	A	n/a	n/a
		PM	9.0	A	n/a	n/a
14.SR4/Byron Highway (north intersection)	Signal	AM	n/a	n/a	0.32	A
		PM	n/a	n/a	0.50	A
15. Marsh Creek Road/Walnut Boulevard	Signal	AM	n/a	n/a	0.56	A
		PM	n/a	n/a	0.68	A
16. Sellers Avenue/ Marsh Creek Road	SSS	AM	12.9	B	n/a	n/a
		PM	12.1	B	n/a	n/a
17. Marsh Creek Road/Byron Highway	Signal	AM	n/a	n/a	0.29	A
		PM	n/a	n/a	0.31	B
18. Marsh Creek Road/Bixler Road	SSS	AM	1.2 (14.9)	A (B/EB)	n/a	n/a
		PM	2.2 (13.6)	A (B/EB)	n/a	n/a
19. SR4/Byron Highway (south intersection)	Signal	AM	n/a	n/a	0.77	C
		PM	n/a	n/a	0.58	A
20. SR4/Bixler Road	Signal	AM	n/a	n/a	0.53	A
		PM	n/a	n/a	0.44	A
21. SR4/ Newport Drive	SSS	AM	3.7 (28.0)	A (D/SB)	n/a	n/a
		PM	1.6 (16.9)	A (C/SB)	n/a	n/a
22. Camino Diablo Road/Vasco Road	Signal	AM	n/a	n/a	0.61	B
		PM	n/a	n/a	0.63	B
23. Camino Diablo Road/Byron Highway	SSS	AM	5.3 (17.1)	A (C/WB)	n/a	n/a
		PM	6.5 (17.0)	A (C/WB)	n/a	n/a
24. SR 4 Bypass / Marsh Creek Road	Signal	AM	n/a	n/a	0.39	A
		PM	n/a	n/a	0.39	A

Source: Fehr & Peers, 2011.
1. Signal = Signalized intersection, SSS = Side-street stop-controlled intersection, AWS = All-way stop-controlled intersection.
2. Signalized and All-Way Stop intersection LOS based on average intersection control delay according to the 2000 *Highway Capacity Manual* (Transportation Research Board, 2000).
3. For side-street stop-controlled intersections, delay for worst approach (in seconds per vehicle) is presented. All calculations reflect the 2000 *Highway Capacity Manual* methods. Delay for worst approach is provided (in parentheses) for SSS controlled intersections.
4. LOS = Level of Service
5. *CCTA* volume to capacity (v/c) ratios. Signalized intersection LOS based on *Technical Procedures* (Contra Costa Transportation Authority, 1997)

The remaining unsignalized intersections were analyzed using the HCM method. **Figures 4.16-2a** and **4.16-2b** present the existing traffic counts for the study intersections at peak hours. As shown, all of the study intersections operate at acceptable levels of service during both peak periods.

The eastbound approach at the Holway Drive/Byron Highway intersection (No. 7) operates at unacceptable LOS D during the PM peak hour; however, the overall intersection operates at LOS A. Detailed intersection LOS calculation worksheets are provided in Appendix B of the TIA (see **Appendix I** of this draft EIR).

Existing Roadway Segment Operations

Table 4.16-5 summarizes the results of the roadway segment analysis conducted for Marsh Creek Road, Vasco Road, and Camino Diablo Road. Both Marsh Creek Road and Camino Diablo Road operations meet the target Multi-modal Transportation Service Objective (MTSO) of LOS D or better. However, Vasco Road operates at unacceptable LOS E in the northbound or southbound directions during the AM or PM peak hour.

Table 4.16-5 Existing Conditions Roadway Segment Delay Index Summary

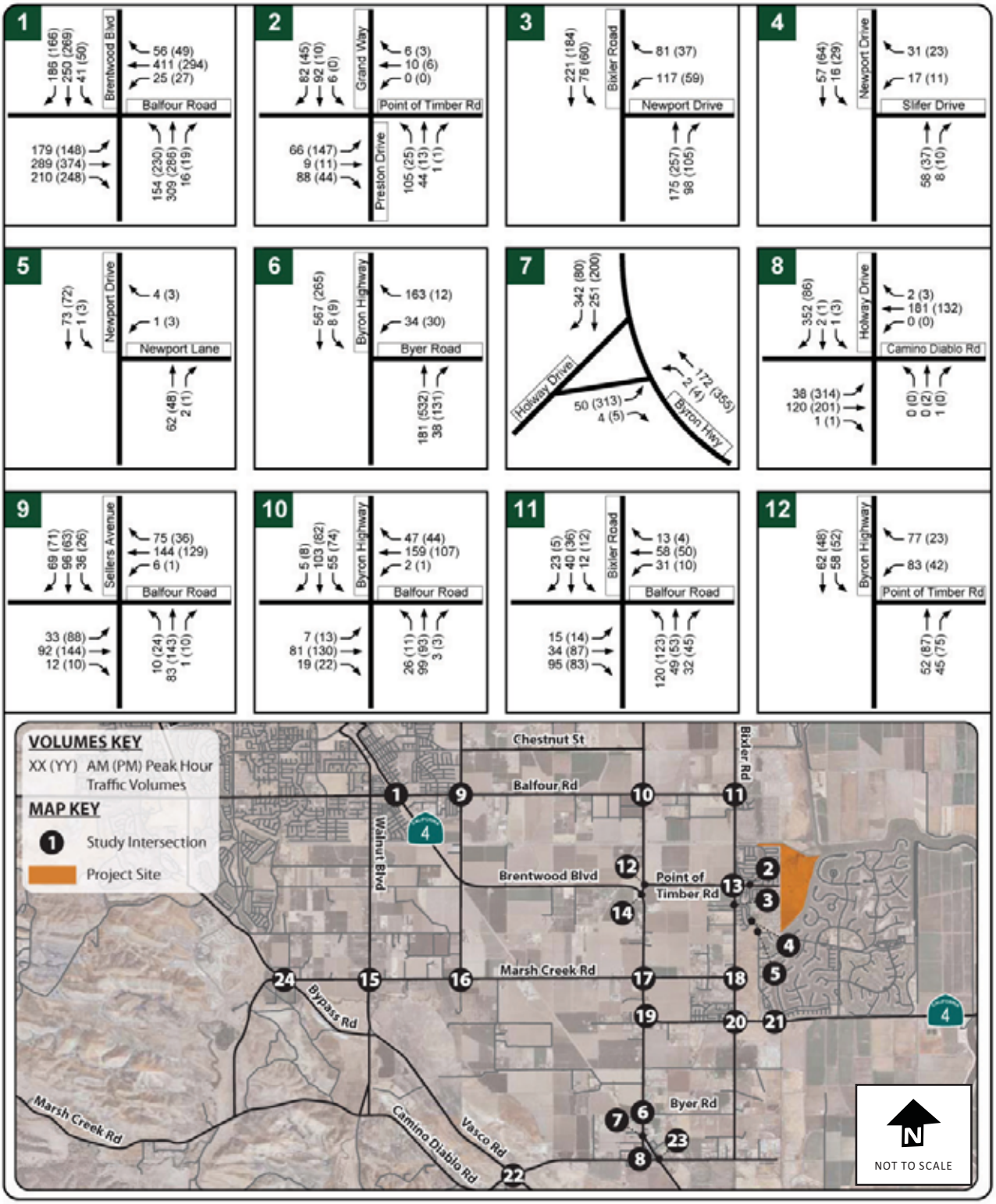
Roadway Segment	Target MTSO[1]	Direction	Eastbound/ Northbound	Westbound/ Southbound
Marsh Creek Road west of SR4	D	AM	C	D
		PM	D	D
Vasco Road south of Camino Diablo Road	D	AM	**E**	**E**
		PM	**E**	**E**
Camino Diablo Road west of Vasco Road	D	AM	C	C
		PM	C	C

Source: Fehr & Peers, 2011
Bold indicates roadway segment not meeting MTSO
1. Target Multi-Modal Transportation Service Objective (MTSO)

Existing Multi-Modal Facilities

Bicycle and Pedestrian Facilities

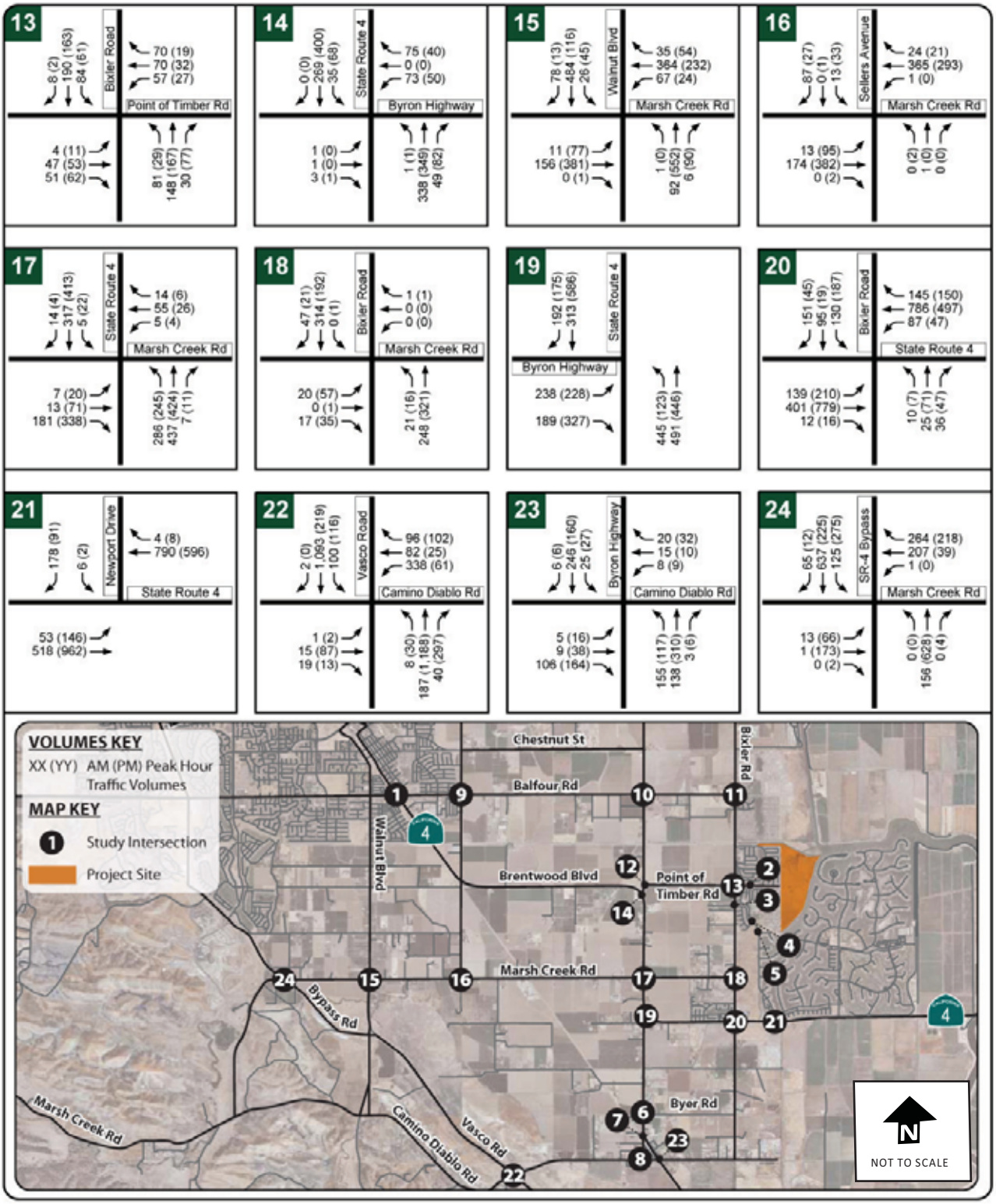
Caltrans standards provide for three distinct types of bikeway facilities, as generally described below:



Existing Conditions Peak Hour Intersection Traffic Volumes

Figure **4.16-2a**

Source: Fehr & Peers, 2011.



Existing Conditions Peak Hour Intersection Traffic Volumes

Figure **4.16-2b**

Source: Fehr & Peers, 2011.

- **Class I Bikeway** (Bike Path) provides a completely separate right-of-way for the exclusive use of bicycles and pedestrians. Vehicle and pedestrian cross-flow is minimized.
- **Class II Bikeway** (Bike Lane) provides a restricted right-of-way designated for the use of bicycles with a striped lane on a street or highway. Bike lanes are generally five feet wide. Vehicle and pedestrian cross-flow is permitted. In some cases, vehicle parking is permitted adjacent to bike lanes.
- **Class III Bikeway** (Bike Route) provides a right-of-way designated by signs or pavement markings for shared use between bicyclists and motor vehicles.

Class II Bikeways are provided on Bixler Road and Point of Timber Road. A Class III Bikeway is designated on Marsh Creek Road. As part of the *East County Bikeway Plan 2005 Update*, additional Class III facilities are planned along Vasco Road, Camino Diablo, SR4, and Walnut Boulevard. Class II facilities are planned on Point of Timber Road and Byron Highway as well as a Class I bike path along the East Contra Costa Irrigation District Main Canal Trail (between Point of Timber Road and Balfour Road).

Sidewalks are provided on Point of Timber Road, on the east side of Bixler Road between SR4 and Balfour Road, and on segments of Byron Highway.

Transit

Tri Delta Transit provides bus service to Discovery Bay. Route 386 provides bus service between the Discovery Bay Park and Ride and the Brentwood Park and Ride. This route provides service three times per day in each direction on weekdays only, with stops on the Bixler Road/Point of Timber Road and Point of Timber Road/Preston Drive intersections, as well as the Discovery Bay Park and Ride. As of March 2010, Route 386 serves 21 passenger trips per day on average.

Boat Traffic

The northwest portion of Kellogg Creek at the Indian Slough junction has been identified as a congestion point due to its narrow width, high traffic volume (up to approximately 1,000 boats/day in summer), and confined tidal flows. The minimum channel width along this reach is approximately 100 feet, which meets the width requirements for recreational marinas based on both federal (100 feet) and state (75 feet) guidance. However, the US Army Corps of Engineers (Corps) recommends consideration of additional factors such as vessel size and maneuverability, traffic congestion, and the effects of wind, waves, and currents, which may increase the design width beyond the minimum requirements.

Federal and state guidance does not provide recommendations for additional channel width required due to boat traffic on a per boat basis for inland waterways such as Discovery Bay. However, for the purposes of this analysis, the methodology for sizing entrance channels is based on a minimum required width for the first 1,000 boats plus 100 feet of width per additional 1,000 boats serviced by the channel. For example, a channel servicing 2,000 boats would require an additional 100 feet of width beyond the existing 100 feet minimum width requirement.

The same type of relationship is applied here to evaluate the existing channel width in Kellogg Creek. Assuming the northwest portion of Kellogg Creek services approximately 75 percent of the waterfront homes in Discovery Bay, the channel should be sized for approximately 2,025 boats.[3] The recommended channel size based on this guidance (assuming a minimum state required width of 75 feet and 1,775 boats beyond the first 1,000) would be approximately 250 feet (i.e., an additional 175 feet of width required due to high volume of boats). Based on this rough guidance, the northwest portion of Kellogg Creek is likely undersized relative to the existing boat traffic.

The waterways within Discovery Bay are designated as no wake zones with a posted speed limit of 5 miles per hour (mph). The no wake zone begins at the entrances to Discovery Bay from Indian Slough.

4.16.3 REGULATORY SETTING

Contra Costa County General Plan

The Transportation & Circulation Element of the Contra Costa County General Plan contains the following relevant policies related to transportation and circulation:

Transportation & Circulation Element

5-4 Development shall be allowed only when transportation performance criteria are met and necessary facilities and/or programs are in place or committed to be developed within a specific period of time.

5-8 Direct frontage and access points on arterials and collectors shall be minimized.

5-13 Physical conflicts between vehicular traffic, bicyclists, and pedestrians shall be minimized.

[3] Seventy-five percent of the total 2,700 waterfront homes in Discovery Bay.

5-14 Adequate lighting shall be provided for vehicular, pedestrian and bicyclists safety, consistent with neighborhood desires.

5-15 Curbs and sidewalks shall be provided in appropriate areas.

5-16 Emergency response vehicles shall be accommodated in development project design.

5-20 New subdivisions should be designed to permit convenient pedestrian access to bus transit and efficient bus circulation patterns.

5-25 Planning and provision for a system of safe and convenient pedestrian ways, bikeways and regional hiking trails shall be continued as a means of connecting community facilities, residential areas, and business districts, as well as points of interest outside the communities utilizing existing public and semi-public right-of-way.

5-31 Local road dimensions shall complement the scale and appearance of adjoining properties.

5-32 Landscaping and maintenance of street medians and curb areas shall be provided where appropriate.

Project Consistency Analysis

The development of the project site would generate new traffic volumes that would reduce the LOS ratings for some of the nearby intersections and roadways. Implementation of **Mitigation Measures TRA-1** and **TRA-2** would lessen these negative effects so that the impacted facilities would be able to operate at an acceptable LOS, consistent with Policy 5-4.

Streets would be designed in compliance with County standards and requirements of emergency service providers. In addition, access to the project site would be via Point of Timber Road, which is not considered an arterial or collector street. Incorporating an access point along this roadway would therefore not conflict with Policy 5-8.

Consistent with Policy 5-16, Wilde Drive would provide emergency vehicle access (EVA) only to the project site. The Wilde Drive EVA would also serve as a publicly accessible pedestrian/bike access. An internal EVA road would be constructed in the northwest portion of the project site through the proposed wetland mitigation and open space area, consistent with Policy 5-16. The EVA road would also serve as a publicly accessible pedestrian/bike trail and would include interpretive signage,

kiosks, and seating areas. Other pedestrian walkway systems included as part of the project are discussed further in **Subsection 4.16.4**. The provision of these facilities would make the project consistent with Policy 5-13, 5-15, 5-20, and 5-25.

Street medians and curb areas would be built in compliance with County standards, and would provide new landscaping where appropriate, consistent with Policy 5-32. Similarly, the project applicant has prepared a lighting plan for the review and approval of the Contra Costa County Public Works Department and Zoning Administrator. The review and approval would ensure that adequate lighting is provided for vehicular and pedestrian safety, consistent with Policy 5-14.

The road dimensions on the project site would be similar to the adjacent Discovery Bay and Discovery Bay West residential subdivisions, consistent with Policy 5-31.

4.16.4 ANALYSIS OF POTENTIAL IMPACTS

CEQA Significance Criteria

Appendix G of the CEQA Guidelines identifies environmental issues to be considered when determining whether a project could have significant effects on the environment. As identified in Appendix G, the project would have a significant transportation and traffic impact if it would:

a) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks;

b) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses;

c) Result in inadequate emergency access;

d) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities;

e) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit; or

f) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways.

Standards of Significance

The County's LOS standards listed below were used to determine whether the project would result in a significant impact to the study intersections and/or roadway segments. In addition, the standards included for transit systems, pedestrian and bicycle facilities, and site access and internal circulation were developed in coordination with County staff, and are based on accepted industry practice and adopted guidelines within the *Contra Costa General Plan, East Contra Costa County Bikeway Plan 2005 Update, and 2009 Countywide Bicycle and Pedestrian Plan*.

Signalized Intersections

- **Signalized intersections designated as "Suburban" (Nos. 1, 15, and 20):** Change from LOS low-D (a volume to capacity ratio of 0.84 based on CCTALOS standards) or better to LOS high-D, E, or F.
- **Signalized intersections designated as "Semi-Rural" (Nos. 14, 16, 17, 19, 22, and 24):** Change from LOS high-C (a volume to capacity ratio of 0.79 based on CCTALOS standards) or better to LOS D, E, or F.
- **All signalized intersections:** Deterioration in already unacceptable intersection operations by a change in volume to capacity (V/C) ratio of more than 0.01

Unsignalized Intersections

- **All-way stop (AWS) intersections designated as "Suburban" (Nos. 2, 9, and 11):** Change from an average LOS low-D (an average delay of 30 seconds based on HCM standards) or better to LOS high-D, E or F; and intersection meets MUTCD Peak Hour Signal Warrant.
- **All-way stop (AWS) intersections designated as "Semi-Rural" (No. 10):** Change from an average LOS low-C (an average delay of 25 seconds based on HCM standards) or better to LOS D, E or F; and intersection meets MUTCD Peak Hour Signal Warrant.
- **Side-street stop (SSS) intersections designated as "Suburban" (Nos. 3, 4, 5, 7, 8, 13, 18, 21, 23):** Change from LOS low-D (an average delay of 30 seconds based on HCM standards) or better to LOS high-D, E or F (except at intersections on SR 4); and intersection meets MUTCD Peak Hour Signal Warrant.

- **Side-street stop (SSS) intersections designated as "Semi-Rural" (Nos. 6, 12, and 16):** Change from LOS C (an average delay of 25 seconds based on HCM standards) or better to LOS D, E or F; and intersection meets MUTCD Peak Hour Signal Warrant.
- **All unsignalized intersections:** Deterioration in already unacceptable intersection operations by a change in average delay of more than 5 seconds.

Roadway Segments

- Change from the target Multi-Modal Transportation Service Objective (MTSO) of LOS D or better to an LOS E or F.

Transit System

Transit impacts would be considered significant if the project conflicts or creates inconsistencies with adopted transit system plans, guidelines, policies or standards.

Pedestrian and Bicycle Systems

Pedestrian and Bicycle impacts would be considered significant if the project conflicts or creates inconsistencies with adopted bicycle system plans, guidelines, policies or standards.

Site Access and Internal Circulation

A site access or internal circulation impact would be considered significant if the project would result in any of the following:

- Inadequate emergency access; or
- Designs for on-site circulation, access and parking areas that fail to meet industry standard design guidelines.

Discussion of No Impacts

Analysis of the project details and site characteristics in the context of the significance criteria stated above shows that no impact would result for four of the criteria. The following discussion presents the evidence in support of this conclusion.

a) Would the project result in a change to air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?

The project does not involve aircraft or activities that would interfere with air traffic patterns. The project includes a 100-foot by 100-foot Medivac helicopter landing area near the Marine Patrol Substation. However, emergencies that would require a Medivac helicopter landing on the project site are rare and would not result in a change to existing air traffic patterns since Medivac helicopters currently land on nearby levees when called for an emergency response. Furthermore, the closest public or private airstrip is more than 2 miles away.

b) Would the project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses?

Internal circulation was reviewed with respect to the proposed roadway lane widths, sight distance, and vehicle/pedestrian/bicycle conflicts. The project includes seven streets and cul-de-sacs that would be privately owned and maintained by a homeowners association. Pedestrian walkways would be provided on 5 and 8-foot sidewalks on both sides of the internal roadways, with a 5-foot landscaped buffer between the roadway and sidewalk throughout the proposed development. Other than the EVA/public trail, the roadways within the project site would not have bike lanes. Therefore, bicyclists would be sharing the road with motor vehicles. Given that the traffic volumes and vehicular speeds within the project site are anticipated to be low, road-sharing is not anticipated to cause a major conflict between bicyclists and motor vehicles.

In addition, the internal roadways were evaluated to determine whether adequate sight distance is provided for pedestrian and bicyclist safety. The Caltrans Highway Design Manual provides sight distance standards based on the design speed of the roadway. A design speed of 25 miles per hour (mph) was used for the internal roadways, which corresponds to a minimum sight distance of 155 feet. All of the internal intersections provide adequate sight distance for pedestrian and bicyclist safety.

c) Would the project result in inadequate emergency access?

Streets would be designed in compliance with County private road standards and requirements of emergency service providers. With two exceptions, streets would include a 56-foot right-of-way (36 feet measured from each edge of pavement), with room for parking on both sides and 10 feet on each side of the street for separated sidewalks and a landscaped linear bioretention facility.[4]

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[4] Linear bioretention facilities are landscaped elements designed to remove silt and pollution from surface runoff water.

- Exception #1: The extension of Point of Timber Road from its current terminus to the site's internal circulation roadway would be 40-feet wide within a 70-foot right-of-way.
- Exception #2: 'C' Court is a short cul-de-sac with homes fronting on one side only. Therefore, it is designed within a 43-foot right-of-way and has a 28-foot road measured from each edge of pavement, a 5-foot linear bioretention facility on both sides, and parking and a 5-foot sidewalk on only one side. As such, it meets County private road standards and Fire District requirements cul-de-sac bulbs would be designed to meet Fire District turning-radius requirements.

In addition, an EVA road would be constructed in the northwest portion and southwest portion of the project site. The EVA in the northwest portion of the site would be constructed through the proposed wetland mitigation and open space area. The applicant proposes that EVA/public trail to be 20 feet wide, with an 8-foot paved trail in the middle and a 6-foot compacted aggregate shoulder on each side. The EVA would connect the northernmost portion of 'A' Street to the northernmost portion of 'B' Street, as illustrated in **Figure 3-5**.[5] A similar EVA would be constructed to the sheriff's marine patrol substation. As such, the project would provide adequate emergency access to the entire project site.

d) Would the project conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

There is no planned transit service within the project development. However, the project would connect to existing sidewalks on Point of Timber Road and Wilde Drive. These sidewalks would provide public pedestrian/bicycle access to the open space areas within the project site. The sidewalk connections would also provide access from the site to the closest existing transit service (at the intersection of Point of Timber Road/Preston Drive), schools, and parks. As such, the project would not conflict with adopted pedestrian plans or guidelines identified in the *Contra Costa General Plan, East Contra Costa County Bikeway Plan 2005 Update,* or *2009 Countywide Bicycle and Pedestrian Plan*. The project is also consistent with the *East County Trails Master Plan* dated July 2009. The Master Plan envisions access through the Pantages site, but does not identify a precise alignment. In conformance with this Master Plan, the project provides access via the public trail

[5] Street names will be changed prior to final subdivision map.

through the emergent marsh area. Trail users can also exit the Pantages site and connect to other existing and planned trails that provide access to the south towards Highway 4, as shown on the Master Plan

The two Tri Delta Transit routes that would serve the project site currently operate well under capacity. Route 386 has a daily capacity of 312 trips but currently serves 21 average trips per day (approximately 7 percent capacity). The Delta Express has a capacity of 224 trips per day and currently serves 59 average trips per day (approximately 26 percent capacity). The excess capacity available on the existing transit system would accommodate additional transit trips generated by the project. The project does not conflict with any transit system plans or guidelines and would therefore not create an impact.

Discussion of Less-than-Significant Impacts

Analysis of the project details and site characteristics in the context of the significance criteria stated above shows that less-than-significant impacts would result for two of the criteria. The following discussion presents the evidence in support of this conclusion.

e) Would the project conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system?

f) Would the project conflict with an applicable congestion management program?

Project Trip Generation

The amount of traffic projected to enter and exit a site is referred to as the project's trip generation. Trip generation estimates for the project were calculated using trip generation data published in the Institute of Transportation Engineers' (ITE) 2*008 Trip Generation (8th Edition)* and are presented below in **Table 4.16-6**. The project, as proposed, is estimated to generate approximately 2,790 daily trips, 219 AM peak hour trips, and 295 PM peak hour trips.[6]

[6] The project applicant is required to develop a Transportation Demand Management (TDM) program pursuant to Section 82-32.010 of the County Code, which applies to residential projects that would result in 13 or more dwelling units. Possible trip generation reductions from implementation of the TDM program were not applied to the trip generation in order to provide a more conservative analysis.

Table 4.16-6 Pantages Bays Trip Generation Estimates

Land Use	Size (Dwelling Units)	Daily	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Single Family[1]	292	2,790	55	164	219	186	109	295

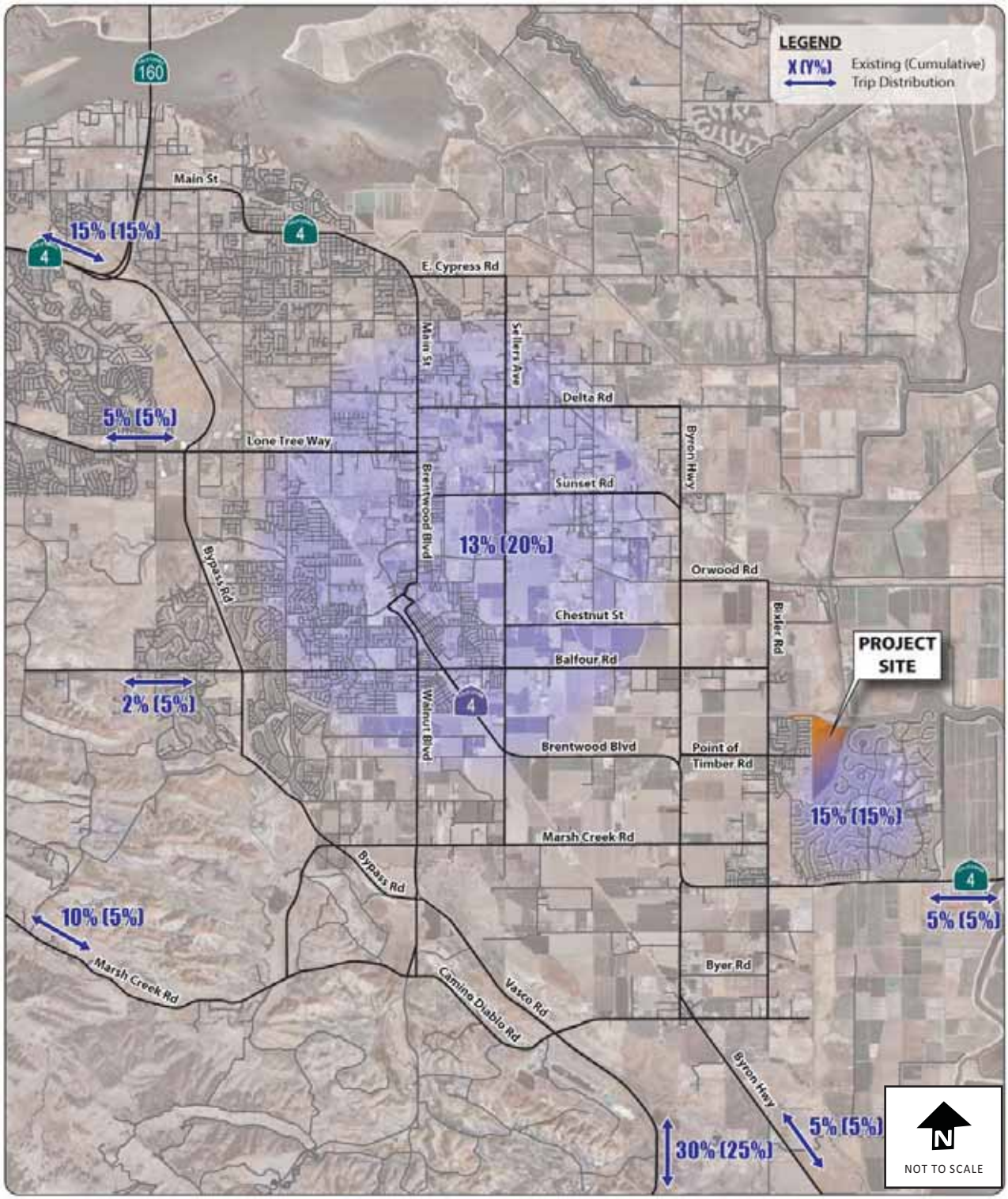
Source: Fehr & Peers, 2011.
Note: DU = dwelling units.
1. Trip generation based on the average rates for Single-Family Detached Housing (Land Use 210) in the Institute of Transportation Engineers' (ITE) Trip Generation (8th Edition), as presented below.
Daily Average Rate: T = 9.57 * X
AM Average Rate: T = 0.75 * X (inbound = 25%, outbound = 75%)
PM Average Rate: T = 1.01 * X (inbound = 63%, outbound = 37%)
Where: T = trip ends and X = number of dwelling units.

The project also includes a Sheriff's Marine Patrol station. The station is expected to be staffed during summer weekends to patrol the waterways of surrounding the project site. As such, the station is not expected to generate a significant number of vehicle trips during the weekday peak hours analyzed in this report. Furthermore, due to the maritime nature of the station, some officers may arrive via water.

Project Trip Distribution and Assignment

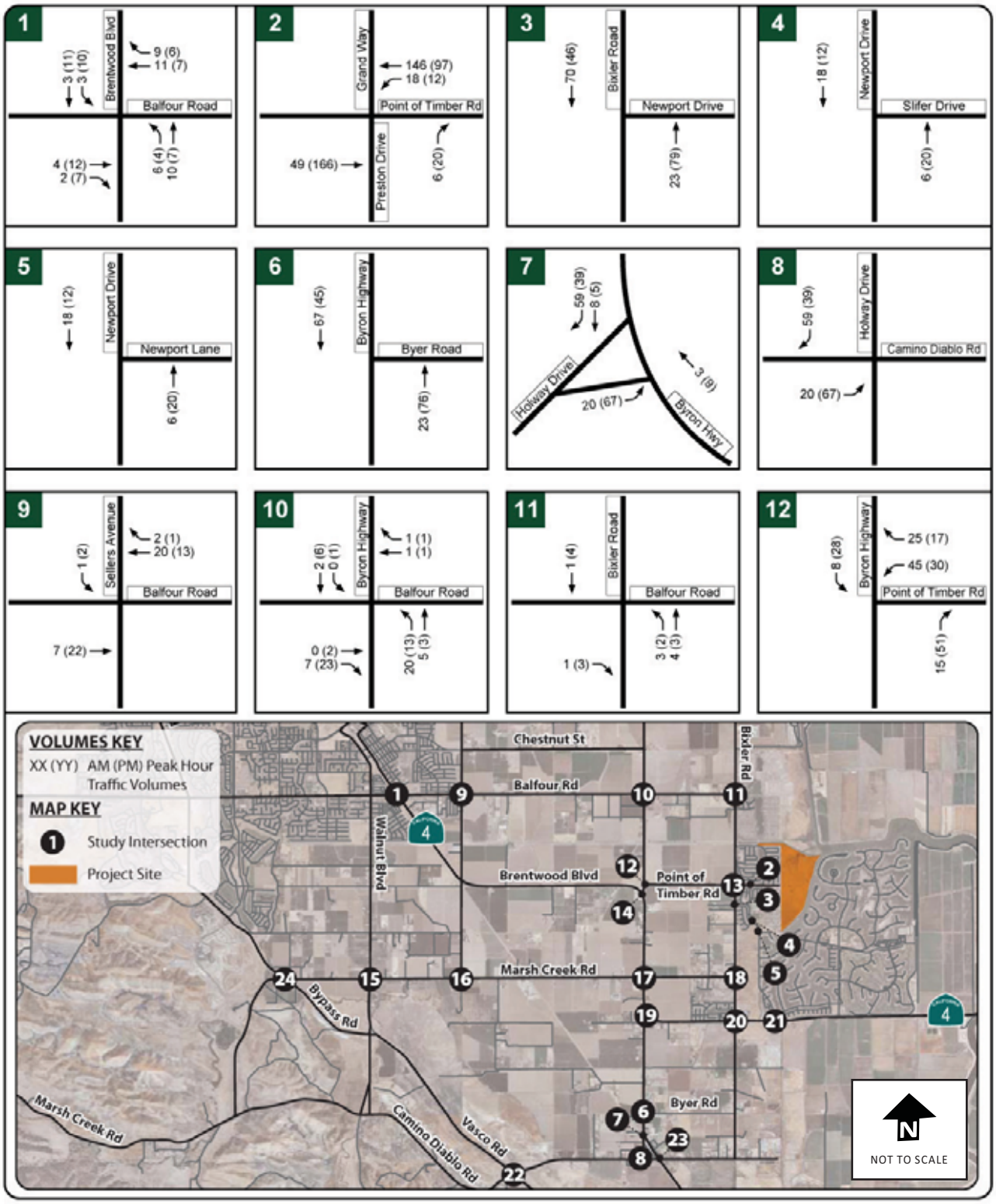
The routes that trips use to approach and depart from a site and the percentage of project traffic anticipated to use each route is known as a project's trip distribution. Using the CCTA travel demand model and knowledge of existing travel patterns, trip distribution percentages were developed for the existing (2010) and cumulative (2035) conditions in the project vicinity. These percentages were presented to and approved by County staff in December 2009. Two different trip distribution percentages were computed because the planned growth in the area would affect project trips in the future, with a greater percentage of trips remaining in the Brentwood area under cumulative conditions.

Figure 4.16-3 presents the trip distributions for the existing and cumulative conditions. Peak hour project trip assignments to each study intersection for Existing Plus Project conditions are presented on **Figure 4.16-4a** and **Figure 4.16b**. The peak hour project traffic volumes were added to the existing traffic volumes to determine Existing Plus Project traffic impacts. These peak hour traffic volumes are shown in **Figures 4.16-5a** and **4.16-5b**.



Project Trip Distribution Figure **4.16-3**

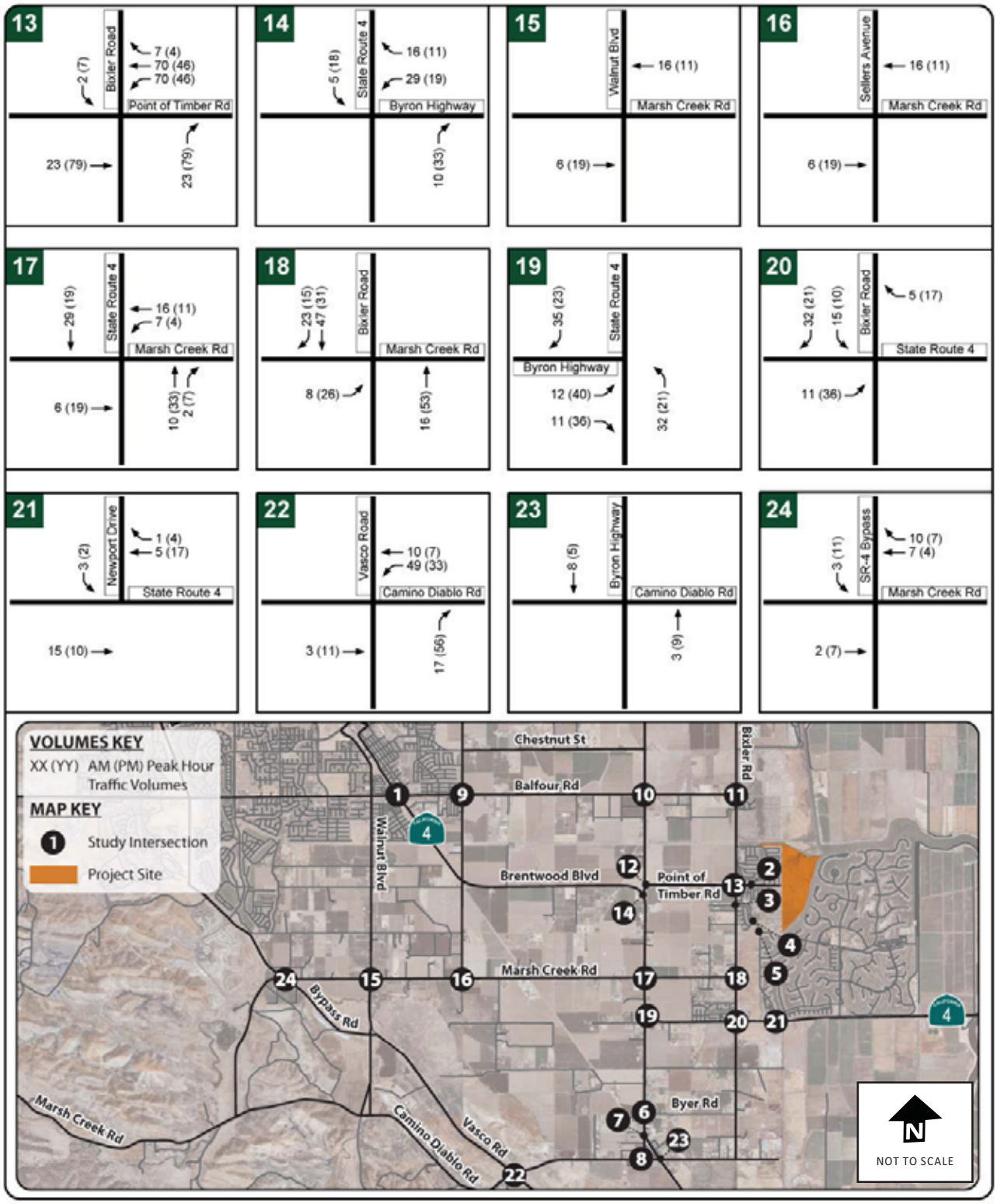
Source: Fehr & Peers, 2011.



Peak Hour Project Trip Assignment

Figure **4.16-4a**

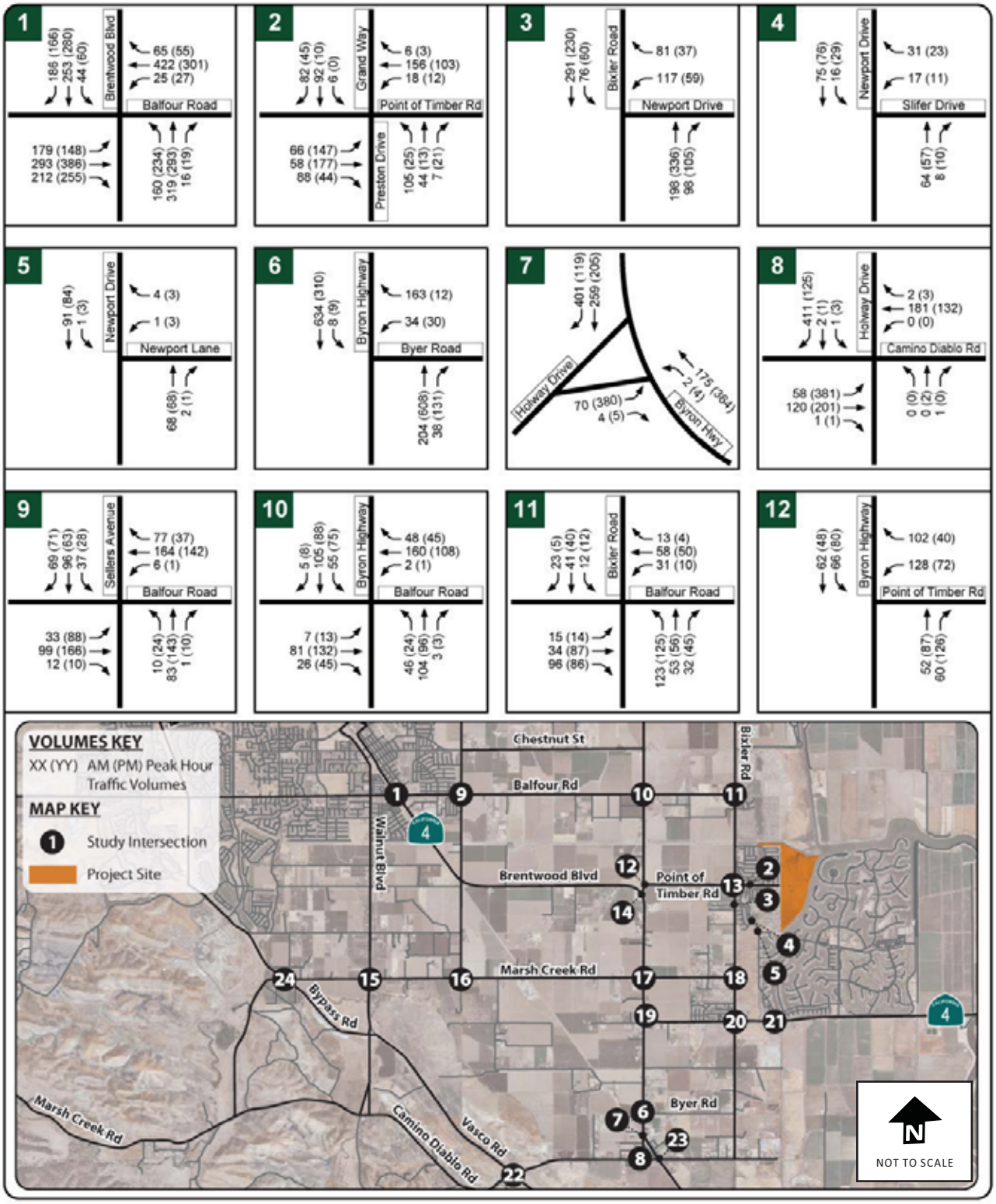
Source: Fehr & Peers, 2011.



Peak Hour Project Trip Assignment

Figure **4.16-4b**

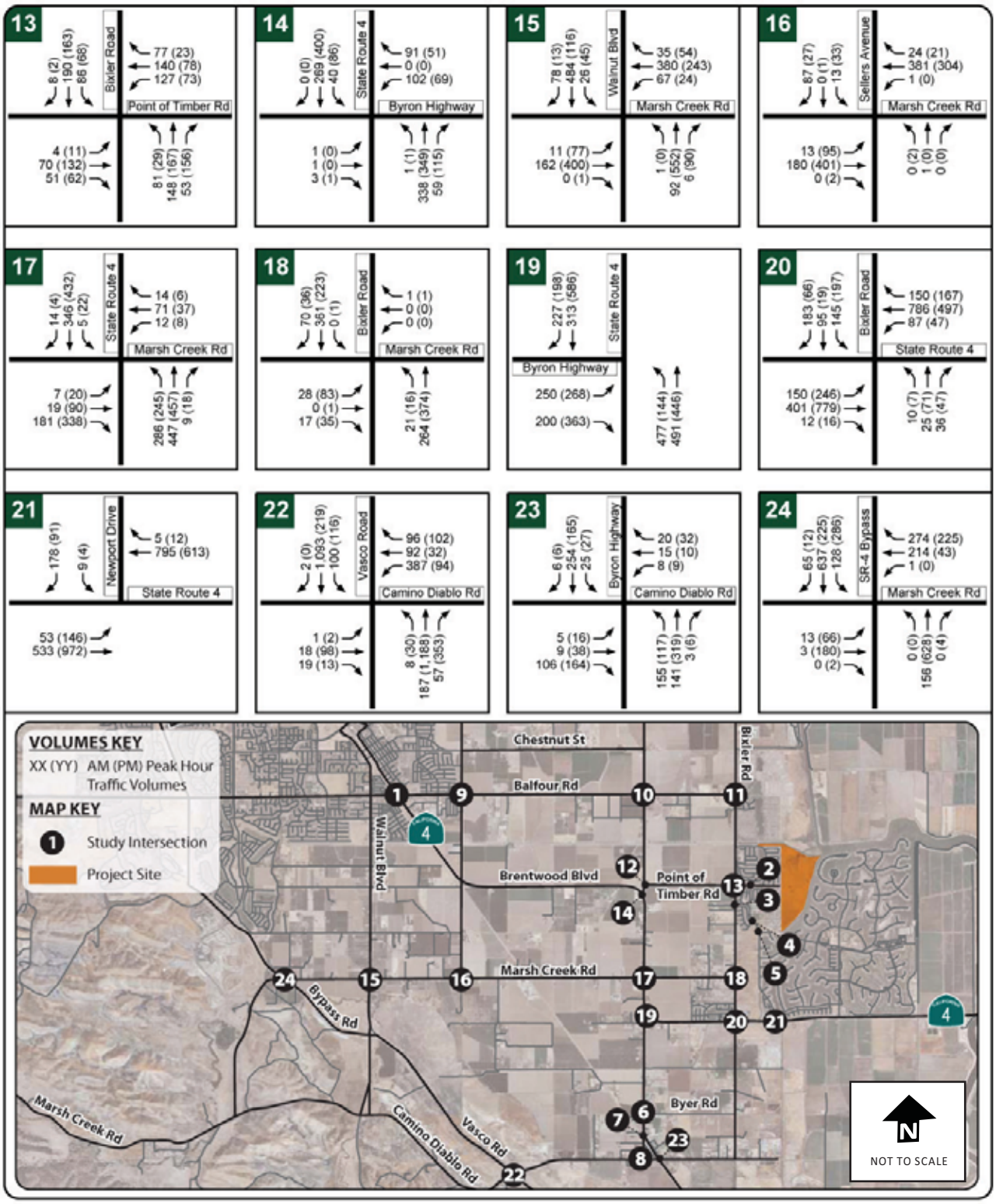
Source: Fehr & Peers, 2011.



Existing Plus Project Conditions Peak Hour Intersection Traffic Volumes

Figure **4.16-5a**

Source: Fehr & Peers, 2011.



Existing Plus Project Conditions Peak Hour Intersection Traffic Volumes

Figure **4.16-5b**

Source: Fehr & Peers, 2011.

Existing Plus Project Intersection Operations

The results of the Existing Plus Project intersection analysis are provided in **Tables 4.16-7** and **4.16-8**. With the addition of project generated traffic, levels of delay and/or V/C ratios are expected to increase somewhat from the existing conditions. With the exception of the Holway Drive/Byron Highway (No. 7), Camino Diablo Road/Holway Drive (No. 8), and SR4/Byron Highway (south) (No. 19) intersections, all study intersections would continue to operate at an acceptable LOS with the addition of project traffic. However, neither the Holway Drive/Byron Highway nor Camino Diablo Road/Holway Drive unsignalized intersections would meet the peak hour signal warrant analysis. As previously discussed, an unsignalized intersection operating at an unacceptable LOS must meet the MUTCD peak hour signal warrant for the impact to be considered significant. Because neither intersection would meet the peak hour signal warrant, impacts to these intersections as a result of the project generated traffic are considered less than significant.

Impacts to the SR4/Byron Highway (south) are discussed further below under discussion of significant impacts.

Existing Plus Project Roadway Segment Operation

Existing Plus Project roadway segment operations were calculated for the weekday AM and PM peak hours. Impacts were evaluated using the MTSO target of LOS D, as previously discussed. **Table 4.16-9** summarizes the results of the roadway segment analysis. Both Marsh Creek Road and Camino Diablo would continue to operate at acceptable LOS D with the addition of project generated traffic.

However, the addition of project traffic would exacerbate the existing deficiency of Vasco Road, which does not meet the MTSO target of LOS D under Existing or Existing Plus Project conditions. Impacts to Vasco Road are discussed further below under discussion of significant impacts.

Table 4.16-7 Existing Plus Project: Peak Hour Intersection HCM Levels of Service

Location	Control[1]	Peak Hour	Existing		Existing Plus Project	
			Delay[2,3]	LOS[4]	V/C Ratio	LOS[4]
2. Point of Timber Road/Preston Drive Way/Grand Way	AWS	AM	8.3	A	9.8	A
		PM	7.7	A	8.5	A
3. Newport Drive/Bixler Road	SSS	AM	5.9 (19.6)	A (C/WB)	6.4 (24.6)	A (C/WB)
		PM	2.6 (13.7)	A (B/WB)	2.4 (15.6)	A (C/WB)
4. Newport Drive/Slifer Drive	SSS	AM	3.1 (9.3)	A (A/WB)	2.8 (9.4)	A (A/WB)
		PM	3.1 (9.1)	A (A/WB)	2.6 (9.2)	A (A/WB)
5. Newport Drive/Newport Lane	SSS	AM	0.4 (8.9)	A (A/WB)	0.3 (8.9)	A (A/WB)
		PM	0.6 (9.0)	A (A/WB)	0.5 (9.2)	A (A/WB)
6. Byer Road/Byron Highway	SSS	AM	3.0 (14.4)	A (B/WB)	3.0 (15.6)	A (C/WB)
		PM	0.8 (16.8)	A (C/WB	0.8 (19.1)	A (C/WB)
7. Holway Drive/Byron Highway	SSS	AM	0.9 (13.9)	A (B/EB)	1.2 (15.0)	A (C/EB)
		PM	10.4 (**31.2**)	A (**D/EB**)	20.4 (**56.9**)	C **(F/EB)**
8. Camino Diablo Road/Holway Drive	SSS	AM	6.8 (12.5)	A (B/EB)	7.9 (13.6)	A (B/SB)
		PM	5.5 (26.9)	A (D/NB)	6.3 (**33.9**)	A (**D/NB**)
9. Sellers Avenue/Balfour Road	AWS	AM	10.0	A	10.3	B
		PM	10.4	B	10.8	B
10.Balfour Road/Byron Highway	AWS	AM	10.0	A	10.4	B
		PM	9.2	A	9.5	A
11. Balfour Road/Bixler Road	AWS	AM	8.8	A	8.9	A
		PM	8.9	A	8.9	A
12.Point of Timber Road/Byron Highway	SSS	AM	5.6 (10.4)	A (B/WB)	6.6 (11.3)	A (B/WB)
		PM	3.2 (10.0)	A (A/WB)	4.0 (10.7)	A (B/WB)
13. Point of Timber Road/Bixler Road	SSS	AM	9.9	A	11.7	B
		PM	9.0	A	11.5	B
16. Sellers Avenue/Marsh Creek Road	SSS	AM	12.9	B	13.5	B
		PM	12.1	B	12.7	B
18. Marsh Creek Road/Bixler Road	SSS	AM	1.2 (14.9)	A (B/EB)	1.4 (17.6)	A (C/EB)
		PM	2.2 (13.6)	A (B/EB)	2.8 (16.7)	A (C/EB)
21. SR4/Newport Drive	SSS	AM	3.7 (28.0)	A (D/SB)	3.8 (28.7)	A (D/SB)
		PM	1.6 (16.9)	A (C/SB)	1.8 (20.7)	A (C/SB)
23. Camino Diablo Road/Byron Highway	SSS	AM	5.3 (17.1)	A (C/WB)	5.3 (17.4)	A (C/WB)
		PM	6.5 (17.0)	A (C/WB)	6.5 (17.3)	A (C/WB)

Source: Fehr & Peers, 2011.
Notes: Bold indicates deficient intersection operations. ***Bold italics*** indicate potentially significant impacts.
1. Signal = Signalized intersection, SSS = Side-street stop-controlled intersection, AWS = All-way stop-controlled intersection.
2. Signalized and All-Way Stop intersection level of service based on average intersection control delay according to the Highway Capacity Manual (Transportation Research Board, 2000).
3. For side-street stop-controlled intersections, delay for worst approach (in seconds per vehicle) is presented. All calculations reflect the 2000 Highway Capacity Manual methods. Delay for worst approach is provided (in parentheses) for SSS controlled intersections. The worst approach is indicated by WB (westbound), EB (eastbound), NB (northbound), or SB (southbound).
4. LOS = Level of Service

Table 4.16-8 Existing Plus Project: Peak Hour Intersection CCTA Levels of Service

Location	Control[1]	Peak Hour	Existing No Project		Existing Plus Project	
			V/C Ratio[2]	LOS[3]	V/C Ratio[2]	LOS[3]
1. Balfour Road/Brentwood Boulevard	Signal	AM	0.52	A	0.54	A
		PM	0.50	A	0.51	A
14. SR4/Byron Highway (north)	Signal	AM	0.32	A	0.34	A
		PM	0.30	A	0.32	A
15. Marsh Creek Road/Walnut Boulevard	Signal	AM	0.56	A	0.57	A
		PM	0.68	B	0.69	B
17. Marsh Creek Road/Byron Highway	Signal	AM	0.29	A	0.32	A
		PM	0.31	A	0.33	A
19. SR4/Byron Highway (south)	Signal	AM	0.77	C	**0.81**	**D**
		PM	0.58	A	0.62	B
20. SR4/Bixler Road	Signal	AM	0.53	A	0.55	A
		PM	0.44	A	0.46	A
22. Camino Diablo Road/Vasco Road	Signal	AM	0.61	B	0.65	B
		PM	0.63	B	0.68	B
24. SR 4 Bypass/Marsh Creek Road	Signal	AM	0.39	A	0.39	A
		PM	0.39	A	0.40	A

Source: Fehr & Peers, 2011.
Note: Bold indicates deficient intersection operations. ***Bold italics*** indicate potentially significant impacts.
1. Signal = Signalized intersection
2. CCTA volume to capacity (v/c) ratios. Signalized intersection level of service based on Technical Procedures (Contra Costa Transportation Authority, 1997).
3. LOS = Level of Service

Table 4.16-9 Existing Plus Project Roadway Operation

Roadway Segment	Target MTSO[1]	Direction	Eastbound/ Northbound		Westbound/ Southbound	
			Existing	Existing Plus Project	Existing	Existing Plus Project
Marsh Creek Road	D	AM	C	D	D	D
		PM	D	D	D	D
Vasco Road	D	AM	**E**	**E**	**E**	**E**
		PM	**E**	**E**	**E**	**E**
Camino Diablo Road	D	AM	C	C	C	C
		PM	C	C	C	C

Source: Fehr & Peers, 2011
Bold indicates roadway segment not meeting MTSO
1. Target Multi-Modal Transportation Service Objective (MTSO)

Boating Traffic

The project would construct 116 waterfront lots with deepwater access and 176 interior lots. Assuming one boat per waterfront household and County-wide ownership rates for interior lots, the project is estimated to contribute an additional 131 new vessels to Discovery Bay. Based on the California State Department of Parks and Recreation (DPR) average trip rate of 26.1 trips per year (PWA 2010), this would result in approximately 3,420 new boat trips per year originating from Pantages Bays. This represents an approximately 2.8 percent increase in the number of local boat trips within Discovery Bay due to the project.

The project would widen the northwest portion of Kellogg Creek to a minimum width of 300 feet in an effort to reduce boat traffic congestion and tidal flow constriction (refer to **Section 4.9, Hydrology and Water Quality**). Assuming the project would introduce an additional 131 boats to Kellogg Creek, the widened channel would service approximately 2,906 boats[7] and require a minimum width of approximately 265 feet (per the methods discussed above).[8] Since the proposed widened channel dimensions exceed the recommended width, congestion within the widened segment of Kellogg Creek is not expected to be a significant impact.

In Indian Slough, which does not currently experience boat traffic congestion problems, the relatively small increase in number of boats due to the project (2.8 percent) is not expected to have a significant impact on boat traffic (PWA 2010).

Discussion of Significant Impacts

Impact TRA-1: Implementation of the project would increase traffic volumes and worsen LOS conditions at the SR4/Byron Highway (south intersection) signalized intersection. (Significant)

As shown in **Table 4.16-8**, the signalized intersection of SR4/Byron Highway (south intersection) is projected to deteriorate from LOS C to LOS D during the AM peak hour with the addition of project trips. This is below the County's standards of significance for signalized, Semi-Rural intersections and is therefore considered a significant impact.

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[7] As previously discussed, Kellogg Creek is currently estimated to service approximately 2,775 boats. With the addition of 131 boats from the project, the creek would service approximately 2906 boats.

[8] Assuming a minimum width of 75 feet per the first 1,000 boats serviced, plus 100 feet per additional 1,000 boats, the creek would need an additional 190 feet (2,906 – 1,000 ÷ 100 = 190) beyond the minimum requirement: 75 feet + 190 ft = 265 feet

Mitigation Measure TRA-1: Mitigation of the unacceptable traffic conditions at the SR4/Byron Highway (south) can be achieved by adding a second northbound to westbound left-turn lane from Byron Highway onto SR4 and its associated receiving lane. This improvement is currently identified in the 2007 Contra Costa County Capital Road Improvement & Preservation Program, although funding has not been identified. If this improvement is not included in a County fee program or other funding program at the time of project approvals, the project applicant shall be responsible for their fair share of the improvement prior to the issuance of building permits.

Significance after Mitigation: Less than significant.

Implementation of this mitigation measure would improve traffic conditions at this intersection to an LOS high-C (a V/C ratio of 0.72) during the AM peak hour and LOS A during the PM peak hour.

Impact TRA-2: Implementation of the project would increase traffic volumes and worsen LOS conditions on Vasco Road. (Significant)

The addition of project traffic would exacerbate the existing deficiency of Vasco Road, which does not meet the MTSO target of LOS D under Existing or Existing Plus Project conditions.

Mitigation Measure TRA-2: The project applicant shall pay regional roadway fees to the East Contra Costa Regional Fee and Financing Authority (ECCRFFA) fee program to upgrade existing roadways.

Significance after Mitigation: Significant and unavoidable.

As there are no specific plans to provide additional capacity on this segment of Vasco Road, the impact would remain significant and unavoidable.

Impact TRA-3: Implementation of the project would increase traffic volumes on nearby rural roads, and create conflicts with the farm equipment that share these roads during the peak summer months. (Significant)

Several roadways serving Discovery Bay and the proposed Project site are two-lane rural roads that have not been improved to current County standards. While the Project does not take direct access to these roadways and there are roads that serve the Project site that have been improved to current standards, the Project could increase traffic on unimproved rural roadways. These roadways serve active farming uses and during the agricultural season farm equipment often uses these roadways to transport items and equipment between fields. The Project, in conjunction with other approved projects in the area, is expected to increase traffic on unimproved roadways potentially creating conflicts with farm equipment during

the peak summer months. As the added vehicle traffic could create increased hazards with incompatible equipment on unimproved roadways, the Project, in conjunction with other planned and pending development, could result in a potentially significant roadway impact during peak farming periods.

Several projects are listed in the Draft East County Regional Area of Benefit (AOB) Transportation Mitigation Fee Update project list that would widen roads to current County standards and would provide wider shoulders on area roadways that serve active farms, including Sellers Avenue, Byron Highway and Marsh Creek Road. This would allow farm vehicles to travel outside the main travel lane, reducing potential vehicle/farm equipment conflicts. The project shall pay the required AOB fee which would reduce this potential impact to a less-than-significant level.

Implementation of **Mitigation Measure TRA -2** would require the project applicant to pay regional roadway fees to upgrade existing roadways.

Significance after Mitigation: Less than significant.

4.16.5 CUMULATIVE IMPACTS

The cumulative impact area for traffic and transportation includes the forecasted growth in the County. The CCTA *Decennial Travel Demand Model* served as the basis for the traffic forecasts. The most recent version of the CCTA model reflects land use assumptions from the Association of Bay Area Governments (ABAG), with forecasts out to the year 2035. The CCTA forecasts are considered the Cumulative No Project conditions. Traffic volumes that would be generated by the project were added to the Cumulative No Project volumes to develop the Cumulative Plus Project volumes.

This analysis also assumes that several roadway and intersection improvements would be constructed by the Year 2035. Only roadway improvements with identified funding were included in this scenario. Major roadway improvements that are assumed to be completed by 2035 include:

- Widening of SR4 Bypass from two to four lanes from Lone Tree Way to Balfour Road with interchanges at Sand Creek Road and Balfour Road.
- Widening of SR4 freeway to provide three mixed-flow lanes and one high-occupancy vehicle (HOV) lane in each direction west of Hillcrest Avenue.

Existing intersection lane configurations and controls were assumed to remain the same at all study intersections under the cumulative conditions, with the exception of the Newport Drive/Newport Lane intersection, which includes a new two lane west leg connecting to the proposed Newport Pointe development (refer to the cumulative Impacts discussion in **Chapter 4.0, Environmental Setting, Impacts, and Mitigation Measures**). Traffic signal timings were optimized. The Cumulative No Project and Cumulative Plus Project intersection HCM and CCTA LOS analysis results are summarized in **Tables 4.16-10** and **4.16-11**, respectively. Under Cumulative Plus Project conditions, 16 of the 24 study intersections are projected to operate at an unacceptable LOS.

Table 4.16-12 summarizes the results of the cumulative roadway segment analysis. Vasco Road and Marsh Creek Road do not meet the target MTSO of LOS D in either direction under the cumulative conditions.

The addition of project trips would degrade already deficient operations at Newport Drive/Bixler Road (No. 3), Camino Diablo Road/Holway Drive (No. 8), and Balfour Road/Byron Highway (No. 10) intersections; however, none of these intersections would meet the peak hour signal warrant. As previously discussed, an unsignalized intersection operating at an unacceptable LOS must meet the MUTCD peak hour signal warrant for the impact to be considered significant. Because intersection Nos. 3, 8, and 10 would not meet the peak hour signal warrant, cumulative impacts to these intersections as a result of the project generated traffic are considered less than significant.

The addition of project trips would degrade already deficient operations at the Marsh Creek Road/Walnut Boulevard (No. 15) and SR4 Bypass/Marsh Creek Road intersections (No. 24); however, the addition of project trips would not increase the V/C ratio by more than 0.01. As previously discussed, the deterioration of already unacceptable intersection operations (for signalized facilities) must result in a change in V/C ratio of more than 0.01 for the impact to be considered significant. Because project generated traffic would not increase the V/C ratio by more than 0.01 at intersection Nos. 15 and 24, cumulative impacts to these intersections are considered less than significant.

Table 4.16-10 Cumulative Peak Hour Intersection LOS (HCM Method)

Location	Control[1]	Peak Hour	Cumulative No Project		Cumulative Plus Project	
			Delay[2,3]	LOS[4]	Delay	LOS[4]
2. Point of Timber Road/Preston Drive Way/Grand Way	AWS	AM	8.7	A	10.0	A
		PM	8.1	A	9.4	A
3. Newport Drive/Bixler Road	SSS	AM	6.4 (22.5)	A (C)	6.9 (26.7)	A (D)
		PM	6.9 (**40.5**)	A (**E**)	8.7 (***57.2***)	A (***F***)
4. Newport Drive/Slifer Drive	SSS	AM	3.1 (9.7)	A (A)	2.9 (9.8)	A (A)
		PM	2.9 (10.6)	A (B)	2.8 (10.9)	A (B)
5. Newport Drive/Newport Lane	SSS	AM	2.3 (9.9)	A (A)	2.1 (10.1)	A (B)
		PM	1.9 (10.8)	A (B)	1.8 (11.1)	A (B)
6. Byer Road/Byron Highway	SSS	AM	6.7 (**42.2**)	A (**E**)	7.8 (***51.1***)	A (***F***)
		PM	2.8 (**49.0**)	A (**E**)	3.2 (***61.5***)	A (***F***)
7. Holway Drive/Byron Highway	SSS	AM	1.4 (24.8)	A (C)	1.8 (28.7)	A (D)
		PM	**>100 (>100)**	**F (F)**	***>100 (>100)***	***F (F)***
8. Camino Diablo Road/Holway Drive	SSS	AM	8.3 (19.5)	A (C)	10.1 (22.6)	B (C)
		PM	7.5 (**57.9**)	A (**F**)	8.8 (***73.1***)	A (***F***)
9. Sellers Avenue/Balfour Road	AWS	AM	**>100**	**F**	***>100***	***F***
		PM	**91.7**	**F**	***>100***	***F***
10.Balfour Road/Byron Highway	AWS	AM	29.5	D	***37.2***	***E***
		PM	15.4	C	17.3	C
11. Balfour Road/Bixler Road	AWS	AM	12.5	B	12.6	B
		PM	12.4	B	12.6	B
12.Point of Timber Road/Byron Highway	SSS	AM	8.4 (20.2)	A (C)	12.0 (26.5)	B (D)
		PM	13.2 (**39.9**)	B (**E**)	***30.2 (93.7)***	***D (F)***
13.Point of Timber Road/Bixler Road	SSS	AM	12.8	B	16.0	C
		PM	20.9	C	***46.4***	***E***
16. Sellers Avenue/Marsh Creek Road	SSS	AM	**>100**	**F**	***>100***	***F***
		PM	**81.7**	**F**	***87.7***	***F***
18. Marsh Creek Road/Bixler Road	SSS	AM	**61.8 (>100)**	**F (F)**	***86.2 (>100)***	***F (F)***
		PM	**51.8 (>100)**	**F (F)**	***89.2 (>100)***	***F (F)***
21. SR4/Newport Drive	SSS	AM	15.6 (**>100**)	C (**F**)	17.6 (**>100**)	A (**F**)
		PM	**>100 (>100)**	**F (F)**	***>100 (>100)***	***F (F)***
23. Camino Diablo Road/Byron Highway	SSS	AM	**80.3 (>100)**	**F (F)**	**83.5 (>100)**	**F (F)**
		PM	**>100 (>100)**	**F (F)**	***>100 (>100)***	***F (F)***

Source: Fehr & Peers, 2011.
Notes: Bold indicates deficient intersection operations. ***Bold italics*** indicate potentially significant impacts.
1. Signal = Signalized intersection, SSS = Side-street stop-controlled intersection, AWS = All-way stop-controlled intersection.
2. Signalized and All-Way Stop intersection level of service based on average intersection control delay according to the Highway Capacity Manual (Transportation Research Board, 2000).
3. For side-street stop-controlled intersections, delay for worst approach (in seconds per vehicle) is presented. All calculations reflect the 2000 Highway Capacity Manual methods. Delay for worst approach is provided (in parentheses) for SSS controlled intersections. The worst approach is indicated by WB (westbound), EB (eastbound), NB (northbound), or SB (southbound).
4. LOS = Level of Service

Table 4.16-11 Cumulative Peak Hour Intersection LOS (CCTALOS Method)

Location	Control[1]	Peak Hour	Cumulative No Project		Cumulative Plus Project	
			V/C Ratio[2]	LOS[3]	V/C Ratio[2]	LOS[3]
1. Balfour Road/Brentwood Boulevard	Signal	AM	0.58	A	0.59	A
		PM	0.65	B	0.67	B
14. SR4/Byron Highway (north)	Signal	AM	0.68	B	0.69	B
		PM	0.53	A	0.55	A
15. Marsh Creek Road/Walnut Boulevard	Signal	AM	**0.93**	**E**	**0.94**	**E**
		PM	**1.09**	**F**	**1.09**	**F**
17. Marsh Creek Road/Byron Highway	Signal	AM	0.77	C	0.79	C
		PM	0.77	C	0.79	C
19. SR4/Byron Highway (south)	Signal	AM	**1.00**	**E**	***1.02***	***F***
		PM	**0.89**	**D**	***0.92***	***E***
20. SR4/Bixler Road	Signal	AM	0.69	B	0.70	C
		PM	0.72	C	0.74	C
22. Camino Diablo Road/Vasco Road	Signal	AM	0.72	C	0.74	C
		PM	**0.87**	**D**	***0.89***	***D***
24. SR 4 Bypass/Marsh Creek Road	Signal	AM	**0.86**	**D**	**0.86**	**D**
		PM	**0.82**	**D**	**0.83**	**D**

Source: Fehr & Peers, 2011.
Note: Bold indicates deficient intersection operations. ***Bold italics*** indicate potentially significant impacts.
1. Signal = Signalized intersection
2. CCTA volume to capacity (v/c) ratios. Signalized intersection level of service based on Technical Procedures (Contra Costa Transportation Authority, 1997).
3. LOS = Level of Service

Table 4.16-12 Cumulative Roadway Segment Analysis

Roadway Segment	Target MTSO[1]	Direction	Eastbound/ Northbound		Westbound/ Southbound	
			Cumulative No Project	Cumulative Plus Project	Cumulative No Project	Cumulative Plus Project
Marsh Creek Road	D	AM	E	E	E	E
		PM	E	E	E	E
Vasco Road	D	AM	F	F	F	F
		PM	F	F	F	F
Camino Diablo Road	D	AM	C	C	C	C
		PM	C	C	C	C

Source: Fehr & Peers, 2011
Bold indicates roadway segment not meeting MTSO
1. Target Multi-Modal Transportation Service Objective (MTSO)

Impact CUM TRA-1: Implementation of the project would increase traffic volumes and worsen LOS conditions at the unsignalized intersection of Byer Road/Byron Highway (No. 6). (Significant)

The westbound approach of the Byer Road/Byron Highway (No. 6) intersection is projected to operate at LOS E during the AM and PM peak hours under Cumulative No Project conditions, and LOS F during the AM and PM peak hours under Cumulative Plus Project conditions. The addition of project trips would degrade already deficient westbound operations by more than 5 seconds. This intersection would meet the peak hour signal warrant under Cumulative No Project and Cumulative Plus Project conditions, and is therefore considered a significant impact.

***Mitigation Measure CUM TRA-1*:** Mitigation of the unacceptable traffic conditions at the Byer Road/Byron Highway intersection can be achieved by installing a traffic signal and a southbound left turn lane. This improvement is not identified in any funding program.

If this improvement is not included in a County fee program at the time of project approvals, the project applicant shall pay its fair share towards the cost of this improvement to the County's Road Trust account (Fund #8192) prior to the issuance of building permits. This trust fund shall fund improvements to intersections identified as operating unacceptably under cumulative conditions and not identified in a fee program. As indicated in **Table 4.16-15**, the project applicant would be required to contribute 12 percent of the total costs for this improvement.

***Significance after Mitigation*:** Less than significant.

As shown in **Table 4.16-13**, implementation of this mitigation measure would improve conditions at this intersection to acceptable LOS levels.

Impact CUM TRA-2: Implementation of the project would increase traffic volumes and worsen LOS conditions at the unsignalized intersections of Holway Drive/Byron Highway (No. 7) and Camino Diablo Road/Byron Highway (No. 23). (Significant)

The unsignalized intersections of Holway Drive/Byron Highway (No. 7) and Camino Diablo Road/Byron Highway (No. 23) are projected to operate at LOS F during the PM peak hour under Cumulative No Project and Cumulative Plus Project conditions. The addition of project trips would degrade already deficient intersection operations by more than 5 seconds. Both intersections meet the peak hour signal warrant under Cumulative No Project and Cumulative Plus Project conditions, and are therefore considered significant impacts.

Table 4.16-13 Cumulative Plus Project Mitigated Peak Hour Intersection Levels of Service (HCM Method)

Mitigation	Intersection	Control[1]	Peak Hour	Cumulative Plus Project		Mitigated Plus Project	
				Delay[2,3]	LOS[4]	Delay	LOS[4]
CUM TRA-1	6. Byer Road/Byron Highway	SSS	AM	7.8 (***51.1***)	A (***F***)	11.1	B
			PM	3.2 (***61.5***)	A (***F***)	8.7	A
CUM TRA-2 (Option 1)	7. Holway Drive/Byron Highway	SSS	AM	1.8 (28.7)	A (D)	0.7 (25.5)	A (D)
			PM	***>100 (>100)***	***F (F)***	16.6 (**>100**)	C (**F**)
	23. Camino Diablo Road/ Byron Highway	SSS/Signal	AM	**83.5 (>100)**	**F (F)**	21.9	C
			PM	***>100 (>100)***	***F (F)***	33.7	C
CUM TRA-2 (Option 2)	7. Holway Drive/ Byron Highway	SSS/Signal	AM	1.8 (28.7)	A (D)	8.3	A
			PM	***>100 (>100)***	***F (F)***	15.4	B
	23. Camino Diablo Road/ Byron Highway	SSS/Signal	AM	**83.5 (>100)**	**F (F)**	25.1	C
			PM	***>100 (>100)***	***F (F)***	34.2	C
CUM TRA-3	9. Sellers Avenue/Balfour Road	AWS / Signal	AM	***>100***	***F***	29.9	C
			PM	***>100***	***F***	31.3	C
CUM TRA-4	12. Point of Timber Road/ Byron Highway	SSS / Signal	AM	12.0 (26.5)	B (D)	11.5	B
			PM	***30.2 (93.7)***	***D (F)***	14.8	B
CUM TRA-5	13. Point of Timber Road/ Bixler Road	AWS / Signal	AM	16.0	C	30.9	C
			PM	***46.4***	***E***	31.8	C
CUM TRA-6	16. Marsh Creek Road/ Sellers Avenue	AWS / Signal	AM	***>100***	***F***	13.9	B
			PM	***87.7***	***F***	13.0	B
CUM TRA-7	18. Marsh Creek Road/ Bixler Road	SSS / Signal	AM	***86.2 (>100)***	***F (F)***	21.6	C
			PM	***89.2 (>100)***	***F (F)***	16.7	B
CUM TRA-8	19. SR4/Byron Highway (south)	Signal	AM	**68.0**	**E**	27.8	C
			PM	43.7	D	16.9	B
CUM TRA-9	21. SR4/Newport Drive	SSS / Signal	AM	17.6 (>100)	A (**F**)	16.7	B
			PM	***>100 (>100)***	***F (F)***	15.8	B
CUM TRA-10	22. Camino Diablo Road/ Vasco Road	Signal	AM	44.5	D	44.4	D
			PM	***61.0***	***E***	42.1	D

Source: Fehr & Peers, 2011.
Note: **Bold** indicates deficient intersection operations. ***Bold italics*** indicates potentially significant impacts.
1. Signal = Signalized intersection, SSS = Side-street stop-controlled intersection, AWS = All-way stop-controlled intersection.
2. Signalized and All-Way Stop intersection level of service based on average intersection control delay according to the *Highway Capacity Manual* (Transportation Research Board, 2000).
3. For side-street stop-controlled intersections, delay for worst approach (in seconds per vehicle) is presented. All calculations reflect the 2000 *Highway Capacity Manual* methods. Delay for worst approach is provided (in parentheses) for SSS controlled intersections.
4. LOS = Level of Service

***Mitigation Measure CUM TRA-2 (Option 1)*:** Mitigation of the unacceptable traffic conditions at the Holway Drive/Byron Highway and Camino Diablo Road/Byron Highway intersections can be achieved by installing a traffic signal at the Camino Diablo Road/Byron Highway and providing left-turn pockets on all approaches. Traffic turning left from eastbound Camino Diablo Road to northbound Holway Drive and left again from Holway Drive to Byron Highway would instead turn left at the signalized Camino Diablo Road/Byron Highway intersection. This mitigation would require modifications to the adjacent railroad crossing west of the intersection to provide the required left turn pocket on the eastbound approach.

This improvement is included in the Draft East County Regional AOB Transportation Mitigation Fee Update project list. The project applicant shall pay the required AOB fee.

***Mitigation Measure CUM TRA-2 (Option 2)*:** As an alternative to Mitigation Measure CUM TRA-2 (Option 1), mitigation of the unacceptable traffic conditions at the Holway Drive/Byron Highway and Camino Diablo Road/Byron Highway intersections can be achieved by installing traffic signals at both intersections, in addition to adding a northbound left-turn lane pocket at the Holway Drive/Byron Highway intersection. Traffic would not be shifted under this mitigation, and a left turn pocket across the railroad crossing at the Camino Diablo Road/Byron Highway intersection would not be needed.

A signal at the Holway Drive/Byron Highway intersection is not identified in any funding program. Similarly, the installation of a signal at Camino Diablo Road/Byron Highway is not identified in any funding program.

If these improvements are not included in a County fee program at the time of project approvals, the project applicant shall pay its fair share towards the cost of these improvements to the County's Road Trust account (Fund #8192) prior to the issuance of building permits. This trust fund shall fund improvements to intersections identified as operating unacceptably under cumulative conditions and not identified in a fee program. As indicated in **Table 4.16-15**, the project applicant would be required to contribute between 2 percent and 14 percent of the total costs for this improvement.

***Significance after Mitigation*:** Less than significant.

As shown in **Table 4.16-13**, implementation of Option 1 or Option 2 of this mitigation measure would improve conditions at these two intersections to acceptable LOS levels.

Impact CUM TRA-3: Implementation of the project would increase traffic volumes and worsen LOS conditions at the unsignalized intersection of Sellers Avenue/Balfour Road (No. 9). (Significant)

The unsignalized intersection of Sellers Avenue/Balfour Road (No. 9) is projected to operate at LOS F during AM and PM peak hours under Cumulative No Project and Cumulative Plus Project conditions. The addition of project trips would degrade already deficient intersection operations by more than five seconds. This intersection would meet the peak hour signal warrant under Cumulative No Project and Cumulative Plus Project conditions, and is therefore considered a significant impact.

***Mitigation Measure CUM TRA-3*:** Mitigation of the unacceptable traffic conditions at the Sellers Avenue/Balfour Road intersection can be achieved by installing a traffic signal and providing left turn lanes at all four intersection approaches.

This improvement is included in the Draft East County AOB Transportation Mitigation Fee Update project list. The project applicant shall pay the required AOB fee. Implementation of this mitigation measure would reduce this impact to less-than-significant.

***Significance after Mitigation*:** Less than significant.

As shown in **Table 4.16-13**, implementation of this mitigation measure would improve conditions at this intersection to acceptable LOS levels.

Impact CUM TRA-4: Implementation of the project would increase traffic volumes and worsen LOS conditions at the unsignalized intersection of Point of Timber Road/Byron Highway (No. 12). (Significant)

The unsignalized intersection of Point of Timber Road/Byron Highway (No. 12) is projected to operate at acceptable LOS B during the PM peak hour under Cumulative No Project conditions. The addition of project trips would degrade intersection operations from LOS B to unacceptable LOS D. This intersection would meet the peak hour signal warrant under Cumulative No Project and Cumulative Plus Project conditions, and is therefore considered a significant impact.

***Mitigation Measure CUM TRA-4*:** Mitigation of the unacceptable traffic conditions at the Point of Timber Road/Byron Highway intersection can be achieved by installing a traffic signal. This improvement is included in the Draft East County AOB Transportation Mitigation Fee Update project list. The project applicant shall pay the required AOB fee.

***Significance after Mitigation*:** Less than significant.

As shown in **Table 4.16-13**, implementation of this mitigation measure would improve conditions at this intersection to acceptable LOS levels.

Impact CUM TRA-5: Implementation of the project would increase traffic volumes and worsen LOS conditions at the unsignalized intersection of Point of Timber Road/Bixler Road (No. 13). (Significant)

The unsignalized intersection of Point of Timber Road/Bixler Road (No. 13) is projected to operate at acceptable LOS C during the PM peak hour under Cumulative No Project conditions. The addition of project trips would degrade intersection operations from LOS C to LOS E. This intersection would meet the peak hour signal warrant under Cumulative No Project and Cumulative Plus Project conditions, and is therefore considered a significant impact.

***Mitigation Measure CUM TRA-5*:** Mitigation of the unacceptable traffic conditions at the Point of Timber Road/Bixler Road intersection can be achieved by installing a traffic signal and adding left turn lanes at all four intersection approaches. This improvement is not identified in any funding program.

If this improvement is not included in a County fee program at the time of project approvals, the project applicant shall pay its fair share towards the cost of this improvement to the County's Road Trust account (Fund #8192) prior to the issuance of building permits. This trust fund shall fund improvements to intersections identified as operating unacceptably under cumulative conditions and not identified in a fee program. As indicated in **Table 4.16-15**, the project applicant would be required to contribute between 30 and 39 percent of the total costs for this improvement.

***Significance after Mitigation*:** Less than significant.

As shown in **Table 4.16-13**, implementation of this mitigation measure would improve conditions at this intersection to acceptable LOS levels.

Impact CUM TRA-6: Implementation of the project would increase traffic volumes and worsen LOS conditions at the unsignalized intersection of Point of Marsh Creek Road/Sellers Avenue (No. 16). (Significant)

The unsignalized intersection of Marsh Creek Road/Sellers Avenue (No. 16) is projected to operate at LOS F during AM and PM peak hours under Cumulative No Project and Cumulative Plus Project conditions. The addition of project trips would degrade already deficient intersection operations by more than five seconds. This

intersection would meet the peak hour signal warrant under Cumulative No Project and Cumulative Plus Project conditions, and is therefore considered a significant impact.

***Mitigation Measure CUM TRA-6*:** Mitigation of the unacceptable traffic conditions at the Marsh Creek Road/Sellers Avenue intersection can be achieved by installing a traffic signal. This improvement is included in the Draft East County AOB Transportation Mitigation Fee Update project list. The project applicant shall pay the required AOB fee.

Significance after Mitigation: Less than significant.

As shown in **Table 4.16-13**, implementation of this mitigation measure would improve conditions at this intersection to acceptable LOS levels.

Impact CUM TRA-7: Implementation of the project would increase traffic volumes and worsen LOS conditions at the unsignalized intersection of Point of Marsh Creek Road/Bixler Road (No. 18). (Significant)

The unsignalized intersection of Marsh Creek Road/Bixler Road is projected to operate at LOS F during AM and PM peak hours under Cumulative No Project and Cumulative Plus Project conditions. The addition of project trips would degrade already deficient intersection operations by more than five seconds. This intersection would meet the peak hour signal warrant under Cumulative No Project and Cumulative Plus Project conditions, and is therefore considered a significant impact.

***Mitigation Measure CUM TRA*-7:** Mitigation of the unacceptable traffic conditions at the Marsh Creek Road/Bixler Road intersection can be achieved by installing a traffic signal. This improvement is not identified in any funding program.

If this improvement is not included in a County fee program at the time of project approvals, the project applicant shall pay its fair share towards the cost of this improvement to the County's Road Trust account (Fund #8192) prior to the issuance of building permits. This trust fund shall fund improvements to intersections identified as operating unacceptably under cumulative conditions and not identified in a fee program. As indicated in **Table 4.16-15**, the project applicant would be required to contribute between 10 and 11 percent of the total costs for this improvement.

Significance after Mitigation: Less than significant.

As shown in **Table 4.16-13**, implementation of this mitigation measure would improve conditions at this intersection to acceptable LOS levels.

Impact CUM TRA-8: Implementation of the project would increase traffic volumes and worsen LOS conditions at the signalized intersection of SR4/Byron Highway (south) (No. 19). (Significant)

The signalized intersection of SR4/Byron Highway (south) is projected to operate at LOS E during the AM peak hour and unacceptable LOS D during the PM peak hour under Cumulative No Project conditions. The addition of project trips would further degrade intersection No. 19 operations to LOS F during the AM peak hour and LOS E during the PM peak hour, and would increase the V/C ratio by more than 0.01. This is considered a significant impact.

***Mitigation Measure CUM TRA-8*:** Mitigation of the unacceptable traffic conditions at the SR4/Byron Highway (south) intersection can be achieved by adding a second left-turn lane on the Byron Highway approach and a second through lane on the southeast-bound SR4 approach.

The second left-turn lane on the Byron Highway approach improvement is currently identified in the 2007 Contra Costa County Capital Road Improvement & Preservation Program, although funding has not been identified. The second through lane on the southeast-bound SR4 approach is not identified in any funding program.

If this improvement is not included in a County fee program at the time of project approvals, the project applicant shall pay its fair share towards the cost of this improvement to the County's Road Trust account (Fund #8192) prior to the issuance of building permits. This trust fund shall fund improvements to intersections identified as operating unacceptably under cumulative conditions and not identified in a fee program. As indicated in **Table 4.16-17**, the project applicant would be required to contribute between 9 and 11 percent of the total costs for this improvement.

Significance after Mitigation: Less than significant.

As shown in **Table 4.16-14**, implementation of this mitigation measure would improve conditions at this intersection to acceptable LOS levels.

Impact CUM TRA-9: Implementation of the project would increase traffic volumes and worsen LOS conditions at the unsignalized intersection of SR4/Newport Drive (No. 21). (Significant)

The unsignalized intersection of SR4/Newport Drive (No. 21) is projected to operate at LOS F during the PM peak hour under Cumulative No Project and Cumulative Plus Project conditions. The addition of project trips would degrade already deficient

Table 4.16-14 Cumulative Plus Project Mitigated Peak Hour Intersection Levels of Service (CCTALOS Method)

Mitigation	Intersection	Control[1]	Peak Hour	Cumulative Plus Project		Mitigated Plus Project	
				V/C[2]	LOS[3]	V/C[2]	LOS[3]
CUM TRA-3	6. Byer Road/Byron Highway	SSS / Signal	AM	n/a	n/a	0.65	B
			PM	n/a	n/a	0.59	A
CUM TRA-4A	7a. Holway Drive/Byron Highway	SSS	AM	n/a	n/a	n/a	n/a
			PM	n/a	n/a	n/a	n/a
	23a. Camino Diablo Road/ Byron Highway	SSS / Signal	AM	n/a	n/a	0.60	B
			PM	n/a	n/a	0.71	C
CUM TRA-4B	7b. Holway Drive/Byron Highway	SSS / Signal	AM	n/a	n/a	0.53	A
			PM	n/a	n/a	0.68	B
	23b. Camino Diablo Road/ Byron Highway	SSS / Signal	AM	n/a	n/a	0.64	B
			PM	n/a	n/a	0.73	C
CUM TRA-5	9. Sellers Avenue/Balfour Road	AWS / Signal	AM	n/a	n/a	0.64	B
			PM	n/a	n/a	0.54	A
CUM TRA-6	12. Point of Timber Road/ Byron Highway	SSS / Signal	AM	n/a	n/a	0.35	A
			PM	n/a	n/a	0.41	A
CUM TRA-7	13. Point of Timber Road/ Bixler Road	AWS / Signal	AM	n/a	n/a	0.50	A
			PM	n/a	n/a	0.64	B
CUM TRA-8	16. Marsh Creek Road/ Sellers Avenue	AWS / Signal	AM	n/a	n/a	0.64	B
			PM	n/a	n/a	0.52	A
CUM TRA-9	18. Marsh Creek Road/ Bixler Road	SSS / Signal	AM	n/a	n/a	0.73	C
			PM	n/a	n/a	0.67	B
CUM TRA-10	19. SR4/Byron Highway (south)	Signal	AM	***1.02***	***F***	0.69	B
			PM	***0.92***	***E***	0.59	A
CUM TRA-11	21. SR4/Newport Drive	SSS / Signal	AM	n/a	n/a	0.76	C
			PM	n/a	n/a	0.68	B
CUM TRA-12	22. Camino Diablo Road/ Vasco Road	Signal	AM	0.74	C	0.74	C
			PM	***0.89***	***D***	0.78	C

Source: Fehr & Peers, 2011.
Note: **Bold** indicates deficient intersection operations. ***Bold italics*** indicate potentially significant impacts.
1. Signal = Signalized intersection, SSS = Side-street stop-controlled intersection, AWS = All-way stop-controlled intersection.
2. *CCTA* volume to capacity (v/c) ratios. Signalized intersection level of service based on *Technical Procedures* (Contra Costa Transportation Authority, 2006)
3. LOS = Level of Service

intersection operations by more than five seconds. This intersection would meet the peak hour signal warrant under Cumulative No Project and Cumulative Plus Project conditions, and is therefore considered a potentially significant impact.

Mitigation Measure CUM TRA-9: Mitigation of the unacceptable traffic conditions at the SR4/Newport Drive intersection can be achieved by installing a traffic signal. This improvement is not identified in any funding program.

If this improvement is not included in a County fee program at the time of project approvals, the project applicant shall pay its fair share towards the cost of this improvement to the County's Road Trust account (Fund #8192) prior to the issuance of building permits. This trust fund shall fund improvements to intersections identified as operating unacceptably under cumulative conditions and not identified in a fee program. As indicated in **Table 4.16-15**, the project applicant would be required to contribute between 4 and 6 percent of the total costs for this improvement.

Significance after Mitigation: Less than significant.

As shown in **Table 4.16-13**, implementation of this mitigation measure would improve conditions at this intersection to acceptable LOS levels.

Impact CUM TRA-10: Implementation of the project would increase traffic volumes and worsen LOS conditions at the signalized intersection of Camino Diablo Road/Vasco Road (No. 22). (Significant)

The intersection Camino Diablo Road/Vasco Road (No. 22) is projected to operate at LOS D during the PM peak hour under Cumulative No Project Conditions. The addition of project trips would increase the V/C ratio by more than 0.01, which is considered a potentially significant impact.

***Mitigation Measure CUM TRA-10*:** Mitigation of the unacceptable traffic conditions at the Camino Diablo Road/Vasco Road intersection can be achieved by adding a northbound right turn lane. This improvement is included as one of several improvements at this intersection in the Draft East County AOB Transportation Mitigation Fee Update project list. The project applicant shall pay the required AOB fee.

Significance after Mitigation: Less than significant.

As shown in **Table 4.16-14**, implementation of this mitigation measure would improve conditions at this intersection to acceptable LOS levels.

Impact CUM TRA-11: Implementation of the project would increase traffic volumes and worsen LOS conditions along Vasco Road. (Significant)

Service along Vasco Road, south of Camino Diablo Road, would not meet the MTSO target LOS D in either the northbound or southbound direction during the AM or PM peak hour under either cumulative condition. The addition of project traffic would worsen the LOS along this roadway segment. This is considered a significant impact.

***Mitigation Measure CUM TRA-11*:** The project applicant shall pay regional roadway fees to the East Contra Costa Regional Fee and Financing Authority (ECCRFFA) fee program to upgrade existing.

Significance after Mitigation: Significant and unavoidable.

As there are no plans to provide additional capacity on this roadway segment, the impact would remain significant and unavoidable.

Impact CUM TRA-12: Implementation of the project would increase traffic volumes and worsen LOS conditions along Marsh Creek Road. (Significant)

Service along Marsh Creek Road, west of SR4, would not meet the MTSO target LOS D in either the eastbound or westbound direction during the AM or PM peak hour under either cumulative condition. The addition of project traffic would worsen the LOS along this roadway segment. This is considered a significant impact.

Implementation of **Mitigation Measure TRA -2** would require the project applicant to pay regional roadway fees to upgrade existing roadways. However, as there are no specific plans to provide additional capacity on this segment of Marsh Creek Road, the impact would remain significant and unavoidable.

Significance after Mitigation: Significant and unavoidable.

Fair Share Percentages

Fair share contribution percentages were calculated for each intersection impact mitigation measure. This is the percentage of cumulative peak hour trips added to an intersection that are contributed by the project and is calculated by dividing the project trips by the Cumulative Plus Project traffic volume minus the Existing traffic volume. This percentage is calculated for the AM and PM peak hours. The larger of the two peak hour percentages is used for calculating cost allocations. Fair share contribution percentages are summarized below in **Table 4.16-15**. The dollar

amount to be paid by the project applicant shall be determined by the project applicant's consultant based on the calculated fair share of the total project cost and submitted to the County Public Works Department for review and approval.

Table 4.16-15 Cumulative Plus Project Mitigated Fair Share Calculations

Cumulative Mitigation	Intersection	Peak Hour	Existing Volume	Cumulative Plus Project Volume	Project Volume	% Fair Share
CUM TRA-1	6. Byer Road / Byron Highway	AM	991	1,580	72	**12%**
		PM	979	1,770	97	12%
CUM TRA-2 (Option 2)	7. Holway Drive / Byron Highway	AM	821	1,405	72	12%
		PM	957	1,670	97	**14%**
	23. Camino Diablo Road / Byron Highway	AM	736	1,410	11	**2%**
		PM	895	1,590	14	2%
CUM TRA-6	13. Point of Timber Road / Bixler Road	AM	840	1,337	195	**39%**
		PM	703	1,567	263	30%
CUM TRA-8	18. Marsh Creek Road / Bixler Road	AM	669	1,460	77	10%
		PM	645	1,560	104	**11%**
CUM TRA-9	19. SR4 / Byron Highway (south intersection)	AM	1,868	2,695	72	9%
		PM	1,885	2,795	98	**11%**
CUM TRA-10	21. SR4 / Newport Drive	AM	1,549	2,120	24	4%
		PM	1,805	2,335	33	**6%**

Source: Fehr & Peers, 2011.
Note: **Bold** indicates larger fair share to be used in cost allocation procedures.

4.16.6 REFERENCES

Fehr & Peers (2011). Pantages Bays EIR Transportation Analysis.

PWA (2010). Draft Additional Hydrology Impact Assessment Memorandum.

4.17 VISUAL RESOURCES AND AESTHETICS

This section analyzes the effects of the project on views from nearby public viewpoints and private residences. Visual simulations represent the existing and future views from publicly accessible vantage points. Representative views from the project site are also presented in this section.

No comments related to the aesthetics of the project site were received in response to the Notice of Preparation (NOP) for this environmental impact report (EIR).

4.17.1 EXISTING CONDITIONS

Regional Characteristics

Regional characteristics of East County include largely flat terrain with partially obstructed, long-range views of Mount Diablo. In the Discovery Bay area, common characteristics include large expanses of marshlands, native and non-native annual grasslands, and an extension of the water and Delta system of the Suisun Bay. The overall visual character of the project region is rural and consists of agricultural farmlands and clustered communities of single family residences.

Site Characteristics

The project site is undeveloped except for three abandoned structures. Point of Timber Road runs east-west through the center of the site, and is partially paved. Stands of mature trees are clustered in the northeastern corner of the project site, with a few smaller groups of trees (less than 10) near the abandoned residential structures. Topographically, the project site is flat and is bordered by open waterways to the north, east, and south.

Visual Resources

Diablo Range

Significant topographic variations in landscape characterize a majority of the land within the County. The largest and most prominent of these hills, the Diablo Range, form the background view for much of the developed areas surrounding the project site. Long-range views of the Diablo Range are visible from the waters and

residences of Discovery Bay. However, existing views are partially obstructed by intervening power lines and the Ravenswood and Discovery Bay West residential subdivisions.

The County General Plan states "…views of these major ridgelines help to reinforce the rural feeling of the County's rapidly growing communities." Views of these scenic ridges, hillsides, and rock outcroppings are considered scenic vistas.

Scenic Waterways

The Delta system of San Francisco, San Pablo, and Suisun Bays is designated by the County General Plan as a scenic vista. Kellogg Creek, which forms the eastern and southern border of the project site, is identified as part of the Delta system and is also designated as a scenic waterway by the General Plan. The County designates scenic waterways for the purpose of conserving the scenic character of the Delta, and gives special consideration to potential impacts to these waterways when reviewing projects.

Significant Trees

Policies within the County General Plan (General Plan) preserve significant trees and natural vegetation, including natural woodlands to the maximum extent possible. The General Plan does not clearly define "significant trees" or "significant natural vegetation" in terms of visual resources.

While there is no comprehensive list of specific features that automatically qualify trees as scenic resources under the California Environmental Quality Act (CEQA), certain characteristics can be identified which contribute to the determination of a scenic resource (see **Subsection 4.17.3**, **Analysis of Potential Impacts** for a detailed discussion of the criteria used to evaluate the project's potential impacts to visual resources).

The site contains 80 trees, primarily scattered in small clusters in the northeastern portion of the site. The trees are not part of larger forest or park, and the analysis contained **Section 4.4, Cultural Resources**, did not identify any historically significant structures or historically significant events associated with the site that might have suggested the trees were associated with such as resource.

Scenic Roadways

According to the General Plan, a scenic route is defined as a "road, street, or freeway which traverses a scenic corridor of relatively high visual or cultural value. It consists of both the scenic corridor and the right-of-way." The closest designated

scenic roadway is State Route 4 (SR-4), located approximately 1-mile south of the project site. Given the relative distance from SR-4 and intervening residential development, the project site is not visible from SR-4.

Sensitive Viewers

Public views are considered to be sensitive when they have high scenic quality and are experienced by large groups of people. Sensitive viewers for the proposed project include adjacent residents, motorists, boaters, and pedestrians. The degree to which these views would be affected by project development varies depending on the viewers' physical location and the duration of the view. For example, because the general topography of the project site and its vicinity is flat and long-distance views are generally available, views from motorists travelling along Point of Timber Road, and views from boaters traveling along Discovery Bay waterways would likely be of a moderate duration. Views from the adjacent residential subdivisions would be of an extended duration.

Six publicly-accessible viewpoints were selected for analysis by the County to represent existing views. Viewpoints A, B, C, and D were determined to provide representative views into the project site from off-site locations, and best represent the visual character and quality and/or the unique visual resources of the surrounding areas. Viewpoint E and F were determined to provide representative views from the project site towards off-site locations. **Figure 4.17-1** provides a key to the location and direction of these viewpoints.

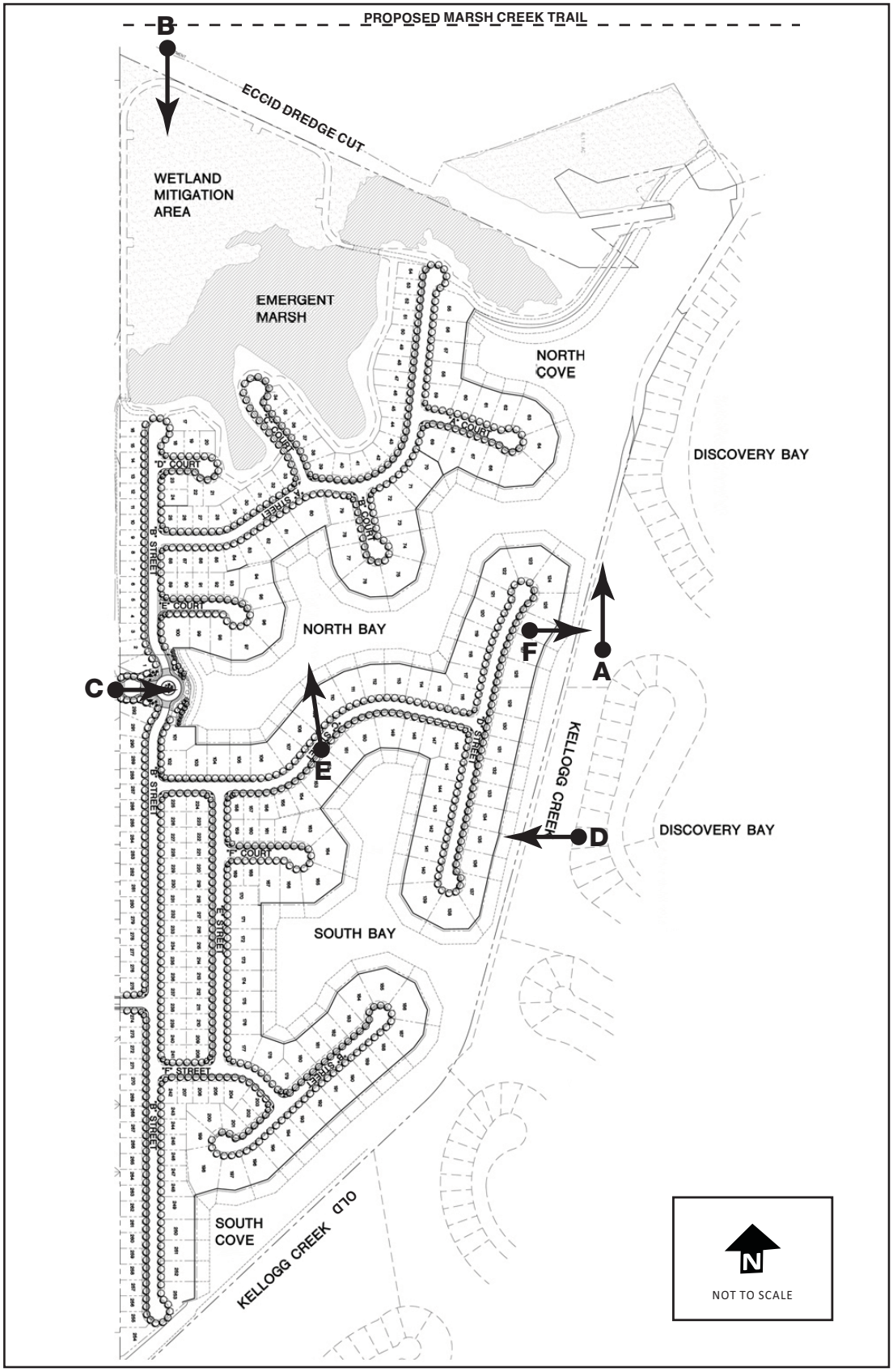
Views of the Site

The project site is visible from several public viewpoints, including the waters surrounding Discovery Bay to the east, Indian Slough to the north, and Point of Timber Road, as well as private properties in the residential subdivisions to the north, east, and west.

Viewpoint A -Kellogg Creek

Viewpoint A provides a view from Kellogg Creek towards the eastern edge of the property (see **Figure 4.17-2**). The viewpoint demonstrates the constrained width of the creek which would be widened by the project to provide for increased boater safety. Pampas grass, bushes, and other low-lying foliage are visible along the banks of Kellogg Creek, and views of the trees lining the ECCID dredge cut indicate the northern boundary of the project site.

The project conditions depicted in the simulated Viewpoint A are discussed in **Subsection 4.17.3** of this section.



Viewpoint Locations Figure **4.17-1**

Source: Rose Associates, 2006; CirclePoint, 2010.

Existing view from Kellogg Creek looking north

Visual simulation of proposed project and marine patrol substation

Viewpoint A: Kellogg Creek

Figure 4.17-2

Source: Environmental Vision, 2010.

Viewpoint B – Proposed East Bay Regional Park District Trail - Marsh Creek Trail to Discovery Bay

According to their 2007 Master Plan Map, the East Bay Regional Park District (EBRPD) proposes to extend the Marsh Creek Regional Trail along the ECCID Dredge Cut, north of the project site. Viewpoint B provides a view towards the project site from the proposed "Marsh Creek Trail to Discovery Bay" (see **Figure 4.17-3**). This viewpoint, highlights the flat terrain and expansive views currently afforded from this location. (The project proposes to plant trees along the creek in the foreground that will eventually screen views from the proposed trail to the project site.) The housing in Village II, Lakeshore, is visible along the western property boundary.

The project conditions depicted in the simulated Viewpoint B are discussed in **Subsection 4.17.3** of this section.

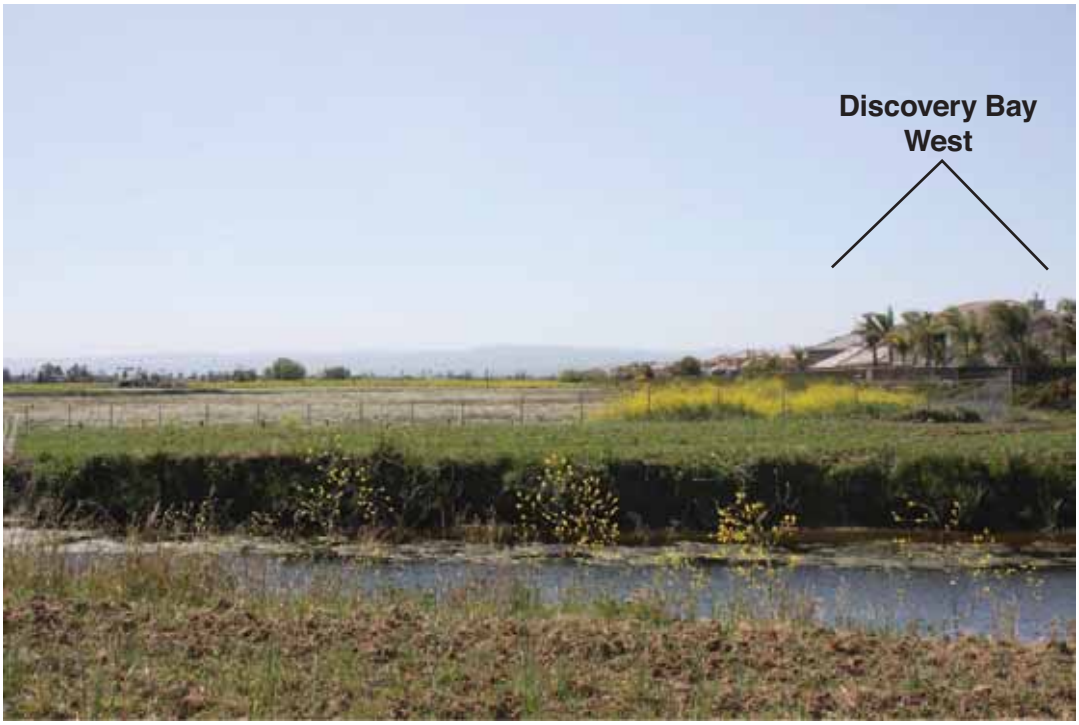
Viewpoint C – Point of Timber Road

Point of Timber Road is a single-lane roadway that provides access to the project site from the west. As shown in **Figure 4.17-4**, motorists, bicyclists, and pedestrians at the terminus of Timber Road have unimpeded views into the site. Point of Timber Road is partially paved and is lined with short, non-native grasses and shrubs, as seen in the foreground from this viewpoint. Notable elements from this location include one barn and associated outbuildings in the center of the site and stands of mature trees, as seen in the mid-ground of this figure. Distant views of homes in Discovery Bay are visible in the background, although the Delta waters are not visible because of the flat topography and the intervening distance of approximately 1,000 feet.

Residents in the Ravenswood and Lakeshore developments would have a similar view, although both subdivisions include backyard fencing that blocks views to the west from exterior areas. Views from the second floor of these subdivisions likely have views to the Delta because of the higher elevation.

Viewpoint D – Discovery Bay

Figure 4.17-5 illustrates the existing views of the project site from the Discovery Bay residential development (east of the site). As previously described in Viewpoint A, direct views of the project site are visible from residents of Discovery Bay. Looking west from the outermost Discovery Bay homes, open views of Kellogg Creek and its vegetated bank dominate the foreground of this



Existing view from proposed Marsh Creek Trail to Discovery Bay, looking south

Visual simulation of project from proposed Marsh Creek Trail to Discovery Bay

Viewpoint B: View from proposed Marsh Creek Trail to Discovery Bay

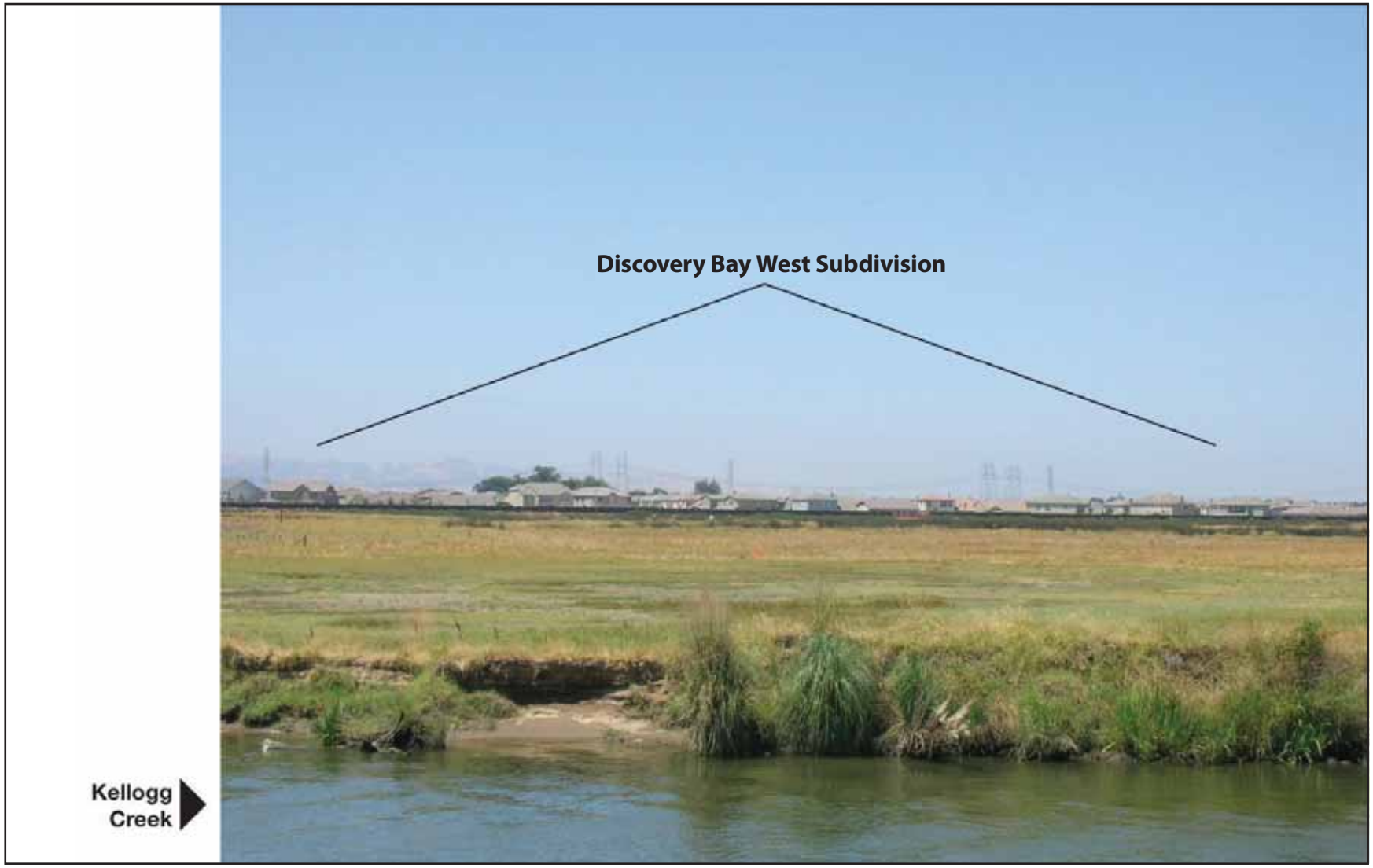
Figure 4.17-3

Source: Environmental Vision, 2010.

Viewpoint C: Point of Timber Road

Figure **4.17-4**

Source: CirclePoint, 2007.



Viewpoint D: Discovery Bay Figure **4.17-5**

Source: CirclePoint, 2007.

figure. The project site encompasses the midground views from this location, and distant, obscured views of the Diablo Range are visible in the background, beyond the Discovery Bay West subdivision.

Views from the Site

Views from the site include views of the existing residential development to the north, east, and west, as well as the waters of Discovery Bay. The subdivisions to the west are organized in a grid-like pattern, whereas Discovery Bay is oriented around curvilinear streets with intersecting bays and coves. The outermost homes in Discovery Bay have deep water access and docks. Individual lots, especially those closest to the project site, often include permanent and temporary structures associated with water access (docks, boats slips, etc.).

Viewpoint E and F – Discovery Bay and Discovery Bay West

Figures 4.17-6 and **4.17-7** include typical views from the site of the Discovery Bay and the Discovery Bay West developments.

4.17.2 REGULATORY SETTING

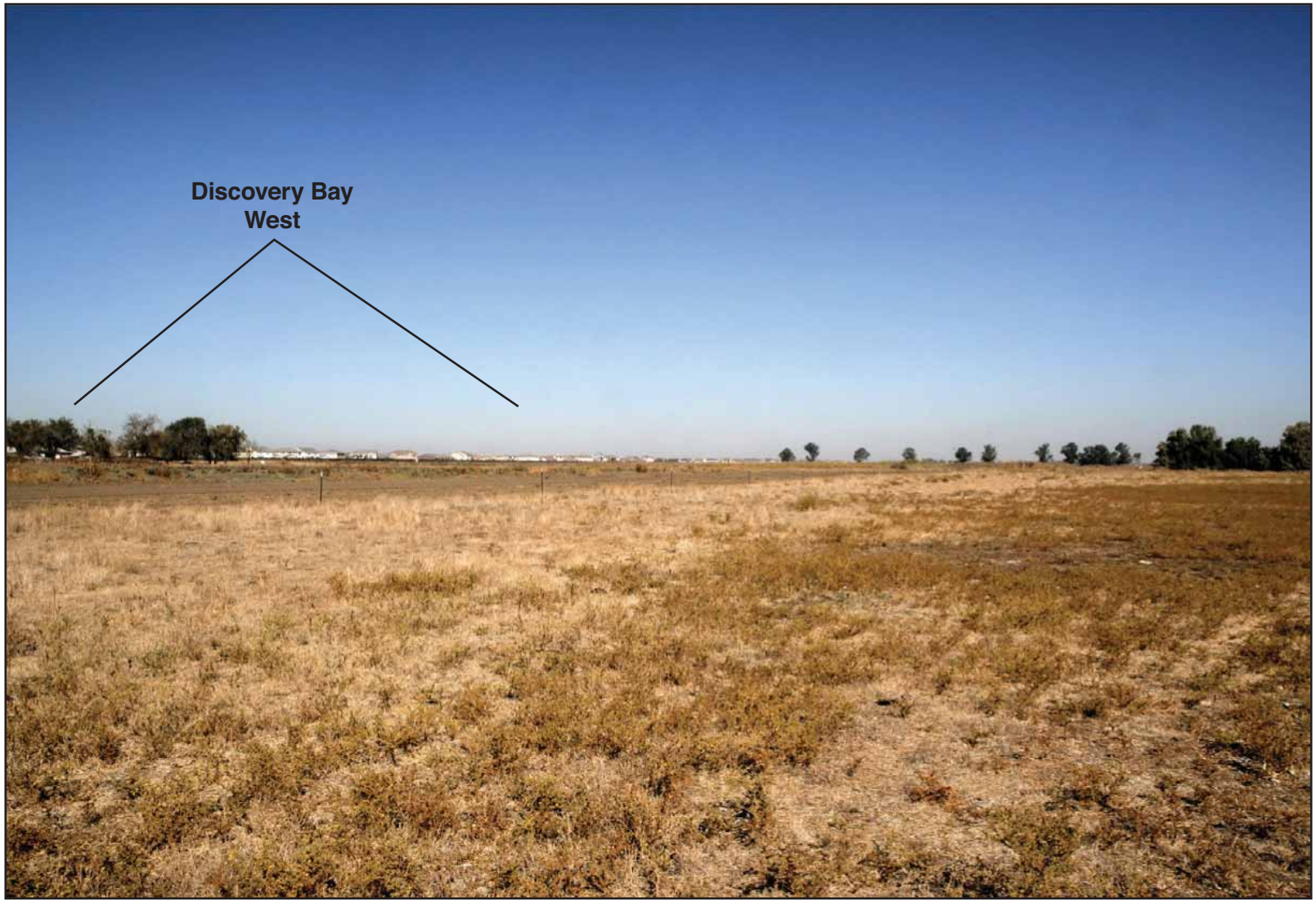
Contra Costa County General Plan

The Open Space Element of the General Plan contains the following relevant policies related to visual resources and aesthetics:

Open Space Element

9-2: Historic and scenic features, watersheds, natural waterways, and areas important for the maintenance of natural vegetation and wildlife populations shall be preserved and enhanced.

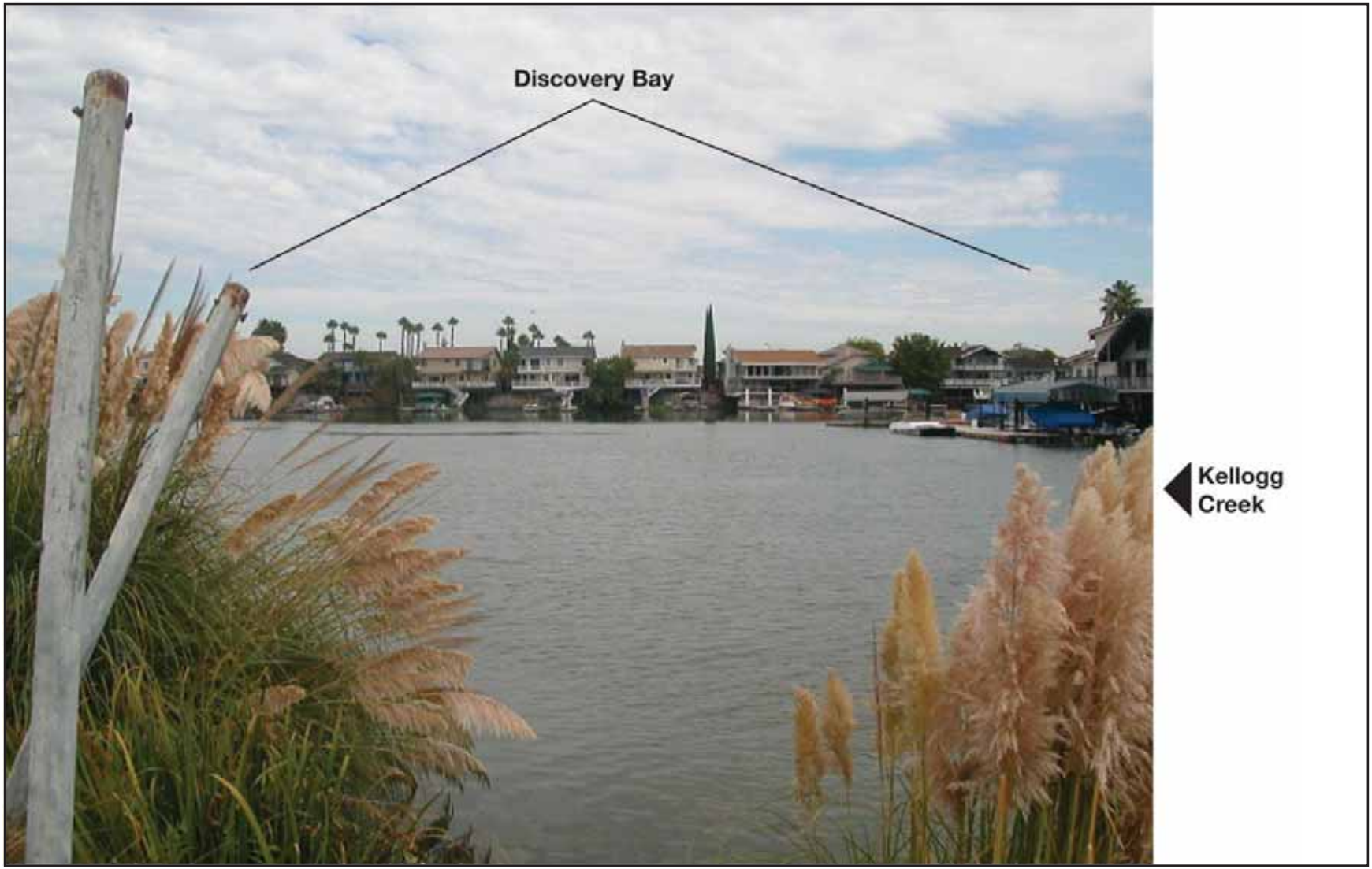
9-14: High quality engineering of slopes shall be required to avoid soil erosion, downstream flooding, slope failure, loss of vegetative cover, high maintenance costs, property damages and damages to visual quality. Particularly vulnerable areas should be avoided for urban development. Slopes of 26 percent or more should generally be protected and are generally not desirable for conventional cut-and-fill pad development. Development on open hillsides and significant ridgelines shall be restricted.



Viewpoint E: View of Discovery Bay West from Project Site

Figure **4.17-6**

Source: CirclePoint, 2007.



Viewpoint F: View of Discovery Bay from Project Site

Figure **4.17-7**

Source: CirclePoint, 2007.

9-15: In order to conserve the scenic beauty of the County, developers shall be required to restore the natural contours and vegetation of the land after grading and other land disturbances. Public and private projects shall be designed to minimize damages to significant trees and other visual landmarks.

9-16: Providing public facilities for outdoor recreation should remain an important land use objective in the County, as a method of promoting high scenic quality, for air quality maintenance, and to enhance outdoor recreation opportunities for all residences.

9-20: New power lines shall be located parallel to existing lines in order to minimize their visual impact.

9-24: Any new development shall be encouraged to generally conform with natural contours to avoid excessive grading.

9-28: Maintenance of the scenic waterways of the County shall be ensured through public protection of the marshes and riparian vegetation along the shorelines and delta levee, as otherwise specified in this Plan.

9-47: Recreational development shall be allowed only in a manner which complements the natural features of the area, including the topography, waterways, vegetation, and soil characteristics.

In addition to the policies stated, the General Plan identifies portions of the San Francisco Bay/Delta estuary system as a scenic resource and identifies Kellogg Creek as a scenic waterway.[1]

The General Plan does not clearly define “significant trees” or “significant natural vegetation” in terms of visual resources. While there is no comprehensive list of specific features that automatically qualify trees as scenic resources under CEQA, certain characteristics can be identified which contribute to the determination of a scenic resource. The following is a partial list of visual qualities and conditions which, if present, may indicate the presence of a scenic resource (Caltrans 2008):

- A tree that displays outstanding features of form or age;
- A landmark tree or a group of distinctive trees accented in a setting as a focus of attention; or
- An unusual planting that has historical value.

[1] Figure 9-1, Scenic Ridges and Waterways, Contra Costa County General Plan, page 9-6.

- Conversely, examples of features that lack the typical characteristics of a scenic resource include:
- Trees that are commonplace and repetitious, occurring frequently along a roadway;
- The fringe trees of a forest; or
- Trees that are incompatible with their surroundings.

Policy Consistency Analysis

The project would be consistent with the General Plan policies related to visual resources.

Although the project would raise the elevations of the building pads for the residential lots, the topography of the proposed development would remain flat. In general, the proposed development would conform to the natural contours of the land, specifically in the areas proposed for the preservation of existing emergent marsh and wetland habitat.

The project would result in the removal of all vegetative cover on the project site, but would replace vegetation through the planting of 770 trees throughout the development, as shown in **Figure 3-6**. The planting would be based on a palette that includes primarily drought tolerant and native species. Additional trees and native vegetation would be planted along enhanced creek banks to provide riparian habitat. Implementation of these project features, in addition to the preservation and enhancement of the emergent marsh and wetland habitat on the northern portion of the site, would be consistent with policies 9-2, and 9-28, and 9-47. As such, the project would be consistent with policies 9-14, 9-15, and 9-24.

An emergency vehicle access (EVA) road would be constructed in the northwestern portion of the project site through the proposed wetland mitigation and open space area. The EVA road would also serve as a publicly accessible pedestrian/bike trail and would include interpretive signage, kiosks, and seating areas, consistent with policy 9-16.

Utilities (including electricity) for the project site would be undergrounded, consistent with policy 9-20.

4.17.3 ANALYSIS OF POTENTIAL IMPACTS

CEQA Significance Criteria

Appendix G of the CEQA Guidelines identifies environmental issues to be considered when determining whether a project could have significant effects on the environment. As identified in Appendix G, the project would have a significant impact to visual resources/aesthetics if it would:

a) Substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway;

b) Have a substantial adverse effect on a scenic vista;

c) Substantially degrade the existing visual character or quality of the site and its surroundings; or

d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

Discussion of No Impact

Analysis of the project plans and site characteristics shows that no impact would result for one of the four significance criteria. The following discussion presents the evidence in support of this conclusion.

a) Would the project substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

There are no state-designated scenic highways within 10 miles of the project site. As such, the project would have no impacts to views from a scenic highway.

Although there are no state designated scenic highways that would be affected by the project, the County identifies SR-4 as a local scenic route. As previously discussed, SR-4 is located more than 1-mile south of the project site, and would not be visible to motorists travelling along this route. Therefore, the project would have no impacts to views from this local scenic route.

Discussion of Less-than-Significant Impacts

Analysis of the project plans and site characteristics shows that there would be a less-than-significant impact for two of the four significance criteria. The following discussion presents the evidence in support of this conclusion.

b) Would the project have a substantial adverse effect on a scenic vista?

The General Plan identifies two major visual resources in the County: (1) scenic ridges, hillsides, and rock outcroppings of the Diablo Range; and (2) the San Francisco Bay/Delta estuary system. As previously discussed, both resources are visible from the areas surrounding the project site. In addition, policies within the General Plan require preservation, to the maximum extent possible, of significant trees and natural vegetation, including natural woodlands. For the purposes of this analysis, "significant trees" or "significant natural vegetation" were defined per the list of visual qualities and conditions presented in **Subsection 4.17.2**, **Regulatory Setting**.

Trees and Vegetation

There are 80 trees scattered in small clusters throughout the project site, primarily in the northeastern portion of the site. The trees are not part of larger forest or park, and do not represent a distinctive planting that has historical value, nor do they represent a unique feature of the area that is the focus of attention. As such, the trees on the project site are not considered a significant visual resource protected under the General Plan. The removal of the trees would therefore not represent a significant impact to visual resources.

The Diablo Range

Distant views of the Diablo Range from Discovery Bay residences are partially obstructed by residential development and power lines (see **Figure 4.17-5**).

Construction of the proposed two-story single-family homes would introduce urban residential uses that would be compatible with surrounding residential development.[2] Given that the project site and vicinity is relatively flat, the proposed construction would impede long-range views to the west, and would incrementally obstruct views of the Diablo Range along the distant horizon.

Because views of the Diablo Range are already partially obstructed by the Discovery Bay West development, and because the development is compatible with the type and intensity of surrounding development, construction of the project is not considered a significant impact to a scenic vista.

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[2] The homes that would be constructed as part of the project would be custom built and/or production-type products similar to the existing homes in Discovery Bay and Discovery Bay West. As such, the project applicant does not currently have elevation estimates and/or drawings for the proposed development.

Scenic Waterways

Kellogg Creek and the associated waterways of the Delta estuary system are not visible from most of the adjacent private properties to the northwest and west of the project site due to the flat topography and the 1,000 feet or more of distance. Views of the Delta from the second story of these residences—to the extent that they currently exist—would be partially obstructed by the project, although the new bays and coves would be created in much closer proximity, potentially providing expanded views of the water.

Views of scenic waterways from Discovery Bay (east of the site) would not be impacted by the development of the project site, as the proposed improvements would occur west of Kellogg Creek. Therefore, implementation of the project would have a less-than-significant impact to a designated scenic waterway.

c) Would the project substantially degrade the existing character or quality of the site and its surroundings?

Development of the project site would introduce one- to two-story residential buildings on a predominantly undeveloped vacant site. The project would be similar in type, density, and quality with surrounding subdivisions. The project would not substantially alter the existing urban-residential character of the area. **Figure 4.17-2** illustrates the proposed project conditions for boaters travelling north along Kellogg Creek. As seen in this figure, the project improvements along Kellogg Creek would very similar to the existing Discovery Bay development, and would also have the same types of permanent and temporary structures associated with water access (i.e., docks, boats slips, etc.).

The project would construct enhanced marshlands on the northern portion of the site, and would improve the natural habitat that is visible from the north, northwest, and east. **Figure 4.17-3** illustrates future project conditions for individuals using the proposed EBRPD Marsh Creek Trail to Discovery Bay. This visual simulation illustrates the distance to the proposed project development from the future trail, and the amount of space that would be provided as part of the project's emergent marsh and open space area. This visual simulation illustrates an unobstructed view of the project site, and does not show proposed vegetation that would be planted in the foreground along the canal bank as part of the mitigation requirements for biological impacts (see **Mitigation Measure BIO-2**).

The open space and reconstructed marshlands would create a visual buffer for individuals looking at the project site from the north. Additionally, views from the north of the project site, looking south, would not be substantially altered by the project because of the scale of the proposed development and its consistency with the surrounding neighborhood developments.

Given the above, impacts related to degradation of the existing character or quality of the site and its surroundings are considered less than significant.

Discussion of Significant Impacts

Analysis of the project plans and site characteristics shows that there would be a significant impact for one of the four significance criteria. The following discussion presents the evidence in support of this conclusion.

d) Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Impact VIS-1: The project would create new sources of light and glare which could adversely affect day or nighttime views in the area. (Significant)

Existing sources of lighting include nearby residential buildings and headlights from vehicles travelling along Point of Timber Road. The project would include lighting elements typical of a residential neighborhood (e.g., porch lights, street lights, etc.) that would introduce new sources of nighttime lighting to the project site and surrounding areas. The project applicant proposes the use of street light fixtures that minimizing uplight and glare. The cutoff optical system (IES) on the streetlight fixtures allows only 1 percent uplight. This means that the light from this fixture allows only 1 percent of candela[3] intensity to be emitted at an angle above 90 degrees to the ground or other lateral angles around the lamp. This cutoff feature is designed to minimize sky glow and energy waste. The fixtures would be mounted on sixteen-foot-tall poles, and spaced at approximately 115 foot intervals along all project streets.

Mitigation Measure VIS-1 would reduce the potential impact of the new sources of residential light and glare, and potential for lateral spread of lighting onto adjacent properties.

[3] A candela is a unit of light measurement that refers to the power emitted by a light source in a particular direction.

Mitigation Measure VIS-1: The project applicant shall prepare a lighting plan for the review and approval by the Zoning Administrator. Exterior lighting shall be low mounted, downward casting, shielded, and shall utilize motion detection systems where applicable. In general, the light footprint of individual units shall not extend beyond the periphery of each property. Implementation of exterior lighting fixtures on all buildings shall also comply with the standard California Building Code (Title 24, Building Energy Efficiency Standards) to reduce the lateral spreading of light to surrounding uses.

Significance after Mitigation: Less than significant.

This measure includes specific direction to ensure the development of a lighting system that complies with the requirements of the standard California Building Code, including provisions to prevent nighttime lighting from spilling out onto the adjacent properties. Compliance with the provisions of the building codes would therefore reduce the lighting impacts to a less-than-significant level.

4.17.4 CUMULATIVE IMPACTS

The cumulative setting for aesthetics includes any proposed development and/or cumulative projects that would affect scenic resources within the County.

The General Plan EIR noted three primary areas where scenic quality could be degraded:

- development of vacant areas would reduce natural open space and would change the County's character.
- new development that is obtrusive, inconsistent with surrounding development or which is placed on a location of unique scenic value.
- development of hillsides, ridges, and the Bay and Delta shoreline

For the first impact, the EIR noted that adoption of the ULL would concentrate development within 35 percent of County lands, preserving 65 percent of County lands from urban development. Although the project would develop vacant land, it is within the ULL and is therefore identified for conversion to an urban use, along with the adjacent subdivisions that have already been developed.

As discussed in this section, the project site is not would be similar in type, density, and quality to the surrounding subdivisions and would not therefore result in a cumulative contribution to the degradation of scenic quality noted in the second impact.

The project would not develop any hillsides or ridgelines, but would develop the shoreline along Kellogg Creek to provide private docks with deep water access. This development would degrade the shoreline from its current state, which is characterized as low quality creek bank habitat. To address impacts to the shoreline and associated biological species, the applicant would be required to enhance 11,060 linear feet of creek bank habitat on Pantages Island and along the ECCID dredge cut to provide high and moderate quality shaded riverine aquatic habitat. These enhancements would be visible to the public through the public trail to be provided through the emergent marsh and wetland mitigation area (see **Section 4.3, Biological Resources, Mitigation Measure BIO-2**). With the implementation of this and other associated enhancement measures, the project's contribution to this identified impact would not be considerable.

4.17.5 REFERENCES

California Building Code, Title 24, Parts 1 and 6, Building Energy Efficiency Standards. November 5, 2003

California Department of Transportation (Caltrans) (2008). Standard Environmental Reference (SER): Chapter 27, Visual & Aesthetics Review.

Contra Costa County General Plan (2005), Open Space Element.

5.0 ALTERNATIVES

5.1 INTRODUCTION

In accordance with California Environmental Quality Act (CEQA) Guidelines Section 15126.6, this draft Environmental Impact Report (EIR) contains a comparative impact assessment of alternatives to the project. The primary purpose of this section is to provide decision makers and the general public with a range of reasonable project alternatives that could feasibly attain most of the basic project objectives, while avoiding or substantially lessening any of the project's significant adverse environmental effects. Important considerations for these alternatives analyses are noted below.

- An EIR need not consider every conceivable alternative to a project;
- An EIR should identify alternatives that were considered by the lead agency, but rejected as infeasible during the scoping process;
- Reasons for rejecting an alternative include:
  - Failure to meet most of the basic project objectives;
  - Infeasibility; or
  - Inability to avoid significant environmental impacts.

5.1.1 SIGNIFICANT UNAVOIDABLE IMPACTS

The Pantages Bays Project (project) is described and analyzed in the previous chapters with an emphasis on significant impacts and mitigation measures to avoid these impacts. The project would result in the following significant unavoidable impacts:

- Traffic: The project would increase traffic volumes and worsen LOS conditions along Marsh Creek Road and Vasco Road. As there are no plans to provide additional capacity on these roadway segments, the impacts would remain significant and unavoidable. This would also be a significant unavoidable cumulative impact.

- Global Climate Change: The project would generate greenhouse gas (GHG) emissions in excess of the Bay Area Air Quality Management District's (BAAQMD) threshold of 4.6 metric tons of carbon dioxide equivalents (CO_2e) per service population per year and would therefore have a considerable contribution to global climate change. This would be a significant unavoidable cumulative impact.

5.1.2 ALTERNATIVES TO THE PROPOSED PROJECT

The two alternatives to the project analyzed in this section are as follows:

- No Build Alternative: The site would remain in its existing condition and no development would occur.
- Reduced Density (No Project Alternative): This alternative assumes future development would be consistent with the existing general plan and zoning designations of the project site.

The two alternatives to the project are analyzed below and include a comparison of the project and each individual project alternative. In several cases, the description of the impact may be the same under each alternative when compared with the CEQA thresholds of significance (i.e., both the project and the alternative would result in a less than significant impact). The actual degree of impact may be slightly different between the project and each alternative, and this relative difference is the basis for a conclusion of greater or lesser impacts.

The CEQA Guidelines require that an environmentally superior alternative be identified when compared to the project and other alternatives. If the alternative with the least environmental impact is determined to be the "no project alternative," the EIR shall also identify an environmentally superior alternative among the other alternatives.

Table 5-1 below presents a summary matrix of the project impacts in comparison with all three alternatives.

5.2 PROJECT OBJECTIVES

As stated in **Chapter 3.0, Project Description**, the two main objectives of the project are as follows:

- Build an economically viable residential community with bays, coves, and a proportionately significant number of waterfront residences with deep-water access and individual docks; and

- Widen a portion of Kellogg Creek on the northern end of the project site to reduce water velocities and improve public safety in that section of Kellogg Creek.[1]

Other key project objectives include:

- Construct market-rate housing to meet the needs of present and future residents of eastern Contra Costa County;
- Develop a project consistent with the character of existing neighborhoods (i.e., 6,000- to 21,320-square-foot lots) to the east and west of the project site and that creates an improved link between the original Discovery Bay and Discovery Bay West;
- Provide for flood protection in a conservative manner that exceeds current County minimum standards for finished floor elevations above the 100-year storm base flood elevation (BFE);
- Reduce the need for dredging by Reclamation District 800 (RD 800) and improve water quality in Kellogg Creek and Indian Slough through appropriate bank stabilization and habitat restoration along the project shoreline, further reducing the amount of scour and associated sedimentation;
- Create new high- and moderate-quality bank habitat in and near the project site and enhance existing banks from low-quality to high-quality bank habitat to benefit native fish species;
- Preserve the majority of the emergent marsh in the northwestern portion of the site and all of the emergent marsh on Pantages Island;
- Provide public pedestrian/bicycle access to and through the preserved open space areas on the north side of the project site, with open views of the Delta water, and provide seating areas and kiosks with educational signage; and
- Provide improved safety for project residents and within Discovery Bay by constructing a marine patrol substation with a two-boat dock at the northeasterly point on the project site, and provide funding by future property owners through a police service district tax for an extra deputy sheriff who could operate out of the substation on an as-needed basis.

[1] The existing channel is narrower than is the width generally required by RD 800.

5.3 ALTERNATIVE 1 – NO BUILD ALTERNATIVE

Under Alternative 1, the project site would remain in its current state and there would be no development of residential housing units, roadways, and utilities infrastructure. The site would remain privately-owned and the open space wetland mitigation area would remain unimproved. There would be no changes to parcels on the site or any amendments to the General Plan or Zoning Ordinance.

5.3.1 IMPACT ANALYSIS

Under Alternative 1 no new structures would be built, the existing buildings on site would remain vacant and no new human occupation or use of the project site would occur. Project impacts related to construction, new buildings, and human occupation of the site would therefore be completely avoided. Because annual disking and cattle grazing would still occur, Alternative 1 would have the potential to impact biological resources. Alternative 1 would not address abandoned groundwater wells on the project site, which have the potential to impact water quality.

The following analysis evaluates the impacts of Alternative 1 in these two topic areas, as compared to the project. The remaining issue areas are not discussed further since Alternative 1 would not result in impacts in these categories, although they are shown in **Table 5-1** below.

Biological Resources

Alternative 1 would involve no new human occupation or construction. Therefore Alternative 1 would avoid many of the impacts to biological resources when compared with the project. Although Alternative 1 would involve fewer ground disturbing activities than the project, annual disking of the site has the potential to result in some impacts to the California red-legged frog, the western pond turtle and the western burrowing owl. Therefore, Alternative 1 would have biological resources impacts slightly less than the project.

Hydrology and Water Quality

The project site contains abandoned groundwater wells that could act as direct conduits to groundwater for hazardous waste. Alternative 1 would have the same risks as the project in terms of water quality impacts from abandoned groundwater wells in the area (**Impact HYD-2**), although all other impacts would be reduced when compared to the project.

5.3.2 CONCLUSION

The No Build Alternative would avoid the project's significant unavoidable impacts and would have less impact on most environmental topical areas. However, this alternative would not advance any of the project objectives.

5.4 ALTERNATIVE 2 – REDUCED DENSITY (NO PROJECT) ALTERNATIVE

Pursuant to CEQA Guidelines, Section 15126.6 (e)(3)(A), when a project is a revision to an existing land use or regulatory plan, the No Project alternative will be the continuation of the existing land use or regulatory plan for the project site. Project site parcels are currently designated by the General Plan as Agricultural Lands (AL), Delta Recreation and Water (WA), and zoned as a General Agricultural District (A-2) and a Heavy Agricultural District (A-3).

The Agricultural Lands (AL) land use designation allows for all land-dependent and non-land dependent agricultural production and related activities. The General Plan permits residential uses at a maximum allowable density of one dwelling unit per 5 acres. Other uses related to processing of agricultural products, agricultural support services and small-scale visitor uses are allowed with a land use permit.

The A-2 and A-3 zoning designations allow the site to be developed with agricultural uses, such as general farming and sheds and warehouses, and with residential uses, such as a single-family dwelling or a family care home. A detached single-family dwelling is allowed on each parcel with the A-2 or A-3 zoning designation. Other uses, such as commercial recreational facilities, medical offices, or churches, may be allowed with a land use permit.

Alternative 2 assumes primarily rural residential land uses on approximately 171 acres as allowed under the existing general plan and zoning designations. For purposes of this analysis, five of the parcels on the project site are considered developable. This alternative assumes five single-family residential units would be constructed on the project site in accordance with current zoning designations. This alternative would not require a General Plan amendment.

5.4.1 IMPACT ANALYSIS

Under Alternative 2, the project site would be developed with rural residential uses that would include a few agricultural-related structures such as barns and sheds. This alternative assumes that the existing wetlands and emergent marsh would be protected, similar to the project. The limits of development would therefore be the same as the project, but the density would be reduced by approximately 98 percent.

The reduced density of this alternative would result in fewer vehicle trips, reducing the traffic-related impacts to a less-than-significant level. Project impacts related to air quality, biology, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, noise, public services and recreation, utilities, and visual resources would be similarly reduced.

The following analysis evaluates the impacts of Alternative 2 as compared to the project.

Agricultural Resources

The project site does not contain farmland designated “Prime,” “Unique,” or of “Statewide Importance”, or land that is protected under a Williamson Act contract. Similarly, the project site does not contain any forest land. As such, development under either the project or Alternative 2 would not result in significant impacts to agricultural or forest resources.

Air Quality

In comparison to the project, Alternative 2 provides 98 percent fewer residential homes, and therefore substantially reduces the emissions form the use of wood-burning stoves, resulting in reduced air quality impacts from the operation of the proposed development (**Impact AQ-1**).

Both the project and Alternative 2 would result in construction-related emissions (**Impact AQ-2**); however, as the physical expanse of Alternative 2 would be less than the project, construction-related emissions that could affect sensitive receptors would be reduced.

Biological Resources

Although the density of development allowed by Alternative 2 would be significantly less than the project, some or all of the 80 trees on the project site could be removed or disturbed during construction of the five residences and associated

agricultural-related structures under Alternative 2. Therefore, Alternative 2 would have reduced impacts to protected trees on the project site when compared with the project (**Impact BIO-1**).

Alternative 2 would not involve creek widening activities, creations of new bays or waterfront homes, and would avoid this impact and the need for mitigation (**Impact BIO-2**).

Vernal pool fairy shrimp were identified in a seasonal wetland on the project site that could be avoided by Alternative 2. Therefore, impacts to vernal pool fairy shrimp under Alternative 2 would be similar to the project (**Impact BIO-3**).

Project development has the potential to result in impacts to the California red-legged frog since the project site provides suitable habitat for this species, which is both federal-listed as threatened, and is also a California species of special concern. Development of Alternative 2 would have similar impacts to the California red-legged frog when compared to the project (**Impact BIO-4**).

Development of the project has the potential to result in impacts to the giant garter snake since the project site provides suitable habitat for this federal and state-listed threatened species. Therefore, Alternative 2 would have similar impacts to the giant garter snake when compared to the project (**Impact BIO-5**).

The western pond turtle is a California species of special concern that is known to occur on the project site. Development of the project has the potential to impact individual western pond turtles and their habitats. Similarly, development under Alternative 2 would impact western pond turtles and their habitats (**Impact BIO-6**).

Project construction activities related to channel widening and excavation of uplands have the potential to impact federal and/or state-listed fish species, as well as fish species designated by the State of California as Species of Special Concern. However, Alternative 2 would not involve creek widening activities or excavation of interior bays or coves. Therefore, Alternative 2 would avoid this impact and associated avoidance measures (**Impact BIO-7**). The enhancement of creek bank habitat along the ECCID dredge cut and Pantages Island would not occur under this Alternative.

Project construction activities would have a potentially significant impact on nesting and foraging habitat of tree nesting raptors, Swainson's hawk, and other protected nesting birds. Although Alternative 2 would result in the removal of fewer trees when compared to the project, it would result in similar construction activities that could impact the nesting and foraging habitat of tree nesting raptors, Swainson's hawk, and other protected nesting birds (**Impact BIO-8, BIO-9, and BIO-11**).

Project development has the potential to result in impacts to the western burrowing owl since they are known to nest adjacent to the project site and their presence on the project site cannot be ruled out. Development of Alternative 2 would have greater flexibility to avoid impacts to the western burrowing owl when compared to the project (**Impact BIO-10**).

The project would have potential impacts to the waters of the Unites States and waters of the State due to construction and development activities near the designated waters. Since development of the project site is also proposed under Alternative 2, impacts to waters of the United States and waters of the State would be similar.

Cultural Resources

Subsurface construction associated with both the project and Alternative 2 would have the same potential to damage unknown cultural resources in the project area (**Impacts CUL-1** through **CUL-4**). However, as the physical expanse of development under Alternative 2 would be reduced, the likelihood of these discoveries occurring would be less when compared to the project.

Energy

Under Alternative 2 there would be 98 percent fewer residential homes and therefore less energy demands than when compared to the project. Neither the project nor Alternative 2 would result in significant impacts related to Energy.

Geology and Soils

Similar to the project, Alternative 2 would expose new structures and people to adverse effects from strong seismic ground shaking and seismic related ground failure including liquefaction and lateral spreading (**Impact GEO-1**). Development under Alternative 2 would also result in similar soil erosion potential when compared to the project (**Impact GEO-2**). Taken as a whole, Alternative 2 would result in fewer homes or structures on the project site such that seismic and soil-related hazards would endanger fewer people; however, exposure to hazards would still be possible for anyone on the site, resulting in a similar level of impact.

Global Climate Change

In comparison to the project, there would be 98 percent fewer residential homes under Alternative 2, and therefore approximately 98 percent fewer greenhouse gas (GHG) emissions (i.e., approximately 102 metric tons of carbon dioxide equivalents [CO_2e]) when fully developed. This level of emissions is below the BAAQMD CEQA

Guidelines' threshold of significance of 1,100 metric tons CO_2e emissions per year. Therefore, Alternative 2 would substantially reduce the impacts to global climate change to a less-than-significant level.

Hazards and Hazardous Materials

Alternative 2 would require similar construction activities as the project; therefore, Alternative 2 would have the same risks associated with the release of hazardous materials (**Impacts HAZ-1** and **HAZ-2**) and related impacts to nearby sensitive receptors (**Impact HAZ-3**) would occur as when compared to the project.

Hydrology and Water Quality

Development of the project site under Alternative 2 would alter the existing drainage patterns in the area to a lesser degree than what is proposed by the project, resulting in reduced impacts to water quality when compared to the project (**Impact HYD-1**). Alternative 2 would have the same risks as the project in terms of water quality impacts from abandoned groundwater wells in the area (**Impact HYD-2**). Development would be subject to the same flood risks from future sea level rise under either the project or Alternative 2 (**Impacts HYD-4** and **HYD-5**). Alternative 2 would not include waterfront development or the widening of Kellogg Creek, as such water quality impacts related to these construction activities under the project (**Impact HYD-3**) would be avoided under Alternative 2.

Land Use and Planning

Alternative 2 would allow development on the project site consistent with the current general plan designations. This alternative would not require a General Plan Amendment or a rezone and would be consistent with applicable land use plans and policies, similar to the project.

However, Alternative 2 does not allow for a concentration of development within the boundaries of the Discovery Bay ULL. Although Alternative 2 would be compatible with land uses and densities in the surrounding area similar to the project, it should be noted that development allowed by Alternative 2 would be at a much lower density than surrounding land uses.

Mineral Resources

The project site does not contain any mineral resources. Development under either the project or Alternative 2 would not result in impacts to mineral resources.

Noise

Construction of either the project or Alternative 2 would create noise levels at adjacent residences that would exceed the County's standards (**Impact NOI-1**). The project would require a much longer construction period and would involve more intensive grading, excavation, and shoring of creek banks. Alternative 2 would result in less intrusive construction-period impacts.

Population and Housing

Under Alternative 2 there would be 98 percent fewer residential homes and therefore less population growth than when compared to the project.

Public Utilities

Under Alternative 2 there would be 98 percent fewer residential homes and therefore less population growth than when compared to the project. This reduction in population growth would result in lesser impacts related to utility demands (**Impact UTIL-1** and **Impact UTIL-2**).

Traffic and Circulation

In comparison to the project, there would be 98 percent fewer residential homes under Alternative 2, and therefore substantially reduced traffic. This reduction in traffic would avoid project-related impacts to the local intersections and roadways in the project area (**Impacts TRA-1** and **TRA-2**).

Visual Resources and Aesthetics

In comparison to the project, there would be 98 percent fewer residential homes under Alternative 2, and therefore less impacts related to light and glare when compared to the project (**Impact VIS-1**).

Cumulative Impacts

As discussed in the individual subsections of **Chapter 4.0, Settings, Impacts and Mitigation Measures**, there would be cumulatively significant impacts to many of the resource areas. For the issue areas where significant cumulative impacts were identified, the reduced density under Alternative 2 would contribute less to these impacts than when compared to the project.

Alternative 2 would avoid the cumulative noise impact along Point of Timber Road between Bixler Road and Byron Highway. The reduction in traffic trips would result in a less than considerable contribution to the cumulative increase in noise along this corridor.

Alternative 2 would avoid the conflict with implementation with the Bay Area 2010 CAP, as the property would be developed according to existing land use designation that were assumed as part of the plan.

5.4.2 CONCLUSION

The Reduced Density (No Project) Alternative would avoid the project's significant unavoidable impacts and would have less impact on all environmental topical areas. However, this alternative would not advance any of the project objectives.

5.5 SUMMARY OF COMPARATIVE IMPACTS

This section summarizes the comparative impacts of each of the alternatives when compared to the project. **Table 5-1** below lists the level of significance of the impacts of the project to each environmental area analyzed in **Chapter 4.0, Settings, Impact and Mitigation Measures**, and shows whether the impacts anticipated under each alternative would be equal, lesser or greater than those of the project.

Table 5-1 Summary of Comparative Impacts

Environmental Issue	Project Level of Environmental Impact	No Build Alternative	Reduced Density (No Project) Alternative
Agricultural Resources	Less than significant	Lesser	Similar
Air Quality (Conflict with applicable air quality plan)	Significant and unavoidable	Lesser	Lesser
Biological Resources	Less than significant with mitigation	Lesser	Lesser
Cultural Resources	Less than significant with mitigation	Lesser	Lesser
Energy	Less than significant	Lesser	Lesser
Geology and Soils	Less than significant with mitigation	Lesser	Similar

Environmental Issue	Project Level of Environmental Impact	No Build Alternative	Reduced Density (No Project) Alternative
Summary of Comparative Impacts, continued.			
Global Climate Change	Significant and unavoidable	Lesser	Lesser
Hazards and Hazardous Materials	Less than significant with mitigation	Lesser	Similar
Hydrology and Water Quality	Less than significant with mitigation	Lesser	Lesser
Land Use and Planning	Less than significant	Lesser	Similar
Noise and Vibration	Less than significant with mitigation	Lesser	Lesser
Population and Housing	Less than significant	Lesser	Lesser
Public Services and Recreation	Less than significant with mitigation	Lesser	Lesser
Public Utilities	Less than significant with mitigation	Lesser	Lesser
Transportation and Circulation	Significant and unavoidable	Lesser	Lesser
Visual Resources and Aesthetics	Less than significant with mitigation	Lesser	Lesser
Cumulative Impacts	Significant and unavoidable	Lesser	Lesser

Source: Circlepoint, 2011.

5.6 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

Pursuant to CEQA Guidelines 15126.6(c), an EIR should identify any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process, and briefly explain the reasons underlying the lead agency's determination. Among the factors that may be used to eliminate alternatives from detailed consideration in an EIR include: (1) failure to meet most of the basic project objectives, (2) infeasibility, or (3) inability to avoid significant environmental impacts. To assist with this discussion, a list of the project objectives is provided in **Section 5.2, Project Objectives**.

5.6.1 ALTERNATIVE OFF-SITE LOCATIONS

No feasible off-site locations for the project were found. To attain most of the project's objectives, the applicant would require a relatively large area of land to develop or redevelop. The project proponents do not own or control any other vacant property adjacent to waterways in the Discovery Bay area similar in nature to the project site.

5.6.2 AGE-RESTRICTED COMMUNITY

The County considered and rejected an alternative that would allow a subdivision to operate as an active adult community that would be age-restricted to residents 55 years of age or older. Housing in active adult communities generates half the number of vehicle trips as traditional sub division housing, and senior apartments generate even fewer vehicle trips. Although age-restricted housing on the project site would result in fewer vehicle trips, the reduction in trips would not be enough to avoid the significant and unavoidable traffic impacts. Furthermore, this alternative would not reduce many of the other project impacts related to air quality, biology, cultural resources, geology and soils, global climate change, hazards and hazardous materials, hydrology and water quality, noise, public services and recreation, utilities, and visual resources.

5.6.3 REDUCED DENSITY ALTERNATIVE

The County considered and rejected a Reduced Density Alternative that would lessen the size of the project to a point where significant and unavoidable impacts would be reduced to a less-than-significant level. The County identified an alternative consisting of 30 residences on the project site to reduce significant and unavoidable traffic impacts and subsequently reduce significant and unavoidable impacts related air quality, greenhouse gas, and noise.

However, the Reduced Density (No Project) Alternative that includes the construction of 5 residences would result in a similar reduction of impacts when compared to a 30-residence reduced density alternative. Five residential units represent a 98 percent reduction in density on the project site compared to a 90 percent reduction in density to 30 residential units. Since the analysis of these two reduced density alternatives would result in the same conclusions, it was determined that a 30-residence reduced density alternative would be redundant. The Reduced Density (No Project) Alternative fulfills the reduce density option.

Furthermore, the 30-residence alternative was rejected because of its inability to meet the majority of the project objectives, specifically the inability to build an economically viable residential community and to develop a project consistent with the character of existing neighborhoods to the east and west. This alternative would also not widen the Kellogg Creek channel and would not result in the beneficial biological resource impacts of the project. For these reasons, this alternative was rejected.

5.6.4 BIOLOGICAL RESOURCE MITIGATION ALTERNATIVE

Under this alternative, development would not be permitted in the northern part of the project site where existing sensitive biological resources, including emergent marsh and seasonal wetlands, are located. This alternative would protect trees, nesting birds, vernal pool fairy shrimp, and habitat for California red-legged frog, giant garter snake, western pond turtle, and western burrowing owl. This alternative would not include the enhancement of creek bank habitat along the ECCID dredge cut and Pantages Island. Furthermore, this alternative would not result in a reduction of the significant and unavoidable impacts related to traffic, air quality, noise, and greenhouse gases, nor would this alternative advance a majority of the project objectives.

5.7 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

CEQA requires the identification of an environmentally superior alternative among the alternatives to the project. The environmentally superior alternative must be an alternative to the project that reduces some of the environmental impacts of the project, regardless of the financial costs associated with this alternative.

As demonstrated in the section, a range of reasonable alternatives were considered, but rejected because they do not meet a majority of the project objectives or were deemed infeasible. A comparison merit was included for the No Build Alternative and a Reduced Density (No Project) Alternative. The reduced density alternative was developed to avoid the significant and unavoidable impacts to traffic, and to fulfill the requirements of CEQA to considered development under existing land use plans. **Table 5-1** provides a comparison of the potential impacts of the No Build Alternative and the Reduced Density (No Project) Alternative. Both of these alternatives would avoid the project's significant and unavoidable traffic, air quality, noise, and greenhouse gas impacts. The No Build Alternative would have less

impact on most environmental topical areas when compared to the project. The Reduced Density (No Project) Alternative would have similar or lesser impacts on all environmental topical areas.

Identification of the environmentally superior alternative is an informational procedure and the alternative selected may not meet the goals or needs of the County. The project under consideration cannot be identified as the environmentally superior alternative.

Additionally, if the No Build/No Project Alternative is determined to reduce most impacts, CEQA requires that the EIR identify an Environmentally Superior Alternative among the other alternatives (CEQA Guidelines Section 15126.6(e)). Because a majority of the alternatives that would reduce and avoid significant impacts would not attain a majority of the project objectives and were deemed infeasible, the environmentally superior alternative in this case is the Reduced Density (No Project) Alternative.

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6.0 CEQA–REQUIRED DISCUSSION

As required by the California Environmental Quality Act (CEQA), this chapter provides a discussion of significant irreversible environmental changes that could be caused by project implementation and growth-inducing impacts of the project. The focus of this chapter is on the environmental effects of construction and operation of the development of the project site and the resulting growth potentially generated by the project.

6.1 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

CEQA Section 15126.2(c) requires that an EIR discuss any environmental changes that would be irreversible if the project were implemented. CEQA defines irreversible environmental changes as the irretrievable commitment of resources and/or irreversible damage resulting from environmental accidents. Irreversible changes may include current or future uses of non-renewable resources, and secondary or growth inducing impacts that commit future generations to similar uses. The CEQA Guidelines describe three distinct categories of significant irreversible changes, including changes in land use that would commit future generations to specific uses; irreversible changes from environmental actions; and consumption of non-renewable resources.

6.1.1 CHANGES IN LAND USE WHICH WOULD COMMIT FUTURE GENERATIONS

As the project site is currently undeveloped agricultural land, implementation of the project would result in the urban development of the project site. The project would involve the construction of 292 new residential units, utility infrastructure, roadways, roadway improvements, and creation and enhancement of an emergent marsh. The applicant is requesting approval of a general plan amendment that would change the land use on the project site from agricultural lands to residential, water, public/semi-public and open space. The land use designation for this project

would not affect future specific uses at the project site and in the project vicinity because the land use designation only applies to the specific parcels on which the project is located.

6.1.2 IRREVERSIBLE CHANGES FROM ENVIRONMENTAL ACTIONS

The project would involve the construction of new residential and service uses in Discovery Bay. Non-renewable resources such as fossil fuels would be required for construction and operation of the project. The change in use from undeveloped agricultural land to urban development and the associated commitment of non-renewable resources necessary for construction and operation of the project would be irreversible.

6.1.3 CONSUMPTION OF NONRENEWABLE RESOURCES

The project includes the development of a residential community. Construction and operation of this type of development would require the consumption of nonrenewable resources, such as electricity, natural gas and petroleum products, and construction materials. Given the changes to the project site, an irreversible commitment to the use of nonrenewable resources would occur with project implementation. The investment of resources in this project would be typical of the level of investments normally required for a residential development of this size.

6.2 GROWTH INDUCEMENT

CEQA requires a discussion of the ways in which a project could be growth inducing. The CEQA Guidelines Section 15126.2(d) identify a project as growth inducing if it would “foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment.” The CEQA Guidelines do not provide specific criteria for evaluating growth inducement and state that growth in any area is “necessarily beneficial, detrimental, or of little significance to the environment.” CEQA does not require separate mitigation for growth inducement as it is assumed that these impacts are already captured in the analysis of environmental impacts (**Chapter 4.0, Settings, Impacts, and Mitigation Measures,** of this draft EIR). Furthermore, the CEQA Guidelines require that an EIR “discuss the ways” a project could be growth inducing and to “discuss the characteristic of some projects which may encourage and facilitate other activities that could significantly affect the environment.”

According to the CEQA Guidelines, the project would have potential to induce growth if it would:

- Remove obstacles to population growth (e.g., through the expansion of public services into an area that does not currently receive these services), or through the provision of new access to an area, or a change in a restrictive zoning or General Plan land use designation.
- Result in economic expansion and population growth through employment opportunities and/or construction of new housing.

In general, a project could be considered growth inducing if it directly or indirectly affects the ability of agencies to provide needed public services, or if it can be demonstrated that the potential growth significantly affects the environment in some other way. However, the CEQA Guidelines do not require a prediction or speculation of where, when, and in what form such growth would occur.[1]

6.2.1 ECONOMIC, POPULATION, AND HOUSING GROWTH

Typically, the growth inducing potential of a project is considered significant if it fosters growth or a concentration of population in a different location or in excess of what is assumed in pertinent general plans or land use plans, or projections made by regional planning agencies, such as the Association of Bay Area Governments (ABAG). **Section 4.13, Population and Housing**, addresses the direct population growth as a result of the residential development on the project site. The project includes the construction of 292 residential units and would house up to 876 people. The new population created by the project would constitute approximately 44 percent of the total population growth anticipated by ABAG in Rural East County from 2010 to 2025. The 292 units proposed by the project would represent approximately 36 percent of the projected household growth over the same period. While the project would not constitute a significant environmental impact as the population growth would be within the growth projections, the project would be growth inducing through its introduction of a new population to the project area.

Additionally, the Contra Costa County General Plan identifies the project area for future urban development, as the area is within the Urban Limit Line (ULL). Since the General Plan has designated the project area as being within the ULL, growth would be occurring in an area previously planned for some type of development. For further discussion of the ULL, refer to **Section 4.10, Land Use and Planning**.

[1] CEQA Guidelines, Section 15145.

Construction of the project would result in a short-term increase in construction related job opportunities in the East Contra Costa County area. However, construction workers can be expected to be drawn from the existing construction employment labor force, as construction of new residential development occurs throughout the County and within surrounding cities. Therefore, opportunities provided by construction of the project area would not likely result in the relocation of construction workers to the project region. Therefore, the employment opportunities provided by construction are not anticipated to induce indirect growth in the region.

6.2.2 REMOVAL OBSTACLES TO GROWTH OR EXCEED CAPACITY OF COMMUNITY FACILITIES

The project would include the provision of service capacity that would accommodate population growth beyond current service levels. The Discovery Bay Community Services District (TDBCSD) provides the existing Discovery Bay community with water and wastewater treatment. As only a portion of the project site is currently located within the TDBCSD, the project would require approval from the Contra Costa Local Agency Formation Commission (LAFCO) for annexation of the remainder of the site into the Discovery Bay Community Services District and corresponding sphere of influence.

6.2.3 PRECEDENT-SETTING ACTION

Development of the project site would include both a general plan amendment and rezoning. The project would include a general plan amendment to change the land use designation on the project site from Agricultural Lands to Single-Family Residential Medium Density, Single-Family Residential High Density, Water, Public/Semi-Public, and Open Space.

The project would include the rezoning of the project area from Agricultural to Planned Unit District to allow for up to 262 homes, 47 acres of open water, and 44 acres of open space areas including wetland and marsh. By its nature, the Planned Unit District classification would be the plan for development on the project site, for which the project would be consistent. Therefore, the project would be growth inducing in respect to the changes in land use as development would be permitted, thus, promoting urban growth in the area.

7.0 LIST OF PREPARERS

Table 7-1 presents the organizations and individuals involved in the preparation of this draft EIR.

Table 7-1 List of Preparers of the Draft EIR

Preparer	Topic/Role	Contact
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Source: Circlepoint, 2011.

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