

## 4.0 Environmental Analysis

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### Topics Addressed in the DEIR

This section of the DEIR identifies specific environmental areas which may be affected as a result of the implementation of the proposed Project. The impact areas are discussed individually in subsections 4.1 through 4.13:

- 4.1 Aesthetics and Light and Glare
- 4.2 Air Quality
- 4.3 Biological Resources
- 4.4 Cultural Resources
- 4.5 Geology and Soils
- 4.6 Hazards and Hazardous Materials
- 4.7 Hydrology, Drainage and Water Quality
- 4.8 Land Use and Planning
- 4.9 Noise
- 4.10 Population and Housing
- 4.11 Public Services and Utilities
- 4.12 Transportation and Circulation
- 4.13 Parks and Schools

Each topic area is covered in the following manner:

- A. Environmental Issues  
An overview of issues related to the topic area.
- B. Environmental Setting  
A discussion of existing conditions, facilities, services, applicable regulations (regulatory framework) on and around the project sites.
- C. Standards of Significance  
An identification of thresholds of environmental significance used to determine whether identified impacts are considered significant.
- D. Environmental Impacts  
An identification and evaluation of potential impacts on the environment, should the project be constructed as proposed. Standards of environmental significance will also be listed which set forth the basis on which the identification of environmental impacts will be made. Standards of significance for this DEIR are based on such standards listed in the California Environmental Quality Act.

Environmental impacts addressed in this document include the following:

- Potentially or significant impact, which means that the identified impact would exceed the environmental standards of significance.
- Less-than-significant impact, which means an impact would not exceed the minimum environmental thresholds of significance.
- No impact, means that no environmental impact would be expected for a particular environmental topic.

E. Mitigation Measures and Impacts After Mitigation

An identification of specific efforts and measures which can be incorporated into the project to eliminate or reduce identified environmental impacts to a level of insignificance.

## 4.1 AESTHETICS AND LIGHT AND GLARE

### ENVIRONMENTAL ISSUES

Visual impacts would include causing an adverse impact on views and vistas, substantial damage to scenic resources, including adjacent to a state scenic highway, degradation of the existing visual character of a site or its surroundings. The potential effects of new light and glare sources are also addressed.

### ENVIRONMENTAL SETTING

The Project area is primarily vacant, although a number of parcels within the area have been developed with single and multiple family dwellings. The area contains a mix of parcels with flatter land adjacent to Foothill and Mission Boulevards as well as parcels on relatively steep topography with scenic qualities. The area also contains a number of scenic resources, including stands of trees and major water courses.

#### *Views, vistas and landforms*

Portions of the Project area, generally located south of Grove Way and north of Tennyson Road, include the Hayward hills. Portions of the hills include westerly-facing slopes that are readily visible from roadways and other vantage points west of the Project area.

#### *Scenic resources*

The Project area contains a number of scenic resources. These include a mix of oak woodlands, riparian forests and major creeks. These are described and analyzed in Section 4.3, Biological Resources.

#### *Scenic highways*

No local or State scenic highways exist on or adjacent to the Project site (see <http://www.dot.ca.gov/Land-Arch/scenic-highways/index.htm>)

#### *Light and glare*

Portions of the Project area are developed with several sources of light and glare, including but not limited to street lights, parking lot lights and building lights. Other portions of the Project area, primarily hillside areas are undeveloped and contain no sources of light.

## ***Regulatory framework***

The City of Hayward has adopted the following land use regulations governing aesthetics and light and glare.

General Plan. The City of Hayward General Plan, adopted in 2002 contains land use polices and strategies relevant to the proposed Project. These include:

- Promote transit-oriented development in the Mission-Foothill Corridor in order to help relieve regional congestion and create a distinctively attractive commercial boulevard. (*Policy 5*)
- Seek to integrate greater intensity of development and enhance the surrounding neighborhood within 1/2-mile of the South Hayward BART Station. (*Policy 6*)
- Promote infill development that is compatible with the overall character of the surrounding neighborhood. (*Policy 8*)
  - \* Encourage visual integration of projects of differing types or densities through the use of building setbacks, landscaped buffers or other design features. (*Strategy 8.1*)
  - \* Ensure that design guidelines reflect concerns about the preservation of viewsheds. (*Strategy 8.3*)
- Design hillside development to be sensitive to the maintenance of a natural environment through retention of natural topographic features such as drainage swales, streams, slopes rock outcroppings and natural plant formations. (*Policy 9*)
  - \* Consider revisions to the grading ordinance in order to prohibit or limit development on slopes of specified gradients. (*Strategy 9.1*)
  - \* Avoid development on unstable slopes, wooded hillsides and creek banks. (*Strategy 9.2*)
  - \* Respect natural topography in street layouts and require streets to be only as wide as necessary for public safety and traffic flow in order to minimize grading and disruption of ground cover. (*Strategy 9.3*)
  - \* Respect natural contours in the siting of developments: structures on ridges should be landscaped so as to blend with the hill form and building height and location should be adjusted to retain views where feasible. (*Strategy 9.4*)
  - \* Densities of development in the hill area should feather out to very large lot development near the Urban Limit Line to provide for appropriate transition to permanent open space. (*Strategy 9.5*)

Conservation and Environmental Protection policies and strategies relating to aesthetics include:

- Retain open space where it is important to preserve natural ecology and to establish the physical setting of the city. (*Policy 1*)

- \* Designate in the General Plan Land Use map those areas on the shoreline, in the hills, and along waterways to be protected as open space in coordination with the East Bay Regional Park District, Hayward Area Recreation and Park District, Alameda County and other affected agencies. (*Strategy 1.1*)
- Enhance the aesthetic and recreational values of open space resources in the hill and shoreline areas. (*Policy 2*)
  - \* Work with appropriate agencies to provide trail corridor links between the hill area and the Baylands, such as along San Lorenzo Creek and along Industrial Parkway with connections to Old Alameda Creek. (*Strategy 2.6*)

Design Guidelines. The City of Hayward adopted Design Guidelines in 1993 that establish standards for site planning, circulation, architectural design and landscape design for all development within the community. The Guidelines are available for review at the Planning Division of the City of Hayward Department of Development Services, and on the City's website ([www.hayward-ca.gov](http://www.hayward-ca.gov)).

Hillside Design and Urban/Wildland Interface Guidelines. Also in 1993, the City adopted the Hillside Design and Urban/Wildland Interface Guidelines that, among other items, implements General Plan hillside development policies, promotes quality architectural, landscape, site and street design, protects and preserves environmental resources and significant natural features in the hills. Policies included in this document related to visual and aesthetic features include:

#### B. Street Design

2. Streets should generally follow the natural contours of the lands and should not be placed perpendicular to contour lines, unless absolutely unavoidable.
7. A vertically of-set of split-level road designed along a hillside is desirable where it would minimize grading, preserve an important site feature, or enhance the hillside setting.

#### E. Ridgelines

1. Development located near or on a ridgeline must be sensitive to the surrounding environment.
2. Proper placement of homes is crucial for preserving the ridgeline and maintaining the natural scenic views.
3. Development along ridgelines should consist of larger lots with wider frontages and wider setbacks to allow for view corridors.
4. Dwellings should exhibit a low profile, and roof pitches should be angles to follow the slope.

#### F. Cluster Home Development

1. Preferred hillside development includes clusters of approximately 8-12 single-family dwellings or clusters of large multi-family structures separated by natural open space corridors.

2. Dwellings should be clustered to avoid geologic hazards and preserve natural features.
3. Dwellings should be clustered on gentle slopes.
4. Where new single-family lots will be created on steep terrain (25%+ slope), larger lots (10,000 sq. ft. minimum) and wider setbacks should be provided.
5. Greenbelts and fuel breaks should be created to separate clustered structures.

#### H. Grading

1. Grading within hillside areas shall be done according to City Guidelines and ordinances. Measures for protecting existing trees, native vegetation, rock outcroppings and other natural features should be indicated on grading plans.
2. Cut or fill slopes should be designed to blend into the existing slope.
3. Generally, a 3:1 slope or less shall be utilized for cut or fill slopes if it will not result in excessive grading or disturbance of natural features.
4. All developments should minimize grading and use of retaining walls.
7. Drainage ditches and structures that will be highly visible from public view should be constructed with native rock or natural-looking material that will blend into the terrain.

#### I. Landscaping

1. Landscaping should be provided to minimize the visual impact of structures, walls and graded slopes, especially where the development abuts open space areas or is located on ridgelines or on highly visible hill faces.

#### K. Signing

1. An attractive and clear signing program should be developed for large developments.

### North Hayward Neighborhood Plan

- Support neighborhood character in land use policies. (*Policy B*)
  - \* Extend Agricultural (pre-zoning) in the 238 right-of-way north of Apple Avenue for temporary agricultural or other dominantly landscaped uses. If freeway plans are abandoned, seek a gateway park. (*Strategy 5c*)
  - Encourage new development to be compatible with Mediterranean theme based on the existing olive trees, off-white stucco and natural tile roofs, Avoid post-modern designs with jagged edges, large sheets of glass or extensive use of metal. Encourage classic, well-proportioned details (*Strategy 5e*)
- Provide public facilities and amenities in North Hayward (*Policy E*)
  - \* Landscape key public rights-of-way (*Strategy E1*)
  - \* Development Foothill gateway park or entry landscape (*Strategy E3*)

### Upper B Street Neighborhood Plan.

- Promote neighborhood pride through clean-up and beautification programs (*Policy 10*)
  - \* Maintain existing street trees on “B” Street (*Strategy A*)
  - \* Encourage the planting and proper maintenance of trees throughout the neighborhood (*Strategy B*)
  - \* Aggressively pursue Caltrans maintenance of Route 238 properties (*Strategy J*)

### Mission Foothills Neighborhood Plan.

- Respect environmental limitations (*Policy A*)
- Preserve and enhance environmental features (*Policy B*)

### Hayward Highlands Neighborhood Plan.

- Allow only infill development which is respectful of natural features including steeply sloped hillsides, creeks and riparian corridors, significant trees and rock outcrops (*Policy 2*)
  - \* Allow only new residential construction which features stepped-back building envelopes on sloped areas and minimal on-site grading, consistent with the City’s Hillside Design Guidelines (*Strategy 2.1*)
  - \* In accordance with the City’s Hillside Design Guidelines, clustering of residential development is strongly encouraged in order to preserve natural site features such as steep hillsides, rock outcroppings, significant trees or tree clusters and any creeks or natural waterways (*Strategy 2.2*)

Mission-Garin Neighborhood Plan. The Mission-Garin Plan, adopted in 1987, strongly recognizes a need to upgrade the appearance of the study area. Recommended actions include upgrading design standards, maintenance standards, sign ordinances, landscape standards and improving enforcement. Programs to provide monetary and personal recognition are encouraged for both residential and commercial properties.

The following design and appearance standards are included in the Mission-Garin Neighborhood Plan

- \* Explore the continuation and expansion of a program to encourage upgrading/rehabilitation of substandard residential units. (*Strategy 45*)
- \* Establish a street tree program which includes requiring the installation of street trees with new development consistent with the guidelines contained in the Landscape Beautification Plan. (*Strategy 46*)
- \* Improve the appearance of the area to ensure high quality development by revising the undergrounding utilities master plan to include the following: undergrounding utilities along Mission Boulevard, moving Mission Boulevard higher on the undergrounding priority list and explore additional funding sources. (*Strategy 51*)

- \* Upgrading the appearance of Mission Boulevard by considering the following plans and programs: upgrade design standards for new development, adopt property maintenance standards, requiring upgraded landscaping and requiring deeper setbacks for uses requiring outdoor storage. (*Strategy 52*)

Fairway Park Neighborhood Plan. The Fairway Park Neighborhood Plan, which includes the triangular area at the south end of the Project area, was adopted in 1996 and contains the following goal relating to neighborhood character and appearance:

- Improve the quality of life while enhancing the positive perception of the neighborhood.

## STANDARDS OF SIGNIFICANCE

The following standards of significance are used to assess potential environmental impacts related to view obstruction, aesthetics and light and glare.

- Have a substantial adverse impact on a scenic vista;
- Substantially damage scenic resources, including trees, rock outcroppings or historic buildings in a state scenic highway;
- Substantially degrade the visual character or quality of a site or its surroundings; or
- Create significant new sources of light or glare in the Project vicinity.

## ENVIRONMENTAL IMPACTS

### *Views, scenic resources, landforms and visual character*

The visual character of the Project area as seen from parks, playgrounds, schools, major roadways and other public gathering places west of and at lower topographic elevations would change should any of the Alternatives be implemented. Views of largely open space and natural landscaping would generally be replaced with views of urban structures and more formal landscaping; however, impacts to views and vistas would vary from Alternative to Alternative.

To assist in analyzing impacts to views and vistas, photosimulations have been prepared for key viewpoints for each of the Alternatives. **Figure 4.1-1** is a key map showing the location of the vantage points where the simulations have been taken. Simulations are intended to depict the overall approximate scale and massing of development that could occur under each of the Alternatives. They do not depict any pending or proposed specific development projects.

Photosimulations include:

- Views of development that could be allowed under Alternative A are depicted on **Figures 4.1-2 through 4.1-4.**
- Views of development that could be allowed under Alternative B are depicted on **Figures 4.1-5 through 4.1-7.**

- Views of development that could be allowed under Alternative C are shown on Figures 4.1-8 through 4.1-10.

In the northern portion of the Planning Area, **Figure 4.1-2** depicts potential visual and aesthetic conditions looking north from Foothill Boulevard at Cotter Way within the unincorporated portion of Alameda County. Existing views of natural, undeveloped hillside open spaces would be replaced with single-family dwellings at higher elevations and additional commercial development would be allowed adjacent to Foothill Boulevard. Under Alternative B (**Figure 4.1-3**), existing visual characteristics of the area would remain essentially unchanged, while under Alternative C (**Figure 4.1-4**) future visual and aesthetic conditions would be generally similar to Alternative A. There would likely be grading and recontouring of existing hillsides to accommodate future dwellings, roads and utility extensions under Alternatives A and C.

Visual and aesthetic conditions in the approximate central portion of the Project area are shown on **Figures 4.1-5** through **4.1-7**. Simulations have been prepared from Mission Boulevard looking northeast at Devon Drive. **Figure 4.1-5** shows future development that could be allowed under Alternative A in this location. Under Alternative A, existing undeveloped hillside areas would be developed with single-family dwellings. Depending on the siting of future dwellings, existing trees could be removed to accommodate dwellings, although the precise species, number and size of trees is not known since no actual development is proposed. Under Alternative B (**Figure 4.1-6**), minimal changes to existing visual and aesthetic conditions would likely occur in this location, since Alternative B allows for the fewest number of new dwellings and other development. No loss of existing trees would occur. Under Alternative C (**Figure 4.1-7**), future development in this area would include primarily multi-story attached dwellings combined with open spaces. It is likely that less overall grading would be required under Alternative C than Alternative A, since more of the area would remain undeveloped. There would be some loss of existing trees under Alternative C to allow for future development, but not as many as under Alternative A.

Finally, simulations have been prepared to show visual and aesthetic conditions in the southerly portion of the Project area. **Figures 4.1-8** through **4.1-10** depict conditions as shown on the north side of Mission Boulevard near Valley Vista Avenue. **Figure 4.1-8** shows that the existing vacant area on the north side of Mission Boulevard would be replaced by a multi-story commercial building with vehicle parking under Alternative A. Existing undeveloped, natural hillside areas further to the east would be replaced by single family dwellings. Depending on the vantage points of passersby on Mission Boulevard, views of residential development on the hillsides could be largely blocked by commercial buildings on the east side of Mission Boulevard.

A similar type and scale of commercial building could also be constructed on the north side of Mission Boulevard under Alternative B (**Figure 4.1-9**) and single-family dwellings could be allowed on undeveloped hillsides to the east.

Under Alternative C (**Figure 4.1-10**) a smaller scale commercial building would be allowed in this area with single family residences allowed on upper elevations to the east.

Few existing trees grow in this portion of the Project area that would need to be removed, although future grading would be needed to accommodate roads, buildings and other facilities.

Overall, Alternative A would result in the greatest impact to views, scenic resources, landforms and visual character within and adjacent to the Project area by allowing the greatest amount of future development. The amount of development could result in the greatest replacement of existing natural hillsides with residential development, the greatest amount of grading and recontouring of existing hillside conditions and loss of tree resources. Future buildings and other improvements that could be allowed under Alternative A would be most visible to residents and visitors to Hayward from nearby roads, parks and other public gathering places west of the Project area. However, much of the development that could occur would be generally the same type and density that currently exist within the Project area or that are currently allowed under Hayward and Alameda County General Plan land use designations.

Impacts associated with Alternative B would be less than Alternative A, since less development would be allowed and the greatest amount of existing hillside areas would remain undeveloped. There would also be the least amount of grading of hillsides and loss of trees and other natural vegetation.

Visual and aesthetic impacts associated with Alternative C would be greater than Alternative B but less than Alternative A based on the amount and location of development that would be allowed. Future development that could be allowed under Alternative C would be visible to residents and visitors west of the Project area. Similar to Alternative A, future development within the Project area would be generally consistent with existing development patterns in the Project area.

No impacts would result regarding views from scenic highways, since no state or local scenic highways are present in or adjacent to the Project area.

**Impact 4.1-1 (views, scenic resources, landforms and visual character). Implementation of any of the three Alternatives would impact existing views, scenic resources and the scenic character of the Project area by allowing development on properties that are currently vacant or underdeveloped. Existing natural hillsides would be converted to dwellings, roads or other non-open space areas with associated grading and recontouring of the existing topography and loss of trees and other native vegetation. Development that could be allowed in the Project area would be visible from adjacent major roadways and public gathering places; however, future development would be generally consistent with existing development patterns. Impacts to views, scenic resources, landform and visual character would be the greatest under Alternative A and the least under Alternative B (*potentially significant impact and mitigation required*).**

The following mitigation measure is recommended to reduce potential aesthetic impacts to a less-than-significant level:

**Mitigation Measure 4.1-1 (views, scenic resources, landforms and visual character).**  
Development projects submitted to either the City of Hayward or County of Alameda within the Project area shall be subject to design review to ensure:

- a) Adherence to General Plan policies, Design Guidelines, Hillside Design Guidelines and applicable Neighborhood Plans to minimize the grading, appropriate siting of new roads and structures and planting of replacement vegetation to ensure that hillside development integrates into the existing appearance of hillside properties.
- b) Appropriate use of building material and colors to minimize reflection of windows and roofs to the community to the west.
- c) Design of future buildings within flatter portions of the Project area to include “stepping down” of taller buildings, appropriate siting of windows and balconies to maximize privacy and establishment of view corridors to nearby hills.

*Light and glare*

The potential for light and glare within the Project area would be increased under all three alternatives over existing levels of light and glare since new buildings and other improvements with associated light sources would be allowed. Light and glare impacts would be particularly noticeable within hillside areas of the Project area, since hillside areas are primarily undeveloped.

There would also be additional light sources added within the Project area on properties located within the flatter portions of the Project area, near Foothill Boulevard, Mission Boulevard and other roadways.

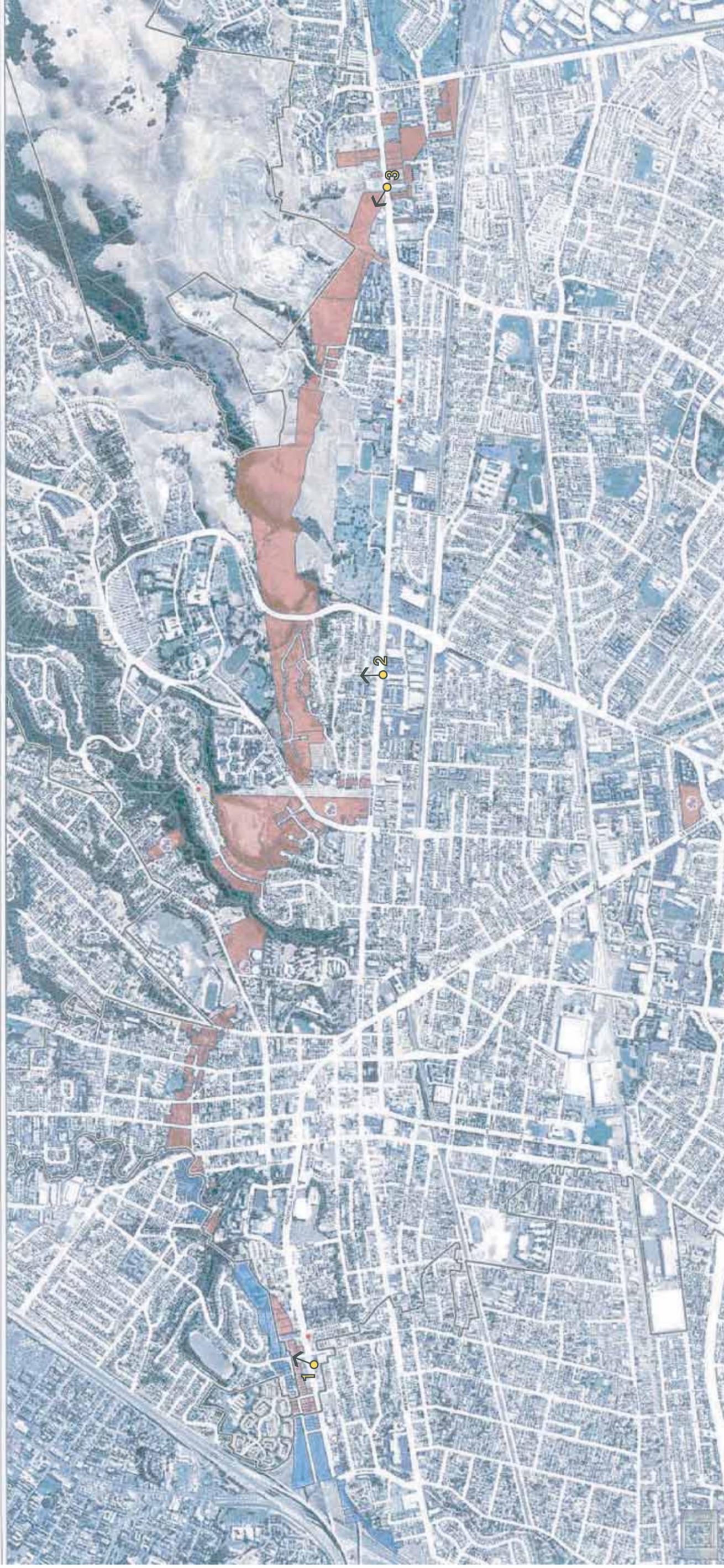
Light and glare impacts would be greater under Alternative A, since a greater amount of development would be allowed, with the least impacts occurring under Alternative B. Light and glare impacts associated with Alternative C would be somewhat less than under Alternative A, but greater than Alternative B.

**Impact 4.1-2 (light and glare impacts).** Additional sources of light and glare would be added to the Project area under all three alternatives. New sources of lights would include street lights for new roadways, porch and yard lights for single family dwellings, balcony and deck lights in the upper levels of multi-story buildings and parking lots lights for commercial and office buildings. New light sources would be visible from vistas inside and outside the Project area (*significant impact and mitigation required*).

The following mitigation measure is recommended to reduce potential light and glare impacts to a less-than-significant level.

**Mitigation Measure 4.1-2 (light and glare impacts).** Lighting Plans shall be submitted to the Alameda County Planning Department and the City of Hayward Development Services Department as part of all future development projects. Lighting Plans shall include specific measures to reduce future lighting to a less-than-significant level, including but not limited to limiting the number of intensity of lighting fixtures to the minimum required for safety

**and security purposes, directing lighting fixtures downward so that light and glare will be minimized, turning off unneeded lights and similar features.**



**Figure 4.1-1 - Photosimulation Vantage Points**  
Photo Viewpoint Locations  
Hayward 238 Bypass Land Use Study

 Photo Viewpoint

Figure 4.1-2 - Simulation of Alternative A from Foothill Blvd. Looking East



1A. Existing view from Foothill Boulevard near Cotter Way looking east



1A. Conceptual simulation of proposed project (Alternative A)

Note: This conceptual visual simulation is intended to portray building massing, not specific architectural design.

**Figure 4.1-3 - Simulation of Alternative B from Foothill Blvd. Looking East**



1B. Existing view from Foothill Boulevard near Cotter Way looking east



1B. Conceptual simulation of proposed project (Alternative B)

Note: This conceptual visual simulation is intended to portray building massing, not specific architectural design.

Figure 4.1-4 - Simulation of Alternative C from Foothill Blvd. Looking East



1C. Existing view from Foothill Boulevard near Cotter Way looking east



1C. Conceptual simulation of proposed project (Alternative C)

Note: This conceptual visual simulation is intended to portray building massing, not specific architectural design.

Figure 4.1-5 - Simulation of Alternative A from Mission Blvd. Looking Northeast



2A. Existing view from Mission Boulevard at Devon Drive looking northeast



2A. Conceptual simulation of proposed project (Alternative A)

Note: This conceptual visual simulation is intended to portray building massing, not specific architectural design.

Figure 4.1-6 - Simulation of Alternative B from Mission Blvd. Looking Northeast



2B. Existing view from Mission Boulevard at Devon Drive looking northeast



2B. Conceptual simulation of proposed project (Alternative B)

Note: This conceptual visual simulation is intended to portray building massing, not specific architectural design.

Figure 4.1-7 - Simulation of Alternative C from Mission Blvd. Looking Northeast



2C. Existing view from Mission Boulevard at Devon Drive looking northeast



2C. Conceptual simulation of proposed project (Alternative C)

Note: This conceptual visual simulation is intended to portray building massing, not specific architectural design.

**Figure 4.1-8 - Simulation of Alternative A from Mission Blvd. Near Valle Vista**



3A. Existing view from Mission Boulevard near Valle Vista Avenue looking north



3A. Conceptual simulation of proposed project (Alternative A)

Note: This conceptual visual simulation is intended to portray building massing, not specific architectural design.

**Figure 4.1-9 - Simulation of Alternative B from Mission Blvd. Near Valle Vista**



3B. Existing view from Mission Boulevard near Valle Vista Avenue looking north



3B. Conceptual simulation of proposed project (Alternative B)

Note: This conceptual visual simulation is intended to portray building massing, not specific architectural design.

**Figure 4.1-10 - Simulation of Alternative C from Mission Blvd. Near Valle Vista**



3C. Existing view from Mission Boulevard near Valle Vista Avenue looking north



3C. Conceptual simulation of proposed project (Alternative C)

Note: This conceptual visual simulation is intended to portray building massing, not specific architectural design.

## 4.2 AIR QUALITY/GREENHOUSE GAS EMISSIONS

### ENVIRONMENTAL ISSUES

This EIR section describes the impacts of the proposed Project on local and regional air quality. The Project's contribution to greenhouse gases are also analyzed. This section of the DEIR is based on a greenhouse gas emission analysis prepared by Donald Ballanti, Certified Meteorologist, contained in Appendix 8.4.

### ENVIRONMENTAL SETTING

#### *Air pollution climatology*

Hayward is located in western Alameda County, part of the 9-county San Francisco Bay Air Basin. Hayward Valley is indirectly affected by marine air flow. Marine air entering through the Golden Gate is blocked by the East Bay hills, forcing the air to diverge into northerly and southerly paths. The southern flow is directed down the bay, parallel to the hills, where it eventually passes over Hayward. These sea breezes are strongest in the afternoon. The further from the ocean the marine air travels, however, the ocean's effect is diminished. Thus, although the climate of Hayward is affected by sea breezes, it is affected less so than the regions of the Bay Area closer to the Golden Gate.

Hayward has a relatively high potential for air quality impacts during the summer and fall. When high pressure dominates, low mixing depths and bay and ocean wind patterns can concentrate and carry pollutants from other cities to Hayward, adding to the locally emitted pollutant mix. In winter and spring the air pollution potential in Hayward is moderate.

#### *Ambient air quality standards*

Criteria Pollutants. Both the U. S. Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) have established ambient air quality standards for common pollutants. These ambient air quality standards are levels of contaminants that represent safe levels that avoid specific adverse health effects associated with each pollutant. The ambient air quality standards cover what are called "criteria" pollutants because the health and other effects of each pollutant are described in criteria documents. Table 4.2-1 identifies the major criteria pollutants, characteristics, health effects and typical sources. The federal and California state ambient air quality standards are summarized in Table 4.2-2.

**Table 4.2.1. Major Criteria Pollutants**

<b>Pollutant</b>	<b>Characteristics</b>	<b>Health Effects</b>	<b>Major Sources</b>
Ozone	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.
Carbon Monoxide	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.
Nitrogen Dioxide	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	Sulfur dioxide is a colorless gas with a pungent, irritating odor.	Aggravation of chronic obstruction lung disease. Increased risk of acute and chronic respiratory disease.	Diesel vehicle exhaust, oil-powered power plants, industrial processes.
Particulate Matter (PM <sub>10</sub> and PM <sub>2.5</sub> )	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, automobiles, field burning, factories and unpaved roads. Also a result of photochemical processes.

The federal and state ambient standards were developed independently with differing purposes and methods, although both processes attempted to avoid health-related effects. As a result, the federal and state standards differ in some cases. In general, the California state standards are more stringent. This is particularly true for ozone and particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>)

**Table 4.2-2. Federal and State Ambient Air Quality Standards**

<b>Pollutant</b>	<b>Averaging Time</b>	<b>Federal Primary Standard</b>	<b>State Standard</b>
Ozone	1-Hour	--	0.09 PPM
	8-Hour	0.075 PPM	0.07 PPM
Carbon Monoxide	8-Hour	9.0 PPM	9.0 PPM
	1-Hour	35.0 PPM	20.0 PPM
Nitrogen Dioxide	Annual Average	0.053 PPM	0.030 PPM
	1-Hour	--	0.18 PPM
Sulfur Dioxide	Annual Average	0.03 PPM	--
	24-Hour	0.14 PPM	0.04 PPM
	1-Hour	--	0.25 PPM
PM <sub>10</sub>	Annual Average	--	20 µg/m <sup>3</sup>
	24-Hour	150 µg/m <sup>3</sup>	50 µg/m <sup>3</sup>
PM <sub>2.5</sub>	Annual	15 µg/m <sup>3</sup>	12 µg/m <sup>3</sup>
	24-Hour	35 µg/m <sup>3</sup>	--
Lead	Calendar Quarter	1.5 µg/m <sup>3</sup>	--
	30 Day Average	--	1.5 µg/m <sup>3</sup>
Sulfates	24 Hour	--	25 µg/m <sup>3</sup>
Hydrogen Sulfide	1-Hour	--	0.03 PPM
Vinyl Chloride	24-Hour	--	0.01 PPM

PPM = Parts per Million

µg/m<sup>3</sup> = Micrograms per Cubic Meter

Source: California Air Resources Board, Ambient Air Quality Standards (11/17/08)

<http://www.arb.ca.gov.aqs/aaqs2.pdf>

Toxic Air Contaminants. In addition to the criteria pollutants discussed above, Toxic Air Contaminants (TACs) are another group of pollutants of concern. There are many different types of TACs, with varying degrees of toxicity. Sources of TACs include industrial processes such as petroleum refining and chrome plating operations, commercial operations such as gasoline stations and dry cleaners, and motor vehicle exhaust. Cars and trucks release at least forty different toxic air contaminants. The most important, in terms of health risk, are diesel particulate, benzene, formaldehyde, 1,3-butadiene and acetaldehyde.

Public exposure to TACs can result from emissions from normal operations, as well as accidental releases. Health effects of TACs include cancer, birth defects, neurological damage and death.

*Ambient air quality*

The Bay Area Air Quality Management District (BAAQMD) has for many years operated a multi-pollutant monitoring site in Hayward monitoring a single pollutant, ozone. The closest multi-pollutant monitoring site is located in nearby Fremont. Table 4.2-3 shows historical occurrences of pollutant levels exceeding the state/federal ambient air quality standards for the three-year period 2006-2008 at these two monitoring sites. The number of days that each standard was exceeded is shown.

Table 4.2-3 shows that all federal ambient air quality standards are met in the Hayward area with the exception of ozone and PM<sub>2.5</sub>. Additionally, the state ambient standards of ozone and PM<sub>10</sub> are regularly exceeded.

**Table 4.2-3. Air Quality Data Summary for Hayward and Fremont, 2006-2008**

Pollutant	Standard	Days Standard Exceeded During:		
		2006	2007	2008
Ozone (Hayward)	1-Hour State	2	0	1
	8-Hour Federal	0	0	-
Ozone (Fremont)	1-Hour State	4	0	1
	8-Hour Federal	0	0	0
Carbon Monoxide (Fremont)	8-Hour St. Fed.	0	0	0
	1-Hour State	0	0	0
Nitrogen Dioxide (Fremont)	1-Hour State	0	0	0
PM <sub>10</sub>	24-Hour State	1	10	0
	24-Hour Federal	0	0	0
PM <sub>2.5</sub>	24-Hour Federal	2	2	0

Source: Air Resources Board, Aerometric Data Analysis and Management (ADAM), 2009. (<http://www.arb.ca.gov/adam/cgi-bin/adamtop/d2wstart>)

### *Attainment status and regional air quality plans*

The Federal Clean Air Act and the California Clean Air Act of 1988 require that the State Air Resources Board, based on air quality monitoring data, designate portions of the state where the federal or state ambient air quality standards are not met as "nonattainment areas". Because of the differences between the national and state standards, the designation of nonattainment areas is different under the federal and state legislation.

The U. S. Environmental Protection Agency has classified the San Francisco Bay Area as a non-attainment area for the federal 8-hour ozone standard. The Bay Area was designated as unclassifiable/attainment for the federal PM<sub>10</sub> and PM<sub>2.5</sub> standards.

Under the California Clean Air Act, Alameda County is a nonattainment area for ozone and particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>). The county is either attainment or unclassified for other pollutants.

Air districts periodically prepare and update plans to achieve the goal of healthy air. Typically, a plan will analyze emissions inventories (estimates of current and future emissions from industry, motor vehicles, and other sources) and combine that information with air monitoring data (used to assess progress in improving air quality) and computer modeling simulations to test future strategies to reduce emissions in order to achieve air quality standards. Air quality plans usually include measures to reduce air pollutant emissions from industrial facilities, commercial processes, motor vehicles, and other sources. Bay Area plans are prepared with the cooperation of the Metropolitan Transportation Commission, and the Association of Bay Area Governments. Ozone Attainment Demonstrations are prepared for the national ozone standard and Clean Air Plans are prepared for the California ozone standard.

### *Greenhouse gas emissions and climate change impacts.*

Gases that trap heat in the atmosphere are referred to as greenhouse gases (GHGs) because they capture heat radiated from the sun as it is reflected back into the atmosphere, much like a greenhouse does. The accumulation of GHG's has been implicated as a driving force for global climate change. Definitions of climate change vary between and across 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 which alter the composition of the global atmosphere.

Individual projects contribute to the cumulative effects of climate change by emitting GHGs during construction and operational phases. The principal GHGs are carbon dioxide, methane, nitrous oxide, ozone, and water vapor. While the presence of the primary GHGs in the atmosphere are naturally occurring, carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O) are largely emitted from human activities, accelerating the rate at which these compounds occur within earth's atmosphere. Carbon dioxide is the "reference gas" for climate change, meaning that emissions of GHGs are typically reported in "carbon dioxide-equivalent" measures. Emissions of carbon dioxide are largely by-products of fossil fuel combustion, whereas methane

results from off-gassing associated with agricultural practices and landfills. Other GHGs, with much greater heat-absorption potential than carbon dioxide, include hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride, and are generated in certain industrial processes.

California State law defines greenhouse gases as:

- Carbon Dioxide (CO<sub>2</sub>)
- Methane (CH<sub>4</sub>)
- Nitrous Oxide (N<sub>2</sub>O)
- Hydrofluorocarbons
- Perfluorocarbons
- Sulfur Hexafluoride

The overall approach to the GHG calculation is based upon the technical advisory of the Governor's Office of Planning and Research (OPR) embodied in the document *CEQA and Climate Change: Addressing Climate Change Through California Environmental Quality Act (CEQA) Review*. According to the Governor's Office of Planning and Research, the most common GHG that results from human activity is carbon dioxide, followed by methane and nitrous oxide. The last 3 of the six identified GHGs are primarily emitted by industrial facilities. For this analysis, only carbon dioxide, methane and nitrous oxide emissions will be considered. These primary greenhouse gases are described below.

Carbon dioxide (CO<sub>2</sub>) Carbon dioxide is primarily generated by fossil fuel combustion in stationary and mobile sources. Due to the emergence of industrial facilities and mobile sources in the past 250 years, the concentration of carbon dioxide in the atmosphere has increased 35 percent. Carbon dioxide is the most widely emitted GHG and is the reference gas (Global Warming Potential of 1) for determining GWPs for other GHGs.

Methane (CH<sub>4</sub>) Methane is emitted from biogenic sources, incomplete combustion in forest fires, landfills, manure management, and leaks in natural gas pipelines. In the United States, the top three sources of methane are landfills, natural gas systems, and enteric fermentation. Methane is the primary component of natural gas, which is used for space and water heating, steam production, and power generation. The GWP of methane is 21.

Nitrous Oxide (N<sub>2</sub>O) Nitrous oxide is produced by both natural and human-related sources. Primary human-related sources include agricultural soil management, animal manure management, sewage treatment, mobile and stationary combustion of fossil fuel, adipic acid production, and nitric acid production. The GWP of nitrous oxide is 310.

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.<sup>1</sup> Secondary effects are likely to include a

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<sup>1</sup> California Air Resources Board (ARB). 2006. Climate Change website.

global rise in sea level, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity.

*Sources of Greenhouse Gas Emissions*

Anthropogenic GHG emissions worldwide as of 2005 totaled approximately 30,800 CO<sub>2</sub> equivalent million metric tons (MMTCO<sub>2</sub>E).<sup>2</sup> The United States was the top producer of greenhouse gas emissions as of 2005. The primary greenhouse gas emitted by human activities in the United States was CO<sub>2</sub>, representing approximately 84 percent of total greenhouse gas emissions. Carbon dioxide from fossil fuel combustion, the largest source of US greenhouse gas emissions, accounted for approximately 80 percent of US GHG emissions.<sup>3</sup>

The primary contributors to GHG emissions in California are transportation, electric power production from both in state and out-of-state sources, industry, agriculture and forestry, and other sources, which include commercial and residential activities. These primary contributors to California's GHG emissions and their relative contributions are presented in Table 4.2-4.

**Table 4.2-4. GHG Sources In California, 2004**

Source Category	Annual GHG Emissions (MMTCO <sub>2</sub> E)	Percent of Total
Agriculture	27.9	5.8
Commercial Uses	12.8	2.6
Electricity Generation	119.8	24.7
Forestry (Excluding sinks)	0.2	0.0
Industrial Uses	96.2	19.9
Residential Uses	29.1	6.0
Transportation	182.4	37.7
Other	16.0	3.3
Totals	484.4	100.0

Source: California Air Resources Board. 2007. *California 1990 Greenhouse Gas Emissions Level and 2020 Emissions Limit*.

*Greenhouse Gas Programs*

(<http://www.arb.ca.gov/cc/120106workshop/intropres12106.pdf>).

<sup>2</sup> The CO<sub>2</sub> equivalent emissions are commonly expressed as "million metric tons of carbon dioxide equivalent (MMTCO<sub>2</sub>E)". The carbon dioxide equivalent for a gas is derived by multiplying the tons of the gas by the associated GWP, such that MMTCO<sub>2</sub>E = (million metric tons of a GHG) x (GWP of the GHG). For example, the GWP for methane is 21. This means that emissions of one million metric tons of methane are equivalent to emissions of 21 million metric tons of CO<sub>2</sub>.

<sup>3</sup> US Environmental Protection Agency. 2008. *Inventory of US Greenhouse Gas Emissions and Sinks 1990-2006*. <http://www.epa.gov/climatechange/emissions/usinventoryreport.html>.

International and Federal Legislation. While there has been increasing attention to GHG in recent years, the potential for global warming effects is not a new issue. In 1988, the United Nations and World Meteorological Organization established the Intergovernmental Panel on Climate Change (IPCC) to assess the risk of climate change. In 1994 the United States joined a number of countries in signing the United Nations Framework Convention on Climate Change (UNFCCC). A result of the UNFCCC efforts was a treaty known as the Kyoto Protocol that commits signees to reduce their emissions of GHG or engage in emissions trading. While more than 160 countries are participating in the Protocol, the United States has not ratified the treaty.

Federal legislation to address greenhouse gas emissions and climate change has been proposed. No federal legislation has been passed by Congress on this issue.

California Executive Orders, Legislation, and Regulatory Agency Action. The following actions have been taken regarding greenhouse gas analysis and impacts:

*Executive Order S-03-05* - In 2005, in recognition of California's vulnerability to the effects of climate change, Governor Schwarzenegger issued 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. Under the Order, the Climate Action Team (CAT) was created to develop information on climate change and its impacts, and GHG reduction programs. The CAT is comprised of members from various State agencies and commissions.

*Assembly Bill 32* - 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. (AB 32)). AB 32 requires the California Air Resources Board (ARB) to design and implement emission limits, regulations, and other measures, such that statewide GHG emissions are reduced to 1990 levels by 2020 (representing about a 30 percent reduction in emissions). AB 32 states that global warming poses a serious threat to the economic well being, public health, natural resources, and the environment of California.

AB 32 establishes a timetable for ARB to adopt emission limits, rules, and regulations designed to achieve the intent of the Act. On or before January 1, 2011, ARB must adopt regulations on GHG emission limits and emission reduction measures to achieve the maximum technologically feasible and cost-effective reductions in GHG emissions in furtherance of achieving the statewide GHG emissions limit. These regulations are to become effective beginning on January 1, 2012.

ARB staff is recommending a total of 44 early action measures. There are nine discrete early action measures that will be enforceable by January 1, 2010. Measures that could become effective during implementation of the proposed Project could pertain to construction-related equipment operations. Some proposed early action measures will require new regulations to implement, some will require subsidies, some have already been developed, and some will require additional effort to evaluate and quantify. Applicable early action measures that are

ultimately adopted will become effective during implementation of a proposed development project. The Project could be subject to these requirements, depending on its timeline.

AB 32 requires ARB to prepare a Scoping Plan that contains the main strategies California will reduce the GHGs that contribute to climate change. In October 2008, ARB released a Proposed Scoping Plan which was adopted by the Air Resources Board in December 2008. The Scoping Plan contains a series of recommended actions to reduce GHG emissions that will provide the framework for development of specific regulations that will be adopted by January 2011 and enforceable by January 2012. The key elements of the Scoping Plan include:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards;
- Achieving a statewide renewable energy mix of 33 percent;
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system;
- Establishing targets for transportation-related greenhouse gas emissions for regions throughout California, and pursuing policies and incentives to achieve those targets;
- Adopting and implementing measures pursuant to existing State laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard; and
- Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the State's long term commitment to AB 32 implementation.

*Senate Bill 97* - Senate Bill 97 (SB 97), enacted in 2007, amends the CEQA statute that directed the California Office of Planning and Research (OPR) to develop draft CEQA guidelines for the mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions by July 1, 2009. It directs the Resources Agency to certify and adopt the CEQA guidelines by January 1, 2010.

*OPR CEQA and Climate Change Technical Advisory* - In June 2008, OPR released a technical advisory document<sup>4</sup> providing a recommended approach to addressing climate change in CEQA documents. It recommends that lead agencies develop an approach that follows three basic steps for analysis: (1) identify and quantify GHG emissions; (2) assess the significance of the impact on climate change; and (3) if the impact is significant, identify mitigation measures and/or alternatives to reduce the impact to a less than significant level. OPR recommends that lead agencies undertake a good-faith effort, based on available scientific and technical information, to estimate GHG emissions from a project. OPR specifically identifies vehicle traffic, energy consumption, water usage, and construction as potential sources of GHG emissions. OPR recognizes that establishing a threshold of significance for GHG emissions is "perhaps the most difficult part of the climate change analysis." OPR has asked ARB technical staff to recommend a statewide threshold of significance for GHG emissions. While this statewide threshold is pending, OPR recommends that lead agencies "undertake a project-by-project analysis,

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<sup>4</sup> Governor's Office of Planning and Research, CEQA and Climate Change: Addressing Climate Change Through California Environmental Quality Act (CEQA) Review, June 19, 2008.

consistent with available guidance and current CEQA practice" to determine the significance of impacts. The Technical Advisory also notes that while "climate change is ultimately a cumulative impact, not every individual project that emits GHGs must necessarily be found to contribute to a significant cumulative impact on the environment." Most importantly, OPR advises that a significance threshold of no new GHG emissions is not required. OPR recognizes that a significance standard can be qualitative or quantitative. If a lead agency determines a project will have a significant impact due to GHG emissions, it should consider alternatives or mitigation measures to reduce or offset project emissions.

The OPR Technical Advisory notes that the most difficult part of a climate change analysis is the determination of significance since there are no established regulatory thresholds for GHGs from the state, air districts or any other source. On October 24, 2008, ARB staff released a document entitled: Preliminary Draft Staff Proposal - Recommended Approaches for Setting Interim Significance Thresholds for GHGs under CEQA. This Preliminary Draft document contained guidelines for the development of significance thresholds for certain types of project. The draft proposal identified types of approaches, but did not contain defined standards.

*Senate Bill 375* – SB 375 took effect on January 1, 2009. SB 375 helps implement AB 32's GHG reduction goals by integrating planning for land use, regional transportation and housing. SB 375 requires regional transportation plans to include a "sustainable community strategy" (SCS) plan to meet GHG reduction targets for vehicle travel set by ARB. The deadline for ARB to establish the GHG reduction target for individual regional plans is September 30, 2010. A Regional Transportation Plan will need to incorporate a SCS after October 2010. Projects consistent with a SCS qualify for relief from some CEQA requirements (example, exemptions or streamlined review). The bill also provides significant changes to Housing Element law, especially the timing and requirements for Regional Housing Needs Allocation (RHNA) planning.

*Assembly Bill 1493* - AB 1493 (Pavley) was enacted on July 22, 2002. AB 1493 requires ARB to set GHG emission standards for passenger vehicles and light duty trucks manufactured in 2009 and all subsequent model years. ARB adopted the standards in September 2004. When fully phased in, the near-term (2009 to 2012) standards would result in a reduction of approximately 22 percent in GHG emissions compared to the emissions from the 2002 fleet, while the mid-term (2013 to 2016) standards would result in a reduction of approximately 30 percent. To set its own GHG emissions limits on motor vehicles, California must receive a waiver from the EPA. However, in December 2007, the EPA denied the request from California for the waiver. In January 2008, the California Attorney General filed a petition for review of the EPA's decision in the Ninth Circuit Court of Appeals; no decision on that petition has been made.

*Senate Bill 1368* - SB 1368 requires the California Public Utilities Commission (CPUC) to establish a greenhouse gas emission performance standard for baseload generation. These standards cannot exceed the greenhouse gas emission rate from a baseload combined-cycle natural gas fired plant. The legislation further requires that all electricity provided to California, including imported electricity, must be generated from plants that meet the standards set by the CPUC and CEC.

Local Agency Regulations. The Bay Area Air Quality Management District (BAAQMD) has not adopted guidance or regulations for analysis of GHGs or climate change in CEQA documents. In June, 2005, the BAAQMD adopted a resolution establishing the Bay Area Air Quality Management District's Climate Change Program. The Climate Change Program is to address climate change and climate protection through District activities including outreach and education campaigns, data collection and analysis, technical assistance, hosting a regional conference on climate change, and support and leadership for local efforts in the Bay Area to reduce emissions that contribute to climate change. The BAAQMD also has prepared a GHG emissions inventory for the Bay Area using 2007 as the base year. The BAAQMD estimated that 102.6 million tons of CO<sub>2</sub>-equivalent GHG gases were emitted from anthropogenic sources in the Bay Area in 2007. Fossil fuel consumption in the transportation sector (on-road motor vehicles) accounted for approximately 41 percent. Stationary sources, including industrial and commercial sources, power plants, oil refineries, and landfills, were responsible for approximately 34 percent. Electricity generation accounted for approximately 15%, and residential fuel usage accounted for about 7% of the total anthropogenic GHG emissions.

### ***Regulatory framework***

The adopted Hayward General Plan contains the following policies related to air quality in the Conservation and Environmental Protection Chapter. Specific strategies related to air quality are found in the full text of the General Plan document.

- Incorporate measures to improve air quality in the siting and design of new development. (*Policy 1*)
- Maintain improved air quality by creating efficient relationships between transportation and land use. (*Policy 11*)
- Support implementation of Transportation Control Measures adopted by the Bay Area Air Quality Management District. (*Policy 12*)

The City of Hayward has also prepared a draft Climate Action Plan to assist the City in quantifying and reducing local greenhouse gas emissions consistent with state mandates identified earlier in this DEIR section. The CAP is expected to be acted upon by the Hayward City Council in mid-2009.

## **STANDARDS OF SIGNIFICANCE**

The Bay Area Air Quality Management District (BAAQMD) (the local air agency) has developed specific thresholds of significance to be used in the preparation of CEQA documents. BAAQMD guidance provides different thresholds of significance for development projects and local plans, defined as city and county general plans, redevelopment plans, specific area plans and other similar "program" documents or plans. The "program" threshold is consistency with the most recently adopted Clean Air Plan (CAP). According to the BAAQMD, the following criteria must be satisfied for a local plan to be determined to be consistent with the CAP and not have a significant air quality impact:

1. The local plan should be consistent with the CAP population and Vehicle Miles Traveled (VMT) assumptions. This is demonstrated if the population growth over the planning period will not exceed the values included in the current CAP, and the rate of increase in VMT for the jurisdiction is equal to or less than the rate of increase in population.
2. The local plan demonstrates reasonable efforts to implement the Transportation Control Measures (TCMs) included in the CAP that identify cities as implementing agencies.

Under CEQA Guidelines, implementation of a proposed project would have a significant air quality impact if it would:

- Conflict with or obstruct implementation of applicable air quality plans.
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation.
- Result in a cumulative considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard, including release of emission which exceed quantitative thresholds for ozone precursors.

This section evaluates potential impacts to global climate change resulting from implementation of the proposed Project. The evaluation of environmental effects presented in this section focuses on potential climate change impacts associated with the Project's increase in GHG emissions.

There is no CEQA statute, regulation or judicial decision that requires an EIR to analyze the GHG emissions of a project or whether a project will have a significant impact on global warming. Senate Bill 97 directs OPR to develop CEQA Guidelines to address GHG emissions to be adopted by January 1, 2010. OPR had not issued any formal regulations at the time this Draft EIR was completed. OPR has issued informal guidance in the form of a Technical Advisory in June 2008 on how to address climate change through CEQA review.

The recommended approach for GHG analysis included in OPR's Technical Advisory is to (1) identify and quantify GHG emissions, (2) assess the significance of the impact on climate change, and (3) if significant, identify alternatives and/or mitigation measures to reduce the impact below significance. Neither the CEQA statute nor guidelines prescribe thresholds of significance or a particular methodology for performing a GHG impact analysis. No state agency or the BAAQMD have issued any final regulations or standards of significance for the analysis of GHGs under CEQA. Therefore, this issue is left to the judgment and discretion of the lead agency. Currently, there is significant uncertainty as to what constitutes a legally adequate GHG analysis under CEQA. The discussion and analysis contained in this chapter is provided in accordance with the purpose of CEQA to make a good faith disclosure to the public and decision makers of potential environmental impacts, so they can make informed decisions.

Whether there is a direct connection between GHG emissions from an individual land use project and global climate change is unknown. No scientific study has established a direct causal link between individual land use project impacts and global warming. Climate change is a global environmental

problem in which (a) any given development project contributes only an infinitesimally small portion of any net increase in GHGs and (b) growth throughout the world is continuing to contribute large amounts of GHGs. Therefore, this study addresses climate change as a potential cumulative impact of the project. The analysis of this issue as a cumulative impact is consistent with all proposed regulatory guidance. The issue is what is the appropriate significance threshold for determining whether the project has a cumulatively considerable contribution to the significant cumulative impact of global warming.

AB 32 requires statewide GHG emissions reductions to 1990 levels by 2020. However, AB 32 does not amend CEQA. No generally applicable significance threshold for GHG emissions has yet been established, nor is formal final State agency regulations on global climate change analysis in CEQA documents anticipated to be available until mid-2009 at the earliest.

State CEQA Guidelines Section 15064(b) provides that the “determination of whether a project may have a significant effect on the environment calls for careful judgment on the part of the public agency involved, based to the extent possible on scientific and factual data”. An “ironclad definition of significant effect is not always possible because the significance of an activity may vary with the setting.” (CEQA Guidelines Section 15064(b)). Lead agencies have discretion under CEQA to establish significance thresholds. The State CEQA Guidelines further indicate that if thresholds are established, they may include an “identifiable quantitative, qualitative or performance level of a particular environmental effect, non-compliance with which means the effect will normally be determined to be significant by the agency.” (State CEQA Guidelines, Section 15064.7)

Some agencies have suggested that a zero emissions threshold would be appropriate when evaluating GHGs and their potential effect on climate change. However, most agencies believe that a “zero new emissions” threshold would be impractical to implement and would hinder any new development. Further, prior CEQA case law makes clear that the rule that “one additional molecule” could create a significant impact is not consistent with CEQA. Such a rule also appears inconsistent with the State’s approach to addressing climate change impacts. AB 32 does not prohibit all new GHG emissions; rather, it requires a reduction in statewide emissions to a given level. Thus, AB 32 recognizes that new GHG emissions will continue to occur.

Bearing in mind that CEQA does not require “perfection” but instead “adequacy, completeness, and a good faith effort at full disclosure,” the analysis below is based on methodologies and information available to the City at the time the study was prepared. Estimation of GHG emissions in the future does not account for all changes in technology that may reduce such emissions; therefore, the estimates are based on past performance and represent a scenario that is worse than that which is likely to be encountered. Additionally, as explained in greater detail below, many uncertainties exist regarding the precise relationship between specific levels of GHG emissions and the ultimate impact on the global climate. Significant uncertainties also exist regarding potential reduction strategies. Thus, while information is presented to assist the public and the City’s decision makers in understanding the project’s potential contribution to global climate change impacts, the information available to the City is not sufficiently detailed to allow a direct comparison between particular project characteristics and particular climate change impacts, nor between any particular proposed reduction measure and any corresponding reduction in climate change impacts.

Because no applicable numeric significance thresholds have yet been defined, and because the precise causal link between an individual project's emissions and global climate change has not been developed, it is reasonable to conclude that an individual development project cannot generate a high enough quantity of GHG emissions to affect global climate change. However, individual projects incrementally contribute toward the potential for global climate change on a cumulative basis in concert with all other past, present, and reasonably foreseeable future projects. This study identifies qualitative factors to determine whether this project's emissions should be considered cumulatively significant. Until the City or other regulatory agency devises a generally applicable climate change significance threshold or methodology for analysis, the analysis used in this study may or may not be applicable to other City projects.

In the absence of regulatory agency rules or guidance on thresholds of significance under CEQA, the City will analyze whether the project has a cumulatively considerable contribution to the significant cumulative impact of global warming under the following qualitative standard:

- Whether the proposed project conflicts with or obstructs the implementation of greenhouse gas reduction measures under AB 32 or other state regulations.

If a project does not conflict with or obstruct GHG reduction strategies identified in AB 32 or other state regulations, the project would result in a less than significant contribution to the cumulative impact of global climate change.

## **ENVIRONMENTAL IMPACTS**

One potential air quality impact is identified: short term construction impacts related to dust generation during buildout of the plan area.

### *Short-term construction impacts*

Construction dust would affect local and regional air quality at various times during the build-out period of the Project. The dry, windy climate of the area during the summer months combined with the fine, silty soils of the region create a high potential for dust generation. Emissions during the grading phase of construction are primarily associated with the exhaust of large earth moving equipment and the dust which is generated through grading activities. Emissions in later stages of construction are primarily associated with construction employee commute vehicles, asphalt paving, mobile equipment, stationary equipment, and architectural coatings.

The effects of construction activities would be increased dustfall and locally elevated levels of PM<sub>10</sub> near the construction activity. Depending on the weather, soil conditions, the amount of activity taking place, and nature of dust control efforts, these impacts could affect existing or future residential areas within or near the project. Since additional development is anticipated in the Project area for all three Concept Plan alternatives, short-term air quality impacts would be approximately the same for all three. Short term air quality impacts would be a significant impact and would be reduced to a less than significant level by adherence to Mitigation Measure 8.1 contained in the General Plan EIR that requires all site-specific project applicants to comply with all City regulations and operating procedures prior to the issuance of building or grading permits.

This General Plan mitigation measure implements all dust control strategies currently recommended by the BAAQMD, and the document *BAAQMD CEQA Guidelines* provides that these measures would reduce dust impacts to a less-than-significant level.

*Violation of air quality standards*

Projects in the Bay Area are most likely to violate an air quality standard or contribute substantially to an existing or projected air quality violation through generation of vehicle trips. New vehicle trips add to carbon monoxide concentrations near streets providing access to the site. Carbon monoxide is an odorless, colorless poisonous gas whose primary source in the Bay Area is automobiles. Concentrations of this gas are highest near intersections of major roads.

The Bay Area is currently an attainment area for both the federal and state ambient air quality standards for carbon monoxide. Concentrations of this pollutant have been declining for the past 25 years due to emission control systems on vehicles. The last violation of any carbon monoxide standard measured in the Bay Area occurred in 1991.

The project would increase development and auto traffic, which would increase concentrations of carbon monoxide along streets affected by project traffic. However, the fact that current levels of this pollutant are well below the state/federal standards and future projected reductions in per-mile emissions from the vehicle fleet in the Bay Area indicate that the potential for project traffic causing an exceedance of the carbon monoxide standards is extremely unlikely. This impact would be *less-than-significant*.

*Inconsistency with an air quality plan*

The San Francisco Bay Area Air Basin is currently non-attainment for ozone (state and federal ambient standards) and particulate matter (PM<sub>2.5</sub> and PM<sub>10</sub>) (state ambient standard). While air quality plans exist for ozone, none exists for particulate matter. The *Bay Area 2005 Ozone Strategy* is the current ozone air quality plan.

The plan contains mobile source controls, stationary source controls and transportation control measures to be implemented in the region to attain the state ozone standards within the Bay Area Air Basin.

A project would be judged to conflict with or obstruct implementation of the regional air quality plan if it would be inconsistent with the growth assumptions, in terms of population, employment or regional growth in Vehicle Miles Traveled. The Bay Area 2005 Ozone Strategy utilized the Association of Bay Area Governments (ABAG) *Projections 2003* forecasts of population and employment which are based on city/county general plans. These forecasts have been updated; the most recent version is *Projections 2007*.

Population retail development and employment projections with each Project alternative are compared to *Projections 2007* population, retail development and employment in Table 4.2-5 below. Also shown is the incremental new Vehicle Miles Traveled for each alternative, estimated by the URBEMIS-2007 program.

For Alternatives B and C, local population, retail development and jobs would be less under these Alternatives than included in *Projections 2007* and these Alternatives would clearly have a less-than-significant air quality impact. For Alternative A, the alternative with the most intensive development, local population at buildout would be higher by up to 1,133 persons than anticipated in *Projections 2007*, but both retail square footage and local employment would be less than included in regional projections. Buildout of residential, retail and employment land uses under Alternative A could be slightly higher than anticipated in *Projections 2007* for this portion of Hayward, but this increase only represents a 0.02% increase in regional Vehicle Miles Traveled, and the rate of increase in VMT (10%) is less than the rate of increase in population (13%). Given the small magnitude of the population difference and the higher density, infill nature of this Alternative (both of which are consistent with the intent of the Clean Air Plan), Alternative A is also deemed to have a less-than-significant air quality impact.

**Table 4.2-5. Project Consistency with Projections 2007 Forecasts of Population and Non-Residential Development**

	<b>Existing General Plan (Projections '07)</b>	<b>Alternative A Buildout</b>	<b>Alternative B Buildout</b>	<b>Alternative C Buildout</b>
Population	8,285	9418 (+1,133)	3478 (-4,807)	6,704 (-1,581)
Employment (jobs)	644	587 (-57)	560 (-84)	601 (-43)
Non-Residential Sq. Ft.	257,707	234,872 (-22,835)	219,920 (-37,787)	240,360 (-17,347)
Vehicle Miles Traveled	287,047	315,815(+28,768)	167,300(-119,747)	244,487(-42,560)

Sources: ABAG Projections 2007  
City of Hayward  
URBEMIS-2007

*Greenhouse gas emission impacts*

This section evaluates the potential of the Project to directly and indirectly emit greenhouse gasses as well as the Project’s contribution to cumulative greenhouse gas emissions.

Direct Emission of Greenhouse Gases. Estimates of carbon dioxide generated by Project traffic and area sources were made using a program called URBEMIS-2007 (Version 9.2.4). URBEMIS-2007 is a program used statewide that estimates the emissions that result from development projects. Land use projects can include residential uses such as single-family dwelling units, apartments and condominiums, and nonresidential uses such as shopping centers, office buildings, and industrial facilities. URBEMIS-2007 contains default values for much of the information needed to calculate emissions. However, project-specific, user-supplied information can also be used when it is available.

Inputs to the URBEMIS-2007 program include trip generation rates, vehicle mix, average trip length by trip type and average speed. The daily trip generation rate for the Project was provided by the Project

transportation consultant. Average trip lengths and speeds for Alameda County were used. URBEMIS-2007 utilizes a standard mix of vehicle types and ages for each county and it varies with the year specified. The emission rates for vehicles changes from year to year as newer, cleaner cars replace older, more polluting vehicles. A year 2025 vehicle mix was assumed for this analysis.

Area Source Emission of Greenhouse Gases. Area source emissions of carbon dioxide were also quantified by the URBEMIS-2007 program. The URBEMIS program identifies 5 categories of area source emissions:

- Natural Gas Combustion
- Hearth Emissions
- Landscaping Emissions
- Architectural Coating
- Consumer Products

Natural gas emissions result from the combustion of natural gas for cooking, space heating and water heating. Estimates are based on the number of residential land uses and the number and size of nonresidential land uses.

Hearth emissions consist of emissions from wood stoves, wood fireplaces, and natural gas fireplaces related to residential uses.

URBEMIS calculates emissions from fuel combustion and evaporation of unburned fuel by landscape maintenance equipment. Equipment in this category includes lawn mowers, rotor tillers, shredders/grinders, blowers, trimmers, chain saws, and hedge trimmers used in residential and commercial applications. This category also includes air compressors, generators, and pumps used primarily in commercial applications.

Consumer product emissions are generated by a wide range of product categories, including air fresheners, automotive products, household cleaners and personal care products. Architectural coating emissions result from the evaporation of solvents contained in paints, varnish, primers and other surface coatings associated with maintenance of residential and nonresidential structures. In URBEMIS-2007, these sources generate Reactive Organic Gases (ROG) emissions but not carbon dioxide.

The URBEMIS-2007 results for carbon dioxide are attached in Appendix 8.4. The output shows annual emissions of carbon dioxide.

While URBEMIS-2007 estimates carbon dioxide emissions from land use projects, there are other global warming gases that should be considered. Emissions of methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O) were estimated separately based on the URBEMIS-2007 estimates of carbon dioxide from vehicles and natural gas combustion. CH<sub>4</sub> and N<sub>2</sub>O emission factors from Table B in BAAQMD's "Source Inventory of Bay Area Greenhouse Gas Emissions" were utilized in a spreadsheet to estimate Project emissions of these gases. Because these gases are more powerful global warming gases, the emissions were multiplied by a correction factor to estimate "carbon dioxide equivalents." CH<sub>4</sub> was assumed to have a Global Warming Potential of 21 times that of CO<sub>2</sub>, while N<sub>2</sub>O was assumed to have a Global Warming Potential of 310 times that of CO<sub>2</sub>. The spreadsheet printout included in Appendix 8.4 shows the

estimated calculation of CH<sub>4</sub> and N<sub>2</sub>O carbon dioxide equivalents and the calculation of total estimated CO<sub>2</sub> equivalent emissions for the Project from all identified sources.

Indirect emissions of greenhouse gases. Indirect emissions are related to secondary emissions of global warming gases emitted away from the site and not directly related to Project activities. The most important of these is that portion of the electricity used by the Project that would be generated by fossil-fueled power plants that generate global warming gases.

Global warming gas emissions related to electricity use were estimated using average annual electrical consumption per residential unit and square foot of commercial space recommended by the California Energy Commission. Emission rates for CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O per megawatt hour were taken from the California Climate Action Registry General Reporting Protocol, Version 3.0. The number of project residential units and commercial square footage was multiplied by an electrical usage factor and emission rates per megawatt hour to obtain annual emissions for CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O. These emissions were converted to CO<sub>2</sub> equivalents. The calculation is shown in Appendix 8.4.

Estimated greenhouse gas emissions. Estimated daily operational emissions of greenhouse gases associated with the Project are shown in Table 4.2-6. Emissions are expressed in CO<sub>2</sub>-equivalent metric tons per year.

**Table 4.2-6. Project Greenhouse Gas Emissions in Metric Tons Per Year (CO<sub>2</sub> Eq.)**

<b>Alternative</b>	<b>Sources</b>	<b>Emissions (MT/Year)</b>
No Project Alternative	Vehicles	44,557.4
	Area Sources	7,410.2
	Indirect Sources	9539.0
	<b>Total</b>	<b>61,506.6</b>
Alternative A	Vehicles	49,054.6
	Area Sources	8,804.5
	Indirect Sources	10,666.5
	<b>Total</b>	<b>68,525.6</b>
Alternative B	Vehicles	25,925.4
	Area Sources	3,409.1
	Indirect Sources	5,320.1
	<b>Total</b>	<b>24,654.6</b>
Alternative C	Vehicles	37,936.3
	Area Sources	6,046.9
	Indirect Sources	8,055.0
	<b>Total</b>	<b>52,038.2</b>

Source: Don Ballanti, 2009

Cumulative impacts of Project.

The California Climate Action Team (CAT) and the California Air Resources Board (ARB) have developed programs and measures to achieve the GHG reduction targets under AB 32 and Executive Order S-3-05. These include the CAT's 2006 "Report to Governor Schwarzenegger

and the Legislature,” ARB’s “Expanded List of Early Action Measures to Reduce Greenhouse Gas Emissions in California, ” and ARB’s “Climate Change Proposed Scoping Plan: a framework for change.”

The reports identify strategies to reduce California’s emissions to the levels proposed in Executive Order S-3-05 and AB 32. The strategies that apply to the Project are contained in Table 4.2-7, which discusses the extent to which the Project complies with the strategies to help California reach the GHG emission reduction targets.

**Table 4.2-7. Project Compliance with Greenhouse Gas Emission Reduction Strategies**

<b>Strategy</b>	<b>Project Compliance</b>
<p><b>Vehicle Climate Change Standards.</b><sup>5</sup> AB 1493 (Pavley) required the state to develop and adopt regulations that achieve the maximum feasible and cost-effective reduction of climate change emissions emitted by passenger vehicles and light duty trucks. Regulations were adopted by the ARB in September 2004.</p>	<p><i>Compliant.</i> The vehicles from the Project will be in compliance with any vehicle standards that the ARB adopts.</p>
<p><b>Building Energy Efficiency Standards in Place and in Progress.</b><sup>6</sup> Public Resources Code 25402 authorizes the Energy Commission to adopt and periodically update its building energy efficiency standards (that apply to newly constructed buildings and additions to and alterations to existing buildings).  <b>Energy Efficiency.</b><sup>7</sup> Maximize energy efficiency building and appliance standards, and pursue additional efficiency efforts. Reductions could be achieved through enhancements to existing programs such as increased incentives and even more stringent building codes and appliance efficiency standards. Green buildings offer a comprehensive approach to reducing greenhouse gas emissions that cross-cut multiple sectors including Energy, Water, Waste, and Transportation.</p>	<p><i>Compliant.</i> Future buildings within the Project area will be required to comply with the updated Title 24 standards for building construction including exterior lighting requirements. Residential building constructed in 2011 would be required to comply with the 2007 California Green Building Code Standards.</p> <p>Adopted on September 16, 2008, the ordinance establishes performance standards for new City-owned buildings and for major renovations of existing city-owned buildings. The ordinance aims to improve water and energy efficiency and minimize construction and demolition waste. The ordinance requires all covered projects (those exceeding 20,000 square feet or \$5 million or a Public-Private Partnership) to be Leadership in Energy and Environmental Design (LEED) Silver Certified</p>
<p><b>Appliance Energy Efficiency Standards in Place and in Progress.</b><sup>8</sup> Public Resources Code 25402 authorizes the Energy Commission to adopt and periodically update its appliance energy efficiency standards (that apply to devices and equipment using energy that are sold or offered for sale in California).</p>	<p><i>Compliant.</i> Appliances that are purchased for future individual dwellings within the Project area will be consistent with existing energy efficiency standards. Future dwellings within the Project area will include energy efficient heating and cooling systems, appliances and equipment, and control systems</p>

<sup>5</sup> California Environmental Protection Agency. 2006. *Climate Action Team Report to Governor Schwarzenegger and the Legislature*. March.

<sup>6</sup> Ibid.

<sup>7</sup> California Air Resources Board. 2008. *Climate Change Draft Scoping Plan: a framework for change*. June.

<sup>8</sup> California Environmental Protection Agency. 2006. *Climate Action Team Report to Governor Schwarzenegger and the Legislature*. March.

Strategy	Project Compliance
<p><b>Measures to Improve Transportation Energy Efficiency.</b><sup>9</sup> Builds on current efforts to provide a framework for expanded and new initiatives including incentives, tools, and information that advance cleaner transportation and reduce climate change emissions.</p>	<p><b>Compliant.</b> The proposed Project promotes programs which encourage walking, bicycling and public transportation use through site planning and design elements. The proposed Project includes pedestrian trails throughout Project area and incorporates access to sidewalks and pathways off site to ensure that destinations may be reached by walking or bicycling.</p>
<p><b>Smart Land Use and Intelligent Transportation Systems (ITS).</b><sup>10</sup> Smart land use strategies encourage jobs/housing proximity, promote transit-oriented development, and encourage high-density residential/commercial development along transit corridors. ITS is the application of advanced technology systems and management strategies to improve operational efficiency of transportation systems and movement of people, goods and services.</p>	<p><b>Compliant.</b> The Project would locate residential uses near transit stops on local transportation corridors, including BART and AC Transit lines, which can be considered smart land use. The City of Hayward has also planned bicycle facilities through the Project area. The proposed Project is an infill Project adjacent to existing development.</p>
<p><b>Water Use Efficiency.</b><sup>11</sup> Approximately 19% of all electricity, 30% of all natural gas, and 88 million gallons of diesel are used to convey, treat, distribute and use water and wastewater. Increasing the efficiency of water transport and reducing water use would reduce greenhouse gas emissions.</p>	<p><b>Compliant.</b> Future individual developments within the Project area will be required to incorporate water- conservation measures, including water efficient fixtures and appliances, water-efficient landscaping and design, the use of water efficient irrigation systems and devices, and will employ water conservation measures required by the City of Hayward Water Efficient Landscape Ordinance.</p>
<p><b>Waste reduction and recycling:</b> Reduce amount of waste generated by projects and increase recycling of products.</p>	<p><b>Compliant.</b> Future individual developments within the proposed Project will reuse and recycle construction and demolition waste including, but not limited to, soil, vegetation, concrete, lumber, metal, and cardboard, as required by the Construction and Demolition Debris Waste Reduction and Recycling Requirements.</p>

Source: Don Ballanti, 2009

<sup>9</sup> Ibid.

<sup>10</sup> Ibid.

<sup>11</sup> Ibid.

Based on the foregoing analysis, the proposed Project would not have a cumulatively considerable contribution to the significant cumulative impact of global warming because the Project does not conflict with or obstruct the implementation of greenhouse gas reduction measures under AB 32 or other state regulations.

## 4.3 BIOLOGICAL RESOURCES

### ENVIRONMENTAL ISSUES

This section describes the methods used to assess biological resources within the project area, including regulatory requirements, plant and wildlife resources, the presence or potential presence of special-status species, and potential impacts to wetlands on the site and measures to mitigate these impacts.

This section is based on a biological resources reconnaissance of the project area conducted by WRA Inc. (WRA) in September, 2007. This report is incorporated by reference into this DEIR and is available for review at the Hayward Development Services Department during normal business hours.

### ENVIRONMENTAL SETTING

#### *Existing biological communities*

The following biological communities have been observed within the Project area. These types are mapped in **Figure 4.3-1**.

Non-native annual grassland. Non-native annual grassland is present in the large, steep undeveloped parcels of the Project area. This community type is described as non-native grassland by Holland (1986) and California annual grassland by Sawyer and Keeler-Wolf (1995), and is dominated by exotic annual grasses with scattered native and non-native forbs. Project Area grasslands are generally dominated by wild oats (*Avena* spp.) and other common invasive grasses such as ripgut brome (*Bromus diandrus*) and Italian ryegrass (*Lolium multiflorum*). The exotic herbaceous species observed in this community included yellow star thistle (*Centaurea solstitialis*), rose clover (*Trifolium hirtum*), chicory (*Cichorium intybus*), and fennel (*Foeniculum vulgare*). Scattered native and exotic trees and shrubs are naturally-occurring or planted in the grasslands, but do not generally create more than five percent average canopy cover. It is likely that more native species would be observed in these areas during the spring and early summer, but they generally appear disturbed by invasive species and historic grazing impacts. Most portions of the Project area mapped as non-native annual grassland continue to be managed with mowing or goat and cattle grazing to reduce fuel loads. One valley needlegrass grassland community is recorded in the California Natural Diversity Data Base (CNDDB) in the vicinity of the Project Area, located two miles north along Fairmont Ridge above Lake Chabot (CDFG 2007). A few non-native annual grassland areas of the Project area, particularly between Carlos Bee Boulevard and Harder Road, include sparse to dense patches of native purple needlegrass (*Nassella pulchra*). However, none were large enough to identify as a distinct native grassland community.

Approximately 125 acres of non-native annual grassland is present in the Project area. Given the disturbed nature but relatively large size of these grassland areas, they represent moderate-value

habitat for special status and common plant and wildlife species. Wildlife species likely to be found in this or similar habitat include harvest mouse (*Reithrodontomys* sp.), shrew (*Sorex* sp.), Western Meadowlark (*Sturnella neglecta*), gopher snake (*Pituophis catenifer*), and others.

Coastal scrub. The coastal scrub community type is present in small patches on steep slopes scattered throughout the Project area. This community is a disturbed variation of the northern coastal scrub community described by Holland (1986), and the coyote brush series and California sagebrush series described by Sawyer and Keeler-Wolf (1995). Within the Project area, coastal scrub consists of sparse to dense coyote brush (*Baccharis pilularis*) or California sagebrush (*Artemisia californica*), with an understory similar to the non-native annual grassland community type. Most areas mapped as coastal scrub appear to be former ruderal or non-native annual grassland areas that have been colonized by native shrubs.

The coastal scrub community type covers approximately eight acres within the Project area, and is not considered sensitive. These areas are a minor component of the existing natural resources of the site, but provide valuable transitional habitat between the more common grasslands and forested areas. This community may support wildlife species such as coyote (*Canis latrans*), Savannah Sparrow (*Passerculus sandwichensis*), and western fence lizard (*Sceloporus occidentalis*).

Disturbed/ ruderal. Typical ruderal communities include areas that have been partially developed or have been used in the past for agriculture. In the Project area, the disturbed/ruderal communities consist primarily of vacant parcels that have been recently disced. Discing has occurred on almost all of the flat non-forested parcels owned by Caltrans, leaving highly disturbed vegetation and soils. At the time of this assessment, vegetation in disced areas was sparse and consisted almost exclusively of Italian ryegrass, bristly ox-tongue (*Picris echioides*), cheeseweed (*Malva parviflora*), and field bindweed (*Convolvulus arvensis*). Many other disturbed vacant parcels included in this community type have compacted soils that have been re-colonized primarily by ruderal species such as fennel, stinkwort (*Dittrichia graveolens*), pampas grass (*Cortaderia jubata*), and Russian thistle (*Salsola tragus*). An abandoned quarry near the center of the Project Area was also mapped as disturbed/ruderal due to a limited vegetation cover dominated by pampas grass, fennel, cotoneaster (*Cotoneaster* sp.), and other ruderal exotic species.

Approximately 109 acres of the disturbed/ruderal community type is present in the Project area, and these areas provide poor habitat for special status or even common native species. Wildlife species that can be found in such areas may include Rock Dove (*Columba livia*), Brewer's Blackbird (*Euphagus cyanocephalus*), gophers (*Thomomys bottae*), and voles (*Microtus* sp.).

Exotic woodland. Many undeveloped parcels within the Project area have relatively dense tree and/or shrub canopies consisting almost entirely of exotic species. The understory in these parcels is similar to non-native annual grassland or the disturbed/ruderal community type where grading or other soil disturbance has occurred. These parcels do not appear to be regularly maintained except for mowing or grazing to reduce fuel loads. While some of the trees and shrubs may be historic plantings, many of the species are naturalized and some are invasive. These areas provide a somewhat natural open woodland habitat beneficial to wildlife, so this

community was mapped separately from urban areas with maintained landscaping. Exotic woodlands within the Project area range from contiguous patches of blue gum eucalyptus (*Eucalyptus globulus*) to small lots covered with a diverse mix of typical weedy urban trees and shrubs including eucalyptus, acacias (*Acacia* spp.), cotoneaster, and tree of heaven (*Ailanthus altissima*). These exotic woodlands also support scattered native species including coast live oak (*Quercus agrifolia*), toyon (*Heteromeles arbutifolia*), coyote brush, and willows (*Salix* spp.).

Approximately 67 acres of exotic woodland are present in the Project area. Hayward Memorial Park was mapped under this community type because of the somewhat natural habitat of a weedy understory with a mix of large native and naturalized exotic trees and shrubs. Wildlife species that may be found in this community include striped skunk (*Mephitis mephitis*), Great Horned Owl (*Bubo virginianus*), Mourning Dove (*Zenaida macroura*), and Wild Turkey (*Megeagris gallopavo*).

Development (urban/landscaping) Development consists of all portions of the Project area not mapped as a natural community type, and includes commercial and residential uses, roads, and other areas dominated by human uses. Much of these developed areas contain planted exotic vegetation and casually- to intensively-maintained landscaping. Scattered native trees, primarily coast live oak, persist as street trees, in residential yards, and on larger landscaped grounds such as schools.

These areas are not likely to provide habitat for special status species due to noise and light pollution, invasive plants and repeated disturbance, and exotic predators such as feral cats. The primary habitat value of these areas lies in the trees, which may be utilized by both birds and bats. Species that may be found here include Rock Dove (*Columba livia*), European Starling (*Sturnella vulgaris*), House Sparrow (*Passer domesticus*), Yuma myotis bat (*Myotis yumanensis*), and roof rat (*Rattus rattus*).

#### *Sensitive biological communities*

Waters of the U.S. Approximately 5.6 miles (19,100 linear feet) of waters are present in the Project area, comprised primarily of perennial to semi-perennial creeks. Most creeks were still flowing with several inches of water at the time of the assessment visit, which was conducted in early fall following a relatively dry winter season. The creeks are generally two to eight feet wide with a gravelly substrate, with San Lorenzo Creek being the largest watercourse crossing the Project Area. Many fish barriers and other structures that reduce wildlife habitat values are present, especially to the west of the Project area where most waters flow through concrete channels or underground culverts.

Creeks within the Project area have the potential to support special status species, particularly San Lorenzo Creek and large pools in Castro Valley Creek. Steelhead or rainbow trout (*Oncorhynchus mykiss*) (FT, CSC) are believed to be present in San Lorenzo Creek (Leidy et al. 2003), which passes through the northern portion of the Project area near A Street. Short lengths of adjoining smaller creeks may also be used as rearing habitat by juvenile *O. mykiss* during certain times of the year. Perennial creeks, riparian corridors, and relatively undisturbed upland areas nearby may also provide habitat for California red-legged frog (*Rana aurora draytonii*,

CRLF), a federal threatened and CDFG species of special concern, which has been documented to occur in the vicinity. A small reservoir in Hayward Memorial Park may also provide habitat for CRLF. More common species that may occur near creeks include Black Phoebe (*Sayornis nigricans*), Mallard (*Anas platyrhynchos*), garter snake (*Thamnophis* sp.), and crayfish (*Pacifasticus leniusculus*).

Wetlands. Although a formal wetland delineation has not been conducted as a part of this assessment, several wetlands with potential to be jurisdictional “Waters of the U.S.” were identified within the Project area based primarily upon the presence of wetland vegetation. Four general types of wetlands were identified: freshwater marsh, vegetated ditches, seep wetlands, and seasonal wetlands, although all are relatively disturbed communities and most appear to be inadvertently created by human activities, as described below. Wetland areas total approximately eight acres, although the scale of mapping results in a higher acreage estimate than is likely to be identified in a jurisdictional wetland delineation. Due to the time of year and highly disturbed nature of many of the mowed and disced undeveloped parcels, it is likely that not all seasonal wetlands were identified during the assessment.

Freshwater marsh communities are present near urban development and were mapped in the Project area based upon the dominance of cattail (*Typha* sp.) and/or common reed (*Arundo donax*). Several small patches of freshwater marsh vegetation abut commercial or residential lots and may rely on unintentional irrigation or leaks from water tanks and underground pipes. Holland (1986) describes Coastal and Valley Freshwater Marsh communities as permanently flooded by fresh water, without significant current. Perennial, emergent monocots up to four meters tall typically dominate these marshes, including cattails (*Typha* spp.), bulrushes (*Scirpus* spp.), and a variety of sedges (*Carex* spp., *Cyperus* spp., *Eleocharis* spp.). All freshwater marsh communities in the Project area are small, disturbed, and surrounded by development.

Two man-made ditches cross the southern end of the Project area. One is located between Valle Vista Avenue and Industrial Parkway, extending from Mission Boulevard to Dixon Street, where it then flows southwest in an underground culvert until it empties into the second canal paralleling the BART tracks and the Project area boundary. These ditches are largely vegetated with a freshwater marsh community, but are clearly man-made channels that carry stormwater. The ditches still held approximately an inch of water at the time of this assessment. Common wetland vegetation in these ditches include cattail, water cress (*Rorippa nasturtium-aquaticum*), barnyard grass (*Echinochloa crus-galli*), and rabbitfoot grass (*Polypogon monspeliensis*).

Several freshwater seep wetlands exhibit similar vegetation communities to freshwater marsh, dominated by perennial, emergent vegetation, but are located in sloped drainages that conduct a small amount of flow. Holland (1986) describes Freshwater Seep communities as dominated by perennial herbs, growing in permanently moist or wet soil and usually forming complete cover. Dominant vegetation in seep-like wetlands of the Project area includes wetland species such as iris-leaf rush (*Juncus xiphioides*), common tule (*Scirpus acutus* var. *occidentalis*), Himalayan blackberry, cattail, tall flatsedge (*Cyperus eragrostis*), and red willows (*Salix laevigata*). The water source of these wetlands was often unclear during the assessment, although some are clearly positioned downhill from large water tanks, culverts, or quarry operations.

Seasonal wetland plant communities are not described in Holland (1986), but occur in swales and depressions that are ponded during the rainy season for sufficient duration to support vegetation adapted to wetland conditions. Seasonal wetlands in California are highly variable in plant composition, depending on the length of ponding or inundation. They also generally lack the plant community assemblage typical of defined marshes and vernal pools. Potential seasonal wetlands in the Project area are generally found on flat or slightly sloped ground in very disturbed non-native annual grassland, disturbed/ruderal areas, and in small un-maintained areas of urban development. The only seasonal wetlands identifiable during the assessment exhibited dry soils but strong wetland vegetation or hydrology indicators such as hoof prints and a clearly different community from the surrounding vegetation. Vegetation in these wetlands includes typical weedy species such as Italian ryegrass, narrow-leaved milkweed (*Asclepias fascicularis*), heliotrope (*Heliotropium curassavicum*), and stinkwort. Seasonal wetlands in the Project area include features apparently fed by leaking water tanks, leaking underground pipes, and irrigation from a large neighboring garden and greenhouse.

Seasonal wetlands generally provide food, cover, and water for over 100 species of birds, and can provide foraging habitats for bats. In addition, amphibian species such as the federal-listed California tiger salamander (*Ambystoma californiense*) and California red-legged frog (*Rana aurora draytonii*) may utilize them as part of their migratory corridor. However, the seasonal wetlands in the Project Area support disturbed exotic vegetation, are surrounded by urban development or other intensive uses, and are unlikely to provide valuable habitat for special status species.

Riparian forest. Riparian forests line all of the creeks in the Project area, and range from completely native tree canopies to a mix of urban plantings with invasive and native trees. The largest corridors of riparian forest within the Project Area are dominated by coast live oak and California bay (*Umbellularia californica*), with scattered Californica buckeye (*Aesculus californica*) and big leaf maple (*Acer macrophyllum*). These forests are typical of oak/bay forests in the San Francisco Bay Area, and are similar to the coast live oak forest and southern coast live oak riparian forest communities described by Holland (1986) and the coast live oak series and California bay series described by Sawyer and Keeler-Wolf (1995). A dense tree canopy results in minimal understory vegetation, including scattered toyon, snowberry (*Symphoricarpos albus*), poison oak (*Toxicodendron diversilobum*), California blackberry (*Rubus ursinus*), and blue elderberry (*Sambucus mexicana*).

A few creeks have significantly narrower riparian corridors remaining due to surrounding urban development, along with a more disturbed species composition of mixed natives and exotic trees and shrubs, namely San Lorenzo Creek, Castro Valley Creek, and the small seasonal creek segments directly west of Hayward High School. Some of the riparian forests, most notably Ward Creek in Hayward Memorial Park, have moderate to severe infestations of invasive plants such as English ivy (*Hedera helix*), Himalayan blackberry (*Rubus discolor*), and cape ivy (*Delairea odorata*).

Riparian forest covers approximately 74 acres, providing the primary remaining native plant habitat within the Project Area and valuable wildlife corridors connecting to larger natural areas to the east and south. All contiguous forest canopies on the steep slopes lining perennial and

seasonal creeks were considered riparian forest, although the actual delineation of riparian corridors under the jurisdiction of CDFG may result in narrower corridors more directly influenced by the creek channels. Wildlife species that may be found in riparian forest include black-tail deer (*Odocoileus hemionus*), raccoon (*Procyon lotor*), dusky-footed woodrat (*Neotoma fuscipes*), Lesser Goldfinch (*Carduelis psaltria*), Spotted Towhee (*Pipilo maculatus*), and chorus frog (*Pseudacris regilla*).

Oak woodland. Oak woodland is present in disturbed, remnant patches in the Project area, often adjacent to more intact riparian forested corridors. This community is similar to the coast live oak woodland community described by Holland (1986) and the coast live oak series described by Sawyer and Keeler-Wolf (1995). This community is typically dominated by coast live oak with an understory of non-native annual grasses and both native and non-native shrubs. It is usually found on steep slopes, raised stream banks, and stream terraces. Within the Project area, oak woodland persists in small remnant patches, often in or surrounded by areas of graded, disturbed soils and ruderal vegetation or non-native annual grassland species. Many of the oak woodland areas appear to be regularly mowed or grazed by cattle or goats. The native species diversity in this community type is lower than most riparian forest in the Project area, and the native tree canopy cover ranges from approximately 10 to 100 percent.

The oak woodland community type covers approximately 14 acres within the Project area, and is considered sensitive for the purposes of this report because of the concentration of native oak trees protected by local tree ordinances. However, these areas are mostly very disturbed and fragmented compared to a typical coast live oak woodland community in less urban areas. They are not as valuable as the riparian forest within the Project Area in terms of habitat, total acreage, or connectivity to other native habitats in the vicinity. Oak woodland areas adjacent to riparian forest provide the most valuable habitat because they enhance wildlife corridors and transitional habitats between forest and grassland areas. Wildlife species that may utilize these areas include Northern Flicker (*Colaptes auratus*), Western Scrub-Jay (*Aphelocoma californica*), fox squirrel (*Sciurus niger*), and raccoon (*Procyon lotor*).

#### *Special-status species*

Plants. Based upon a review of the resources and databases, 44 special-status plant species have been documented in the vicinity of the Project area. Plant species occurrences documented in the CNDDDB within five miles of the Project area are shown in **Figure 4.3-2**. The Project area has the potential to support 21 of these species. Table 4.3-1 (contained in Appendix 8.5 of this document) summarizes the potential for occurrence for each special status plant species occurring in the Hayward USGS 7.5 minute quadrangle and eight surrounding quadrangles. No special status plant species were observed in the Project area during the assessment site visit, nor are any known to have been observed in previous studies. No special status plant species have a high potential to occur in the Project area, because the remaining natural areas are disturbed by historic uses, grazing, discing, mowing, homeless encampments, and surrounding urban development. Two special status plant species have a moderate potential to occur in the Project area, and are discussed below. The remaining species documented to occur in the vicinity of the Project area are unlikely or have no potential to occur.

The site assessment occurred during the blooming period of four of the 21 special status plant species with potential to occur in the Project area; none of the potentially blooming species were observed. However, the assessment was not a protocol-level rare plant survey, so presence of any special status species cannot be ruled out. Plants observed during this reconnaissance-level survey were identified to the species level when possible given the two-day time frame and late phenology of many plants, and are listed in Table 4.3-1 (see Appendix 8.5).

*Western leatherwood (Dirca occidentalis). CNPS List 1B.* Western leatherwood is a deciduous shrub in the Mezereum family (Thymelaeaceae) that typically occurs in riparian areas in broadleaved upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, and North Coast coniferous forest, from 160 to 1,300 feet in elevation. The species is known from the San Francisco Bay Area and blooms from January to March. Populations in the vicinity of the Project Area are located primarily in the Oakland Hills. This species has a moderate potential to occur in most riparian forest corridors in the Project area.

*Diablo helianthella (Helianthella castanea). CNPS List 1B.* Diablo helianthella is a perennial herb in the sunflower family (Asteraceae) that occurs over a very limited geographic area, primarily in Contra Costa and Alameda counties. It occurs in a variety of habitats including broadleaved upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, and valley and foothill grassland, at elevations from 200 to 4,270 feet. Diablo helianthella blooms from March to June, and has a moderate potential to occur in less disturbed grasslands and openings or edges of oak woodland and riparian forests in the Project area.

Wildlife. Forty-nine special status species of wildlife have been recorded in the vicinity of the Project area. Table 4.3-2 summarizes the potential for each of these species to occur in the Project area. Wildlife species occurrences documented in the CNDDDB within five miles of the Project area are shown in **Figure 4.3-2**. One special status wildlife species was observed in the Project area during the site assessment, and two additional species are believed to be present. Five special status wildlife species have a high potential to occur in the Project area, and twelve special status wildlife species have a moderate potential to occur in the Project area. Special status wildlife species of particular interest are discussed below.

The following non-listed special status species have a high to moderate potential for occurrence within the Project area due to the presence of suitable habitat and/or proximity to accepted range and documented occurrences.

San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*)  
Townsend's big-eared bat (*Corynorhinus townsendii*)  
western mastiff bat (*Eumops perotis californicus*)  
Cooper's Hawk (*Accipiter cooperi*)  
Sharp-shinned Hawk (*Accipiter striatus*)  
Golden Eagle (*Aquila chrysaetos*)  
Ferruginous Hawk (*Buteo regalis*)  
Northern Harrier (*Circus cyaneus*)

White-tailed Kite (*Elanus leucurus*)  
Long-eared Owl (*Asio otus*)  
California Horned Lark (*Eremophila alpestris actia*)  
Yellow Warbler (*Dendroica petechia brewsteri*)  
Saltmarsh Common Yellowthroat (*Geothlypis trichas sinuosa*)  
monarch butterfly (*Danaus plexippus*) (roost site)  
western pond turtle (*Actinemys marmorata*)  
coast horned lizard (*Phrynosoma coronatum frontale*)

*California red-legged frog (Rana aurora draytonii). Federal Threatened, CDFG Species of Concern.* The California red-legged frog (CRLF) is dependent on suitable aquatic, estivation, and upland habitat. During periods of wet weather, starting with the first rainfall in late fall, red-legged frogs disperse away from their estivation sites to seek suitable breeding habitat. Aquatic and breeding habitat is characterized by dense, shrubby, riparian vegetation and deep, still or slow-moving water. Breeding occurs between late November and late April. CRLF estivate (undergo a period of prolonged inactivity) during the dry months in small mammal burrows, moist leaf litter, incised stream channels, and large cracks in the bottom of dried ponds.

CRLF has a moderate potential for occurrence within the Project area. Marginal habitat for CRLF is present in a number of creeks that traverse the property moving from east to west. Adjacent riparian areas and upland habitat provide opportunities for dispersal and estivation. Deeper pools within perennial creeks and a small reservoir near Hayward Memorial Park may provide breeding habitat for CRLF. Surveys for this species were performed throughout the Project Area in 1996, but negative findings are only considered valid for 1-2 years, and multiple findings of CRLF have been reported just east of Hayward in subsequent years. Since CRLF is a federally listed species, it is likely to be the species of greatest concern with regard to development within the Project area. Development in disced or previously-developed land surrounded by urban land uses should not impact this species. However, protocol-level surveys may be necessary in many areas near creeks and undisturbed land to ensure absence of CRLF before construction can take place.

*Alameda Whipsnake (Masticophis lateralis euryxanthus). Federal Threatened Species, State Threatened Species.* Alameda whipsnake (AWS) is associated with scrub communities, including mixed chaparral, chamise-redshank chaparral, coastal scrub, and annual grassland and oak woodlands that lie adjacent to scrub habitats that contain areas of rock outcrops. Rock outcrops are important as they are a favored location for lizard prey. Whipsnakes frequently venture into adjacent habitats, including grassland, oak savanna, and occasionally oak-bay woodland.

The Alameda whipsnake is unlikely to occur within the Project area. While small areas of marginal habitat for this species may exist within the site, whipsnakes are likely to stay mostly within higher-quality habitat areas to the east. Extensive trapping done within the Project area in 1996 and 1997 resulted in no findings of AWS. The USFWS agreed during a 2006 technical assistance meeting that no impacts to AWS or CRLF would result from development of the La Vista Quarry, a heavily disturbed land parcel abutting the Project area to the southeast (J. Dreier, pers. communication). The City of Hayward also agreed that no impacts to CRLF or AWS would result from development of La Vista Quarry or development near Garin Regional Park to the

north (Patenaude 2006). These areas had previously been identified as the only areas with potential to support AWS during habitat assessments in 1991 and 1993. These locations also have similar habitat values to many parts of the Project area, as they are disturbed, invaded by non-native plants, and adjacent to or nearly surrounded by urban development. In the time since the 1991-93 assessments, the area has likely decreased in habitat value due to further development, fragmentation, and land management practices such as discing. AWS is therefore unlikely to occur in the project area, although some potential still exists, especially in the mixed grassland and woodland slopes between Calhoun Street and Harder Road. However, previous assessments and surveys for this species appear sufficient to conclude that no significant impacts to AWS should occur from development within the Project area.

*Steelhead-Central California Coast (Oncorhynchus mykiss irideus)*. *Federal Threatened*. The Central California Coast ESU includes all naturally spawned populations of steelhead (and their progeny) in California streams from the Russian River to Aptos Creek, and the drainages of San Francisco and San Pablo Bays eastward to the Napa River (inclusive), excluding the Sacramento-San Joaquin River Basin. Steelhead typically migrate to marine waters after spending two years in freshwater, though they may stay up to seven. They then reside in marine waters for 2 or 3 years prior to returning to their natal stream to spawn as 4-or 5-year-olds. Steelhead adults typically spawn between December and June. In California, females typically spawn two times before they die. Preferred spawning habitat for steelhead is in perennial streams with cool to cold-water temperatures, high dissolved oxygen levels and fast flowing water. Abundant riffle areas (shallow areas with gravel or cobble substrate) for spawning and deeper pools with sufficient riparian cover for rearing are necessary for successful breeding.

The fish species *O. mykiss* is present within the Project Area, having been recently documented in San Lorenzo Creek (Leidy *et al.* 2003). The USFWS would likely consider these fish to be the protected oceangoing subspecies. However, barriers to movement and spawning as well as minimal and degraded habitat make San Lorenzo Creek and adjoining tributaries only marginal habitat. While *O. mykiss* may technically be present within a small portion of the Project Area, it is unlikely that this species will be impacted by development. In general, human activities that would impact this species include removal of shade trees in the riparian corridor, installation of barriers in the creek channel, and creation of sediment runoff that would accumulate in the creek. Sedimentation from modern construction projects is avoided through the use of Best Management Practices (BMPs) and Storm Water Pollution Prevention Plans (SWPPPs), so sedimentation in San Lorenzo Creek as a result of development is unlikely. Construction activities in the riparian corridor and creek channel would require consultation with the CDFG, at which time impacts to *O. mykiss* could be addressed. Therefore, with regard to the remaining Project area and development plans, this species should not be impacted.

*Loggerhead Shrike (Lanius ludovicianus)*. *CDFG Species of Special Concern, USFWS Bird of Conservation Concern*. The loggerhead shrike is a common resident and winter visitor in lowlands and foothills throughout California. It prefers open habitats with scattered trees, shrubs, posts, fences, utility lines or other perches. Nests are usually built on a stable branch in a densely foliated shrub or small tree and are usually well-concealed. The highest densities occur in open-canopied valley foothill hardwood, valley foothill hardwood-conifer, valley foothill riparian pinyon-juniper, juniper, and desert riparian habitats. While this species eats mostly Arthropods,

they also take amphibians, small to medium-sized reptiles, small mammals and birds. They are also known to scavenge on carrion.

Loggerhead Shrike is present within the Project area. WRA biologists observed a single shrike in agricultural grassland north of East 16<sup>th</sup> Street. Mixed grassland and open areas provide foraging habitat for this species, and nesting habitat is present in trees and shrubs throughout the region.

*Pallid bat (Antrozous pallidus)*. CDFG Species of Special Concern, WBWG High Priority. The pallid bat is found in a variety of low elevation habitats throughout California. It selects a variety of day roosts including rock outcrops, mines, caves, hollow trees, buildings, and bridges. Night roosts are usually found under bridges, but also in caves, mines, and buildings. Pallid bats are sensitive to roost disturbance. Unlike most bats, pallid bats primarily feed on large ground-dwelling arthropods, and many prey are taken on the ground (Zeiner, et al. 1990).

Pallid bat is believed to be present within the Project area. CNDDDB records show an occurrence of this species that covers the central Hayward area. Suitable roost habitat is present throughout the site in tree cavities and structures such as bridges and vacant buildings. Foraging habitat is available in open areas over fields and near creeks or other water sources. Presence of this species may also indicate suitable habitat for other sensitive bats including such species as Townsend's big-eared bat (*Corynorhinus townsendii*), western mastiff bat (*Eumops perotis californicus*), and others

## ***Regulatory framework***

### Federal Species Protection

The Federal Endangered Species Act (FESA) protects listed species from harm or "take," which is broadly defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct. Take can also include habitat modification or degradation that results in death or injury to a listed species. An activity can be defined as a "take" even if it is unintentional or accidental. Listed plant species are provided less protection than listed wildlife species. Listed plant species are legally protected from take under FESA, if they occur on federal lands or if the project requires a federal action, such as a wetland fill permit.

Proposed and Candidate Species. The U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) have jurisdiction over federally-listed threatened and endangered species under the FESA. Both services maintain a list of proposed species and candidate species that are not legally protected under the FESA, but which may become listed in the future and are often included in their reviews of projects.

Consultation. Pursuant to the requirements of the FESA, an agency reviewing a proposed project within its jurisdiction must determine whether any federally-listed threatened or endangered species may be present in the project area and determine whether the proposed project could impact such species. Any activities that could result in the take of a federally-listed species will require consultation with the USFWS (for terrestrial species) or NMFS (for marine species) under either Section 7 or Section 10 of FESA before project activities commence.

Critical Habitat. Under Section 4 of the FESA, the USFWS or NMFS must designate critical habitat for listed species. If insufficient information is available on the habitat needs of the listed species, the USFWS or NMFS may designate the critical habitat to be “not determinable.” Critical habitat provisions apply only to federal projects or projects with a federal nexus. However, projects on private or non-federal lands may be affected by critical habitat designation if the proposed action is subject to federal permitting; e.g., filling of wetlands under Section 404 of the Clean Water Act or if the proposed action receives federal funds. If a proposed action has the potential to affect the habitat of a listed species within designated critical habitat for that species, even if the species is not present, consultation with the USFWS or NMFS (as appropriate) will be required.

Migratory Bird Treaty Act. In addition to FESA, the Federal Migratory Bird Treaty Act (16 U.S.C., Sec. 703, Supp. I, 1989) prohibits killing, possessing, or trading in migratory birds except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, and bird nests and eggs. Most native bird species on the project site are covered by this act.

Bald and Golden Eagle Protection Act. This 1940 law as amended provides for the protection of the bald eagle (*Haliaeetus leucocephalus*) and the golden eagle (*Aquila chrysaetos*) by prohibiting, except under certain specified conditions, the taking, possession, and commerce of such birds.

### California Species Protection

*California Endangered Species Act.* The California Endangered Species Act (CESA) prohibits the take of any plant or animal listed or proposed for listing as rare (plants only), threatened, or endangered. In accordance with the CESA, California Department of Fish and Game (CDFG) has jurisdiction over state-listed species (California Fish and Game Code 2070).

*California Species of Special Concern.* Additionally, the CDFG maintains lists of "species of special concern" that are defined as species that appear to be vulnerable to extinction because of declining populations, limited ranges, and/or continuing threats. Pursuant to the requirements of CESA, a state agency reviewing a proposed project within its jurisdiction must determine whether any state-listed or proposed endangered or threatened species may be present in the project area and determine whether the proposed project will have a potentially significant impact on such species.

*Fully Protected Species.* Prior to passage of CESA, the State of California passed the Fully Protected Species Act. This is still an active list. Animal species on this list are legally protected and there is no allowable incidental take for fully protected species.

*California Department of Forestry and Fire Protection.* The Board of Forestry classifies species as sensitive if they warrant special protection during timber operations.

### California Environmental Quality Act

Section 15380(b) of the California Environmental Quality Act (CEQA) Guidelines provides that a species not listed on the federal or state lists of protected species may be considered rare or endangered if the species can be shown to meet certain specified criteria. These criteria have been modeled after the definitions in FESA and CESA and the section of the California Fish and Game Code dealing with rare or endangered plants or animals. This section was included in the guidelines primarily to deal with situations in which a public agency is reviewing a project that may have a significant effect on a species that has not yet been listed. Thus, CEQA provides an agency with the ability to protect a species from a project's potential impacts, if it finds that the species meets the criteria of a threatened or endangered species.

### Clean Water Act

Under Section 404 of the Federal Clean Water Act, the U.S. Army Corps of Engineers (Corps) is responsible for regulating the discharge of fill material into waters of the United States (U.S.). Waters of the U.S. and their lateral limits are defined in 33 CFR Part 328.3 (a) and include streams that are tributary to navigable waters and their adjacent wetlands. Wetlands that are not adjacent to waters of the U.S. are termed “isolated wetlands” and, depending on the circumstances, may not be subject to Corps jurisdiction.

In general, a Corps permit must be obtained before placing fill in wetlands or other waters of the U.S. The type of permit depends on the acreage involved and the purpose of the proposed fill. Minor amounts of fill can be covered by a Nationwide Permit. An Individual Permit is required for projects that result in more than a “minimal” impact on jurisdictional areas. Individual Permits require evidence that jurisdictional fill has been avoided to the extent possible and a review of the project by the public.

Waters of the U.S. and their lateral limits are defined in 33 CFR Part 328.3(a) and include streams that are tributaries to navigable waters and their adjacent wetlands. The lateral limits of jurisdiction for a non-tidal stream are measured at the line of the Ordinary High Water Mark (OHWM) or the limit of adjacent wetlands. Any permanent extension of the limits of an existing water of the U.S., whether natural or man-made, results in a similar extension of Corps jurisdiction.

Waters of the U.S. fall into two categories, wetlands and non-wetland waters. Non-wetland waters include waterbodies and watercourses such as rivers, streams, lakes, springs, ponds, coastal waters, and estuaries. Wetlands include marshes, meadows, seep areas, floodplains, basins, and other areas experiencing extended seasonal soil saturation and dominated by wetland plant cover.

Wetlands and non-wetland waters where a continuous hydrological connection cannot be traced to a navigable water of the United States are not tributary to waters of the United States. These are termed “isolated waters.” Isolated waters are jurisdictional when their destruction or degradation can affect interstate or foreign commerce. Up until 2001, the Corps asserted jurisdiction over isolated waters based on the “Migratory Bird Rule” and other interstate commerce connections. The Migratory Bird Rule refers to waters that are or may be used as habitat for migratory birds, and whose use, degradation, or destruction could affect interstate or

foreign commerce. Based on a January 9, 2001, U.S. Supreme Court decision known as the Solid Waste Agency of Northern Cook County (SWANCC), the Corps can no longer use the “Migratory Bird Rule” as its basis of jurisdictional authority over non-navigable, isolated, intrastate waters. Consequently, the scope of regulatory jurisdiction over isolated waters has been significantly narrowed by the SWANCC decision. (However, California state agencies such as the Regional Water Quality Control Board and CDFG may still claim jurisdiction over features as “state waters” even if the Corps has determined the same features to be isolated under the federal definition.)

#### California Water Quality and Related Programs

Pursuant to Section 401 of the federal Clean Water Act and the state’s Porter-Cologne Act, projects that are regulated by the Corps must obtain water quality certification from the Regional Water Quality Control Board (RWQCB). This certification ensures that the project will uphold state water quality standards. The RWQCB may impose mitigation requirements even if the Corps does not.

The CDFG also exerts jurisdiction over the bed and banks of watercourses and waterbodies according to provisions of Sections 1601 to 1603 of the Fish and Game Code. The Fish and Game Code requires a Streambed Alteration Permit for the fill or removal of material within the bed and banks of a watercourse or waterbody.

The City of Hayward has adopted the Alameda County Flood Control and Water Conservation District’s 20-foot setback from top of bank for development in stream corridors.

#### Other regulations

California Native Plant Society List. The California Native Plant Society (CNPS), a non-governmental conservation organization, has developed lists of special-status plant species of concern in California. Vascular plants included on these lists are defined as follows:

- List 1A Plants considered extinct.
- List 1B Plants rare, threatened, or endangered in California and elsewhere.
- List 2 Plants rare, threatened, or endangered in California but more common elsewhere.
- List 3 Plants about which more information is needed - review list.
- List 4 Plants of limited distribution - watch list.

Although the CNPS is not a governmental regulatory agency and plants on these lists have no formal regulatory protection, plants appearing on List 1B or List 2 are, in general, considered to meet CEQA’s Section 15380 criteria and adverse effects to these species are considered “significant.”

City of Hayward Tree Preservation Ordinance. The City of Hayward adopted a tree preservation ordinance in October 2002 to protect and preserve trees within its jurisdiction. The Ordinance encourages preservation of trees and avoiding removal of trees in development projects. Pursuant to the City of Hayward Municipal Code, Chapter 10, Article 15 it is unlawful to remove, destroy, perform cutting of branches measuring over one-inch in diameter, disfigure or cause to be

removed or destroyed any “protected” tree on any parcel within the City without first obtaining a permit. A “protected tree” tree is defined in Article 15 as any tree with a trunk diameter of 8 inches or more, measured 54 inches above the ground, a street tree or any other tree required as a condition of approval of a discretionary approval, any memorial tree dedicated by a City-recognized entity as a specimen tree that defines a neighborhood or community, any tree of specified species (such as oak species) that has a trunk diameter of 4 inches or more, and any tree planted to replace a protected tree. Trees located on a developed single family residential lot that cannot be further subdivided are exempt from the ordinance, unless such trees have been required or are protected as a condition of discretionary permit approval.

### Hayward General Plan

Applicable policies contained in the Conservation and Environmental Protection Chapter of the Hayward General Plan include:

- Protect and enhance vegetative and wildlife habitat throughout the Hayward planning area. (*Policy 4*)
  - \* Avoid development that would encroach into important wildlife habitats, limit normal range areas, or create barriers that cut off access to food, water or shelter (*Strategy 1*).
  - \* Utilize drought tolerant plant material in city landscaping (*Strategy 6*).
  - \*. Encourage the planting of native vegetation to preserve the visual character of the area and reduce the need for toxic sprays and groundwater supplements (*Strategy 7*).
  - \* Preserve mature vegetation where possible to provide shade, break unwanted wind and enhance the appearance of development (*Strategy 8*).

### **STANDARDS OF SIGNIFICANCE**

Project effects on biological resources would be considered significant if it results in any of the following:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a special-status species in local or regional plans, policies or regulations, or by the CDFG or USFWS.
- Have a substantial adverse effect on any riparian habitat or other sensitive or special-status natural community identified in local or regional plans, policies, or regulations, or by the CDFG or USFWS.
- Have a substantial adverse effect on federally regulated wetlands or other waters of the U.S., as defined by Section 404 of the Clean Water Act through direct removal, filling, hydrological alteration, or other means.
- Interfere substantially with the movement of any resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or substantially impede the use of native wildlife breeding or roosting sites.
- Conflict with any local policies or ordinances protecting biological resources such as a tree preservation policy or ordinance.

## ENVIRONMENTAL IMPACTS

The following discussion addresses potential impacts to biological resources that could occur in the Project area as a result of the proposed alternatives. Mitigation measures to minimize or compensate for these impacts are also recommended.

### *Impacts to special-status plant species*

Of the 44 special status plant species known to occur in the vicinity of the Project area, only two species, western leatherwood and Diablo helianthella, were determined to have a moderate potential to occur in the Project area. Twenty-one species were determined to have a low potential to occur, and the other 21 were determined to have no potential. Riparian forest corridors provide the most intact native habitat remaining in the Project area that could support special status plants. Oak woodlands and non-native grasslands have heavily disturbed understory vegetation and soils due to grazing, mowing, discing, and surrounding urban development, and are less likely to support special status plants.

Impacts to special-status species would be the greatest under Alternative A and C, which have approximately the same amount of developed properties with lesser impacts to these species likely to occur under Alternative B that contains the greatest amount of open space uses which would allow more habitat for special-status plants.

**Impact 4.3-1 (impacts to special-status plants). Potentially significant impacts would result to two special-status plant species (western leatherwood and Diablo helianthella) under all three Alternatives. Impacts would be greatest under Alternative A and C with fewer impacts likely occurring under Alternative B (*potentially significant impact and mitigation is required*).**

The following measures shall be taken to reduce impacts to special-status plants to a less-than-significant level. This measure shall apply to all Alternatives.

**Mitigation Measure 4.3-1 (impacts to special-status plants). The following steps shall be taken to protect special-status plant species within the Project area. These steps shall be added as conditions of approval for individual development proposals for vacant or substantially vacant properties within the Project area and for any development proposal adjacent to any wetland area, creek or other body of water:**

- a) **Rare plant surveys shall be undertaken by a qualified biologist (as approved by the City of Hayward) for all areas that are not mapped as developed or disturbed/ruderal, including riparian forest, oak woodland, non-native annual grassland, coastal scrub, and wetland areas. Surveys should focus on those species with a moderate potential to occur in the Project area, and should include protocol-level surveys in February and May of riparian areas and other suitable habitats for western leatherwood and Diablo helianthella. General protocol-level rare plant surveys are necessary in early spring (February-April), late spring (May-June), and late summer (July-September) to determine the presence or absence of any**

**other plant species with potential to occur in undeveloped habitats of the Project area.**

- b) If species are identified, development activities shall avoid these areas and appropriate buffer areas established around such species. The size and location of any buffer shall be determined by a qualified biologist.**
- c) If avoidance is not feasible, as determined by the City of Hayward, rare plants or their seeds, shall be transplanted to a suitable alternative protected habitat. Such transplantation shall occur pursuant to permits and approvals from appropriate biological regulatory agencies. A monitoring program shall be established to ensure that transplanted species will thrive.**

#### *Impacts to special-status wildlife species*

While a number of special status wildlife species have potential to occur within portions of the Project area, the majority of the area surveyed is unsuitable as habitat for these species. The majority of the Project area is urban, having been disturbed, graded, developed, landscaped, paved, and otherwise modified and occupied by humans. However, due to the large size of the Project area covered and the variation in land use and vegetative communities, some areas of suitable habitat are present. In general, wooded ravines along creeks and minimally disced grasslands contiguous with large areas of open space to the east cannot be ruled out as habitat for a number of species. However, most open fields and vacant lots have been disced, apparently regularly, and this management greatly reduces the possibility for most species to utilize these areas for foraging, nesting, or other activities. Most woodlands are disturbed and in close proximity to areas of development or human activity. Therefore, habitats for special-status species within the Project area are sub-optimal, but hold potential for the occurrence of some species nonetheless.

Potential impacts to special status wildlife species that could occur as a result of development within the Project area can be summarized as follows. Similar to impacts to special-status plants, impacts to special-status wildlife species would be greater under Alternatives A and C and less under Alternative B.

- California red-legged frog (CRLF) may be impacted by construction activity in relatively undisturbed riparian and upland areas adjacent to creeks.
- Nesting birds, including a number of special status birds, may be impacted by construction during the breeding season from February to August.
- Bats, including some special status bats, may be impacted by construction activity during critical life stages from November through August.
- The federally listed fish *O. mykiss* may be impacted by development in or near San Lorenzo Creek, near A Street.

**Impact 4.3-2 (impacts to special-status wildlife species). Potentially significant impacts would result to several special-status wildlife species (California red-legged frog, nesting birds, bats and steelhead) under all three Alternatives. Impacts would be greatest under Alternative A and C with fewer impacts likely occurring under Alternative B (potentially significant impact and mitigation is required).**

The following measures shall be undertaken to reduce impacts to special-status wildlife species to a less-than-significant level. These measures shall apply to all of the Alternatives.

**Mitigation Measure 4.3-2a (California red-legged frog).** The following steps shall be taken to protect California red-legged frog species within the Project area:

- a) Protocol-level surveys shall be performed in all perennial creeks, reservoirs, and deep pools of water before development occurs in or near these areas within the Project area.
- b) If red-legged frogs are found, development activities shall avoid these areas and appropriate buffer areas established around such species. The size and location of any buffer shall be determined by a qualified biologist.
- c) If avoidance is not feasible, as determined by the City of Hayward, red-legged frogs shall be relocated to a suitable alternative protected habitat. Such relocation shall occur pursuant to permits and approvals from appropriate biological regulatory agencies. A monitoring program shall be established to ensure that relocated species will thrive.

**Mitigation Measure 4.3-2b (nesting birds).** Clearing of vegetation and the initiation of construction shall be restricted to the non-breeding season between September and January of each year. If these activities cannot be done in the non-breeding season, a qualified biologist (as approved by the City of Hayward) shall perform pre-construction bird surveys within 30 days of the onset of construction or clearing of vegetation. If nesting birds are discovered in the vicinity of a development site, a buffer area shall be established around the nest(s) until the nest is vacated. The size of the buffer would be dependent on the particular species of nesting bird and shall be determined by a qualified biologist.

**Mitigation Measure 4.3-2c (pallid bats).** Pre-construction bat surveys shall be undertaken prior to grading, tree removal or other construction occurring between November 1 and August 31 of the year. Pre-construction bat surveys shall be undertaken by a qualified biologist (as approved by the City of Hayward) involve surveying trees, rock outcrops, bridges, and buildings subject to removal or demolition for evidence of bat use (guano accumulation, or acoustic or visual detections). If evidence of bat use is found, the biologists shall conduct a minimum of three acoustic surveys between April and September under appropriate conditions using an acoustic detector, to determine whether a site is occupied. If bats are found, they should be excluded from occupied roosts in the presence of a qualified biologist during the fall prior to construction.

**Mitigation Measure 4.3-2d (steelhead trout).**

- a) The Stormwater Pollution Prevention Plan prepared for individual development projects shall include specific measures to avoid sedimentation in San Lorenzo Creek and its tributaries.
- b) A riparian corridor shall be created and preserved around San Lorenzo Creek to minimize impacts to steelhead. The precise location, width and activities within such

**corridors shall be approved by a qualified biologist approved by the City of Hayward.**

*Impacts to wetlands and "other waters"*

The Project area contains approximately 6 acres of wetland areas and approximately 3.6 linear miles of perennial to seasonal creeks potentially within the jurisdiction of the Corps under Section 404 of the Clean Water Act and RWQCB under the Porter Cologne Act and Section 401 of the Clean Water Act. The Project area also contains approximately 74 acres of riparian oak/bay forest, some or all of which is potentially within the jurisdiction of CDFG under Section 1602 of the State Fish and Game Code. Jurisdictional wetland delineations and mapping of riparian vegetation under jurisdiction of CDFG will be necessary to establish more precise locations and acreage of these sensitive communities.

Depending on the proposed impacts, permits may be required from the Corps and RWQCB for impacts to wetlands and waters. A 1602 Streambed Alteration Agreement (SAA) is required from CDFG for impacts to creeks, creek banks, and riparian areas. Mitigation plans including success criteria and long-term monitoring requirements will also likely be required.

Due to the extensive disturbances that have occurred to all streams and wetland seeps downstream in more urban areas, it is recommended that the riparian and wildlife corridors be the highest priority for protection in future land use plans for the Project area. Although non-native annual grasslands are not considered a sensitive community, several grassland areas in the Project Area provide valuable transitional habitat and buffers around riparian corridors. The areas listed below are also less disturbed by fuel reduction and grazing management and have a higher potential to support native and special status plants and wildlife. These grasslands include the area from Harder Road to Calhoun Street, which surround the Zeile Creek riparian corridor as well as a smaller unnamed creek directly south of Harder Road.

In addition, the few remaining open spaces between Ward Creek and 2<sup>nd</sup> Street provide opportunities to enhance this riparian corridor. Several transitional habitat areas of woodland, coastal scrub, and grassland species remain in this zone, although several areas have been disced or invaded by blue gum eucalyptus. The Ward Creek corridor therefore offers opportunities for mitigation and restoration projects, in particular the removal of invasive species that currently threaten the creek and adjoining habitats, including eucalyptus groves and extensive infestations of English ivy, Himalayan blackberry, and cape ivy. The eroding trail along Ward Creek in Hayward Memorial Park also offers an opportunity for mitigation for any proposed impacts to streams in the Project Area, as trail improvements and exotic species removal could reduce current impacts to water quality and the native riparian forest species.

Although each of the three Alternatives depict open space corridors adjacent to major creeks within the Project area, impacts to wetlands and other waters of the U.S. would be greater under Alternatives A and C that include more residential and non-residential development and less open spaces than Alternative B.

**Impact 4.3-3 (wetlands and other waters).** Development activities on properties within the Project area could have potentially significant direct and indirect impacts on jurisdictional wetlands and other waters of the United States under each of the Alternatives. Direct impacts would include grading and other disturbances of wetlands and indirect impacts would include flows of polluted stormwater runoff into wetlands and other waters (*potentially significant impact and mitigation is required*).

The following measure is recommended to reduce this impact to a less-than-significant level.

**Mitigation Measure 4.3-3 (wetlands and other waters).** The following steps shall be taken to protect wetlands and other waters of the U.S.

- a) The amendment to the Hayward General Plan shall include a policy or policies requiring retention of appropriate riparian and wildlife corridors adjacent to major creeks that flow through the Project area. The width of corridors shall be based on site-specific biological assessments of each creek.
- b) In order to ensure that all jurisdictional wetlands and other waters are identified, formal jurisdictional delineations of wetlands and other waters shall be conducted on a project specific basis as part of the normal environmental review process for specific development projects. Jurisdictional delineations should follow the methodology set forth in the 1987 *U.S. Army Corps of Engineers Wetlands Delineation Manual* and should be submitted to the Corps for verification prior to project development.
- c) Future development proposals within the Project area should avoid development on and impacts on identified wetlands and other waters.
- d) If avoidance of wetlands or other waters is not possible, then impacts should be minimized to the maximum extent that is practicable. If impacts to wetlands or other waters cannot be minimized and are unavoidable, these impacts should be compensated for by developing and implementing a comprehensive mitigation plan, acceptable to the Corps, CDFG, and RWQCB to offset these losses. It is recommended that mitigation be conducted within the Project area. If this is not possible, then an off-site mitigation area should be selected that is as close to the Project area as possible and acceptable to the resource agencies. Necessary state and federal permits shall be obtained prior to any work within or in close proximity to wetlands or other waters of the U.S.

#### *Wildlife and fish corridors*

As identified in the Environmental Setting section of the DEIR, a number of major creeks traverse the Project area in an east-west direction. These include Chabot Creek, Castro Valley Creek, San Lorenzo Creek, Sulphur Creek, Ward Creek and Zeile Creek.

These creeks, and bordering creek banks, provide for migratory corridors for wildlife and fish species.

Development adjacent to creeks could block historic migratory patterns of fish and/or wildlife species. Adherence to Mitigation Measure 4.3-3(a) will ensure that impacts related to blockage or interference with fish and wildlife migratory corridors will be less-than-significant.

*Tree impacts*

Portions of the Project area contain potentially significant tree resources, including trees that may be protected under the City's Tree Protection Ordinance. In addition to potential violations of City ordinances, loss of heritage trees would impact nesting and roosting special-status bird species that are discussed above.

Impacts to trees would be greater under Alternatives A and C, that would allow a greater amount of development and would provide less open space. Tree impacts under Alternative B would be less, since this Alternative would have less development and more permanent open space.

**Impact 4.3-4 (tree resources). Development activities within the Project area could result in loss of heritage and non-heritage trees. Loss of heritage trees would be a violation of the City's Tree Protection Ordinance unless necessary permits are first obtained (*potentially significant impact and mitigation is required*).**

The following measure is recommended to reduce this impact to a less-than-significant level.

**Mitigation Measure 4.3-3 (tree resources). Tree surveys shall be conducted by a certified arborist on all properties proposed for development and under the jurisdiction of the tree ordinances. Impacts to trees will require removal permits pursuant to the Hayward Tree Preservation Ordinance or the Alameda County Tree Ordinance in County rights-of-way. Replacement trees shall be provided based on the replacement value of protected trees that are removed.**

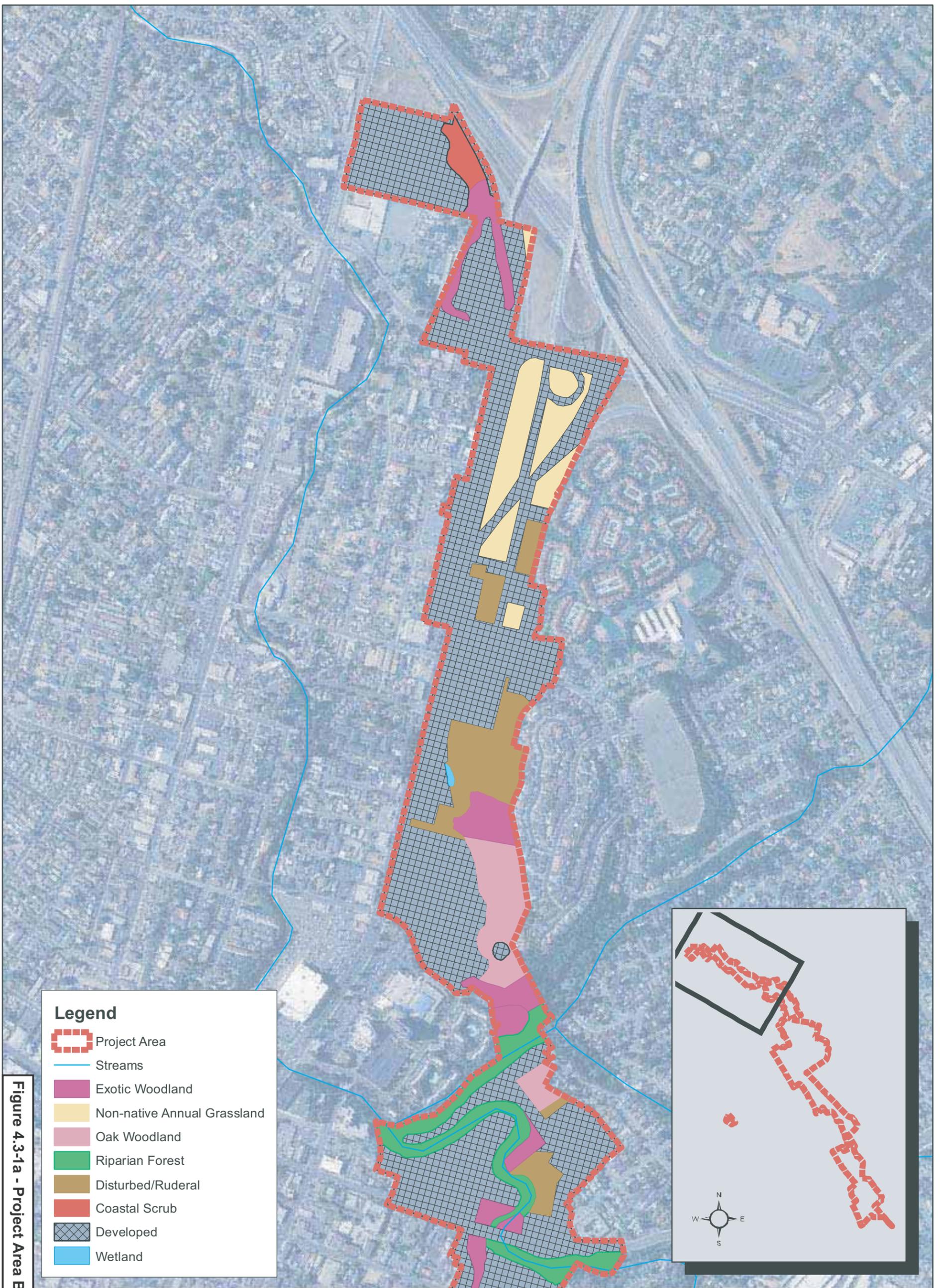
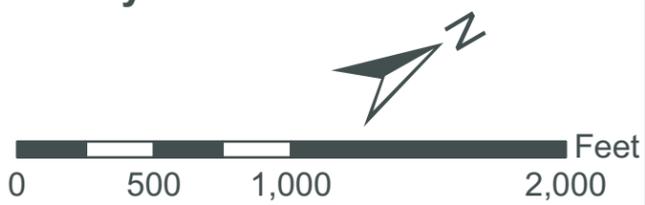


Figure 4.3-1a - Project Area Biological Communities

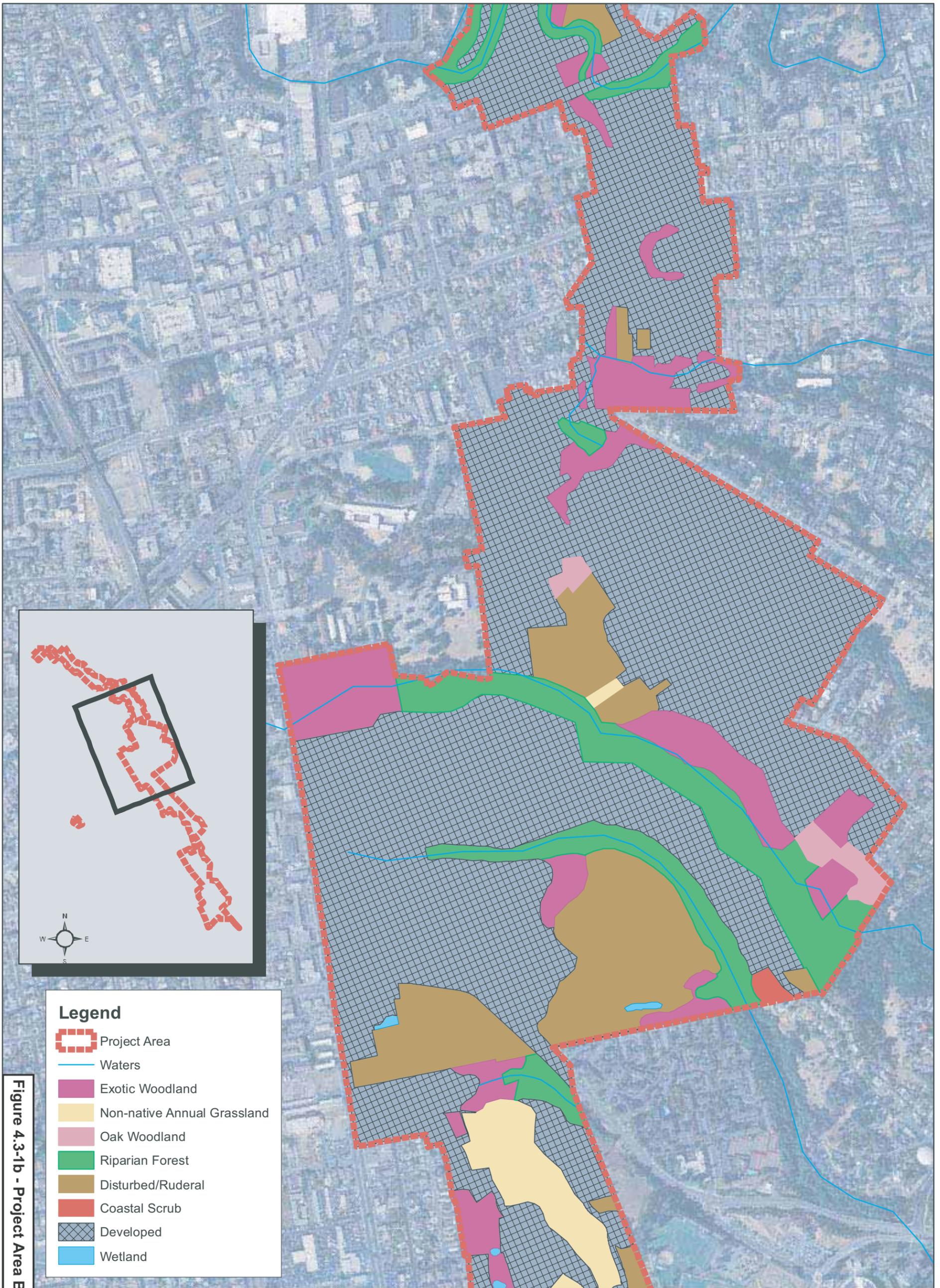
**Legend**

-  Project Area
-  Streams
-  Exotic Woodland
-  Non-native Annual Grassland
-  Oak Woodland
-  Riparian Forest
-  Disturbed/Ruderal
-  Coastal Scrub
-  Developed
-  Wetland

**Figure 4.3-1a - Project Area Biological Communities  
Route 238 Bypass Land Use Study**



Date: September 2007  
 Aerial Photo: TerraServer  
 Map By: Derek Chan  
 Filepath: L:\Acad 2000 Files\17000\17072\gis\arcm\map\VegMaps\VegMap1.mxd



**Legend**

-  Project Area
-  Waters
-  Exotic Woodland
-  Non-native Annual Grassland
-  Oak Woodland
-  Riparian Forest
-  Disturbed/Ruderal
-  Coastal Scrub
-  Developed
-  Wetland

Figure 4.3-1b - Project Area Biological Communities

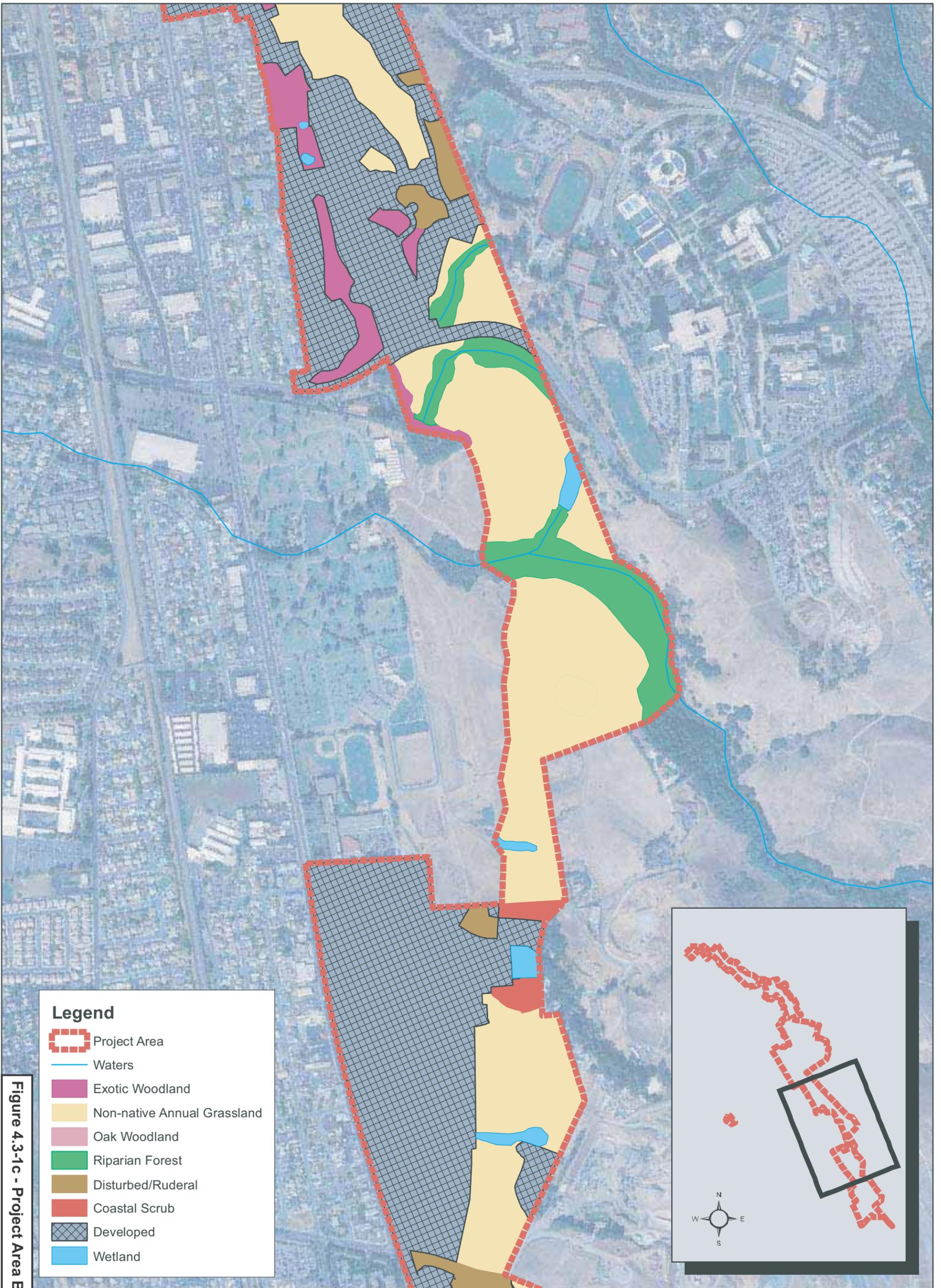
**Figure 4.3-1b - Project Area Biological Communities  
Route 238 Bypass Land Use Study**



0 500 1,000 2,000 Feet



Date: September 2007  
 Aerial Photo: TerraServer  
 Map By: Derek Chan  
 Filepath: L:\Acad 2000 Files\17000\17072\gis\arcmap\VegMaps\VegMap2.mxd



**Legend**

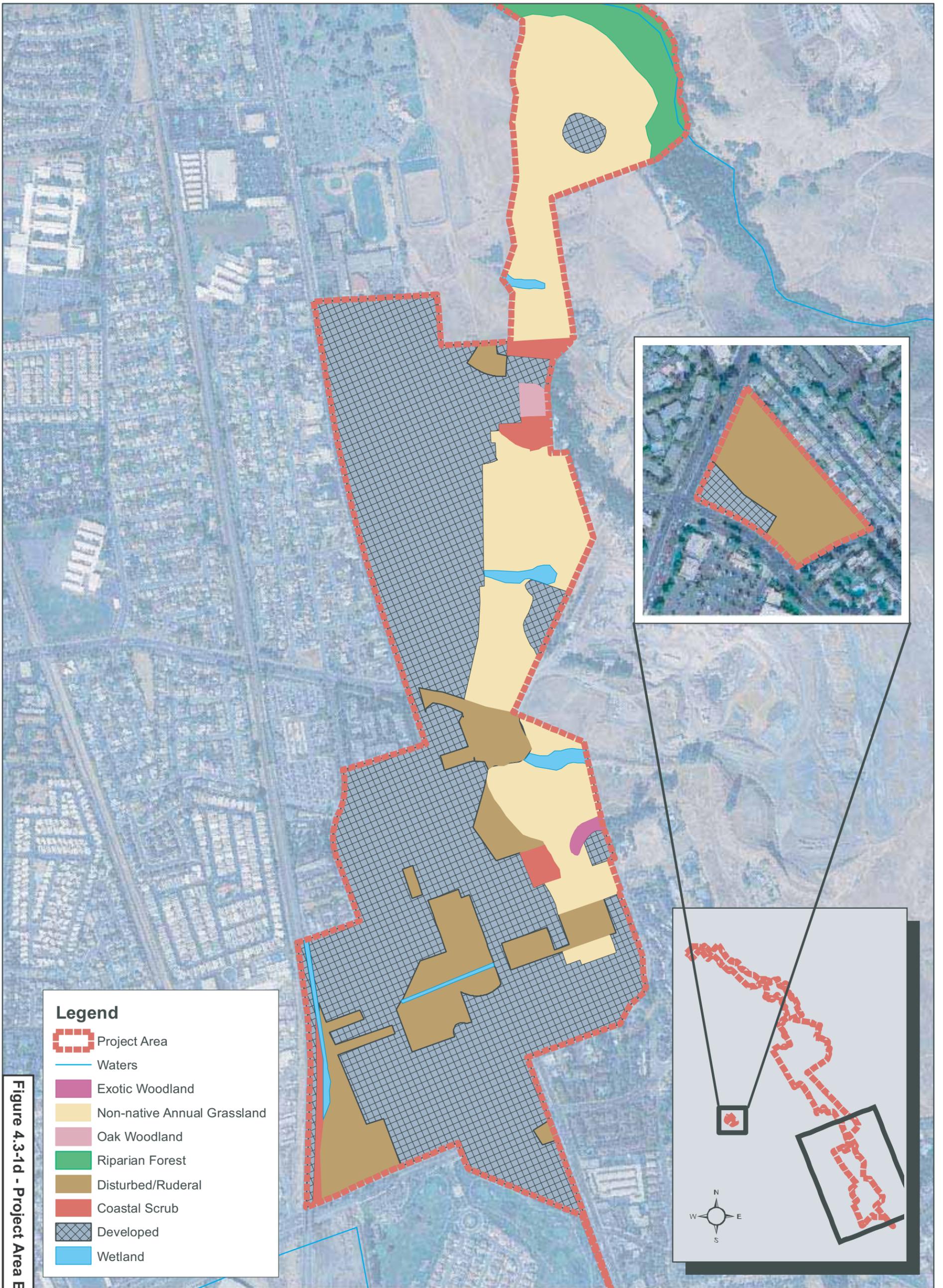
-  Project Area
-  Waters
-  Exotic Woodland
-  Non-native Annual Grassland
-  Oak Woodland
-  Riparian Forest
-  Disturbed/Ruderal
-  Coastal Scrub
-  Developed
-  Wetland

Figure 4.3-1c - Project Area Biological Communities

**Figure 4.3-1c - Project Area Biological Communities  
Route 238 Bypass Land Use Study**



Date: September 2007  
 Aerial Photo: TerraServer  
 Map By: Derek Chan  
 Filepath: L:\Acad 2000 Files\17000\17072\gis\arcm\map\VegMaps\VegMap3.mxd



**Legend**

-  Project Area
-  Waters
-  Exotic Woodland
-  Non-native Annual Grassland
-  Oak Woodland
-  Riparian Forest
-  Disturbed/Ruderal
-  Coastal Scrub
-  Developed
-  Wetland

Figure 4.3-1d - Project Area Biological Communities

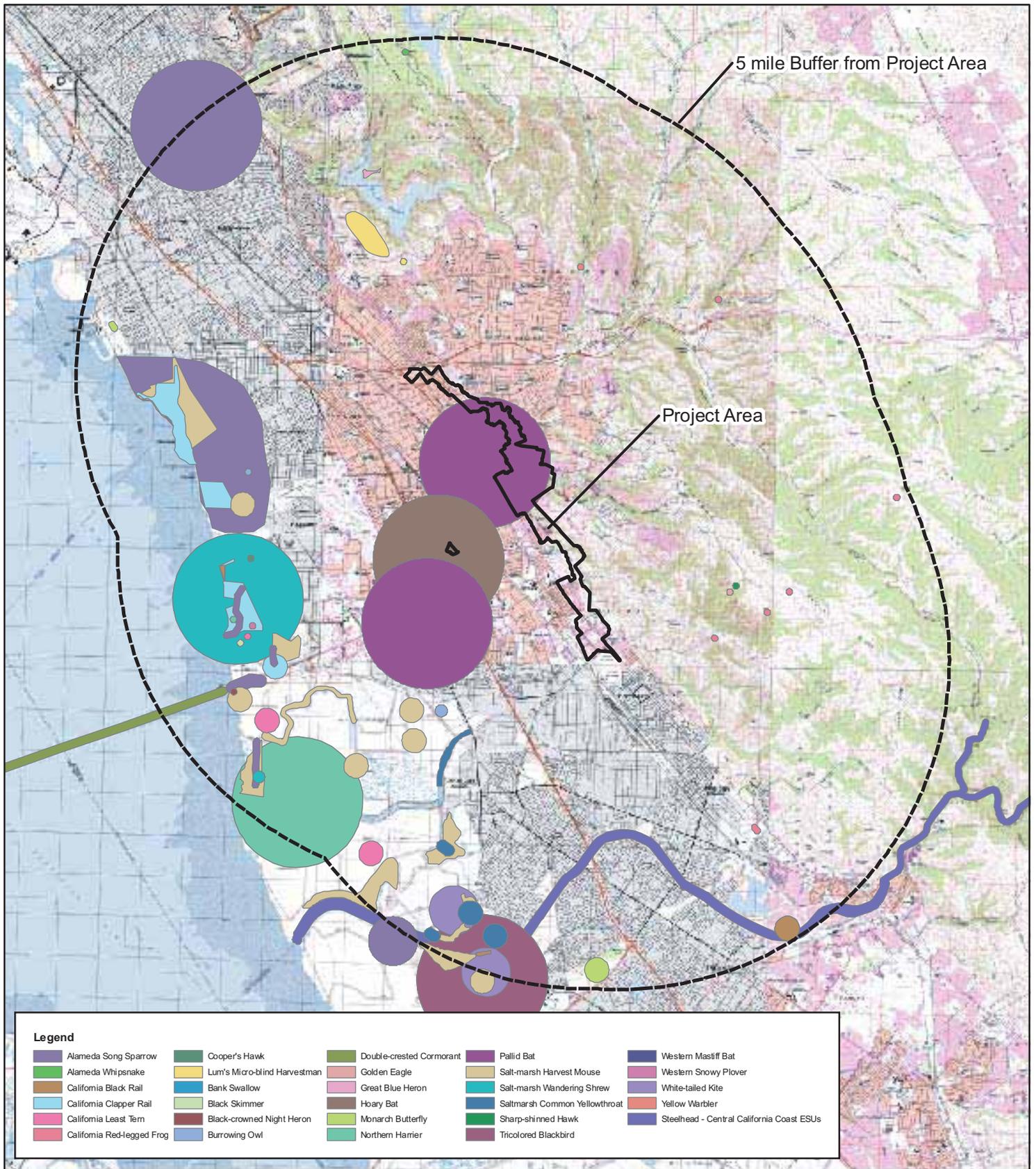
**Figure 4.3-1d - Project Area Biological Communities  
Route 238 Bypass Land Use Study**



0 500 1,000 2,000 Feet



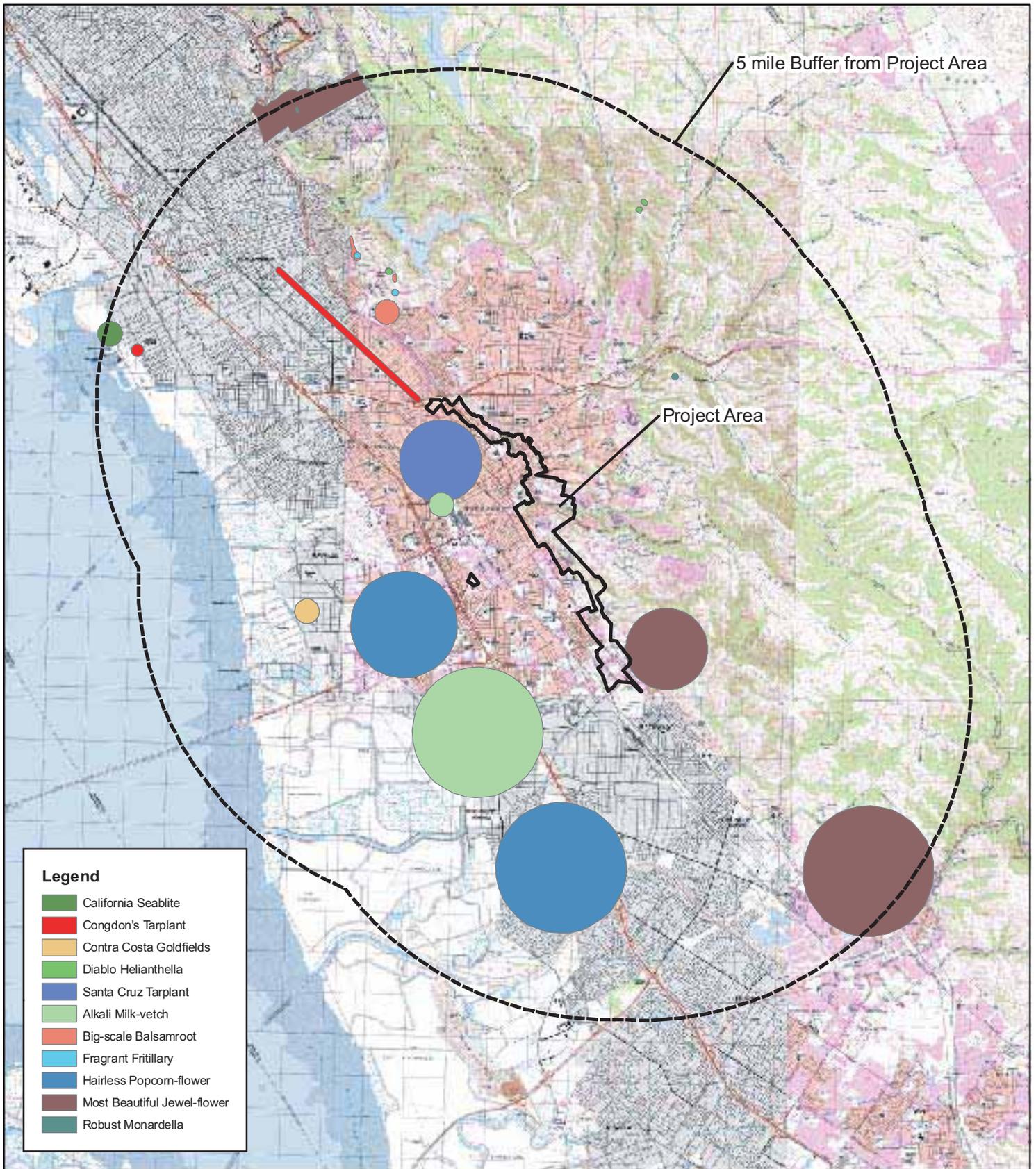
Date: September 2007  
 Aerial Photo: TerraServer  
 Map By: Derek Chan  
 Filepath: L:\Acad 2000 Files\17000\17072\gis\arcm\map\VegMaps\VegMap4.mxd



**Figure 4.3-2a – Special Status Wildlife Species Within Five Miles of Project Area**  
**Route 238 Bypass Land Use Study**



Date: September 2007  
 Basemap: USGS Topo Quad  
 Map By: Derek Chan  
 Filepath: L:\Acad 2000 Files\17000\17072\gis\arcmap\CNDBB\_animals\_20070925.mxd



**Figure 4.3-2b – Special Status Plant Species  
Within Five Miles of Project Area  
Route 238 Bypass Land Use Study**



Date: September 2007  
 Basemap: USGS Topo Quad  
 Map By: Derek Chan  
 Filepath: L:\Acad 2000 Files\17000\17072\gis\  
 arcmap\CNDDb\_plants\_20070925.mxd

