Chapter 2 Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures

This chapter explains the impacts that the project would have on the human, physical, and biological environments in the project area. It describes the existing environment that could be affected by the project, potential impacts from each of the alternatives, and proposed avoidance, minimization, and/or mitigation measures. Any indirect impacts are included in the general impacts analysis and discussions that follow. The study area is defined by the areas likely to be impacted by the project. (See Figure 15, page 106).

As part of the scoping and environmental analysis conducted for the project, the following environmental issues were considered, but no adverse impacts were identified. Consequently, there is no further discussion regarding these issues in this document.

- Farmlands-No farmland will be impacted by the project.
- Relocation-No residents or businesses will be relocated.
- Parks and recreation-No parks will be impacted by the project.

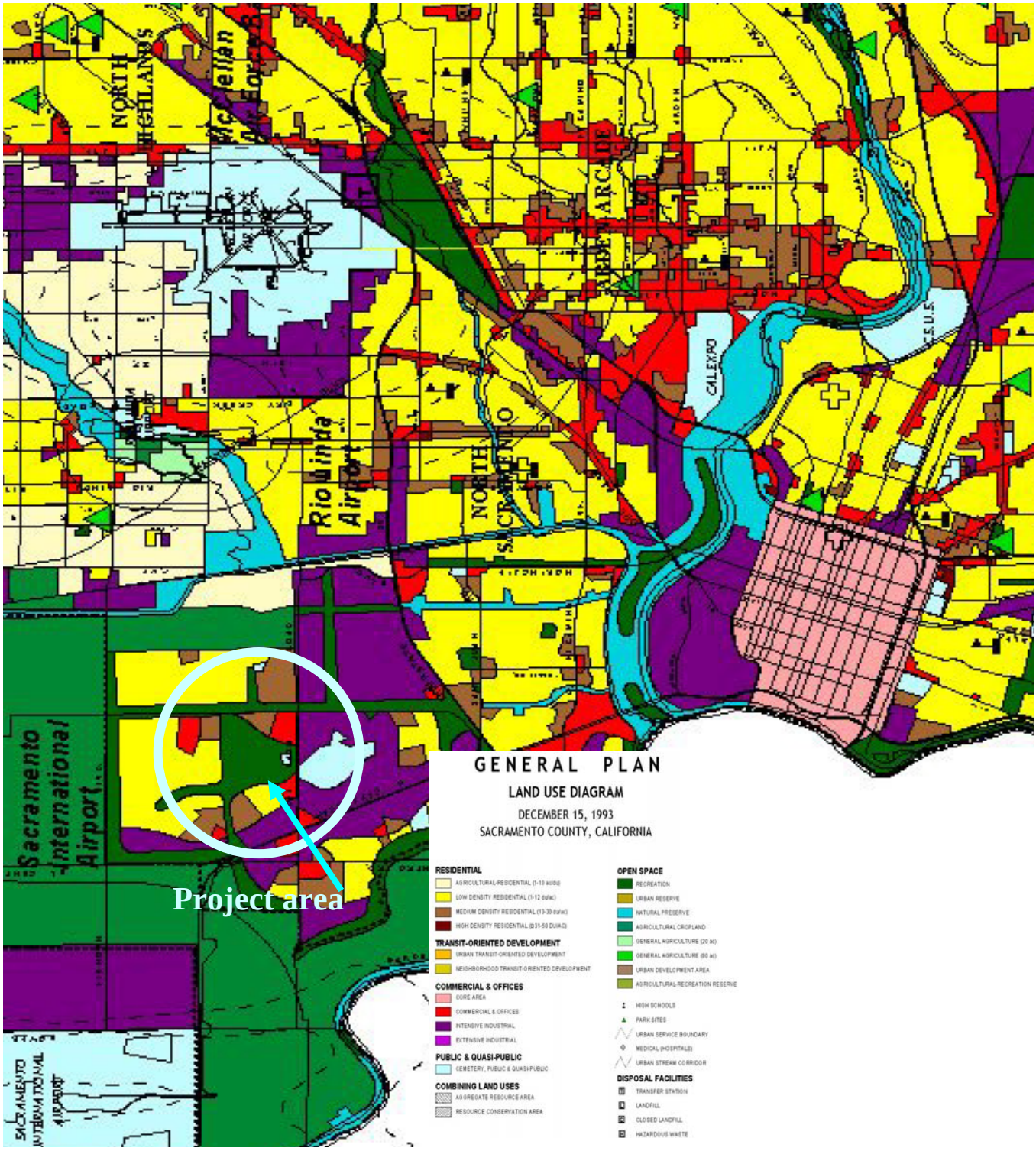
2.1 Land Use

2.1.1 Affected Environment

The project is located in northwestern Sacramento County (See Figure 1, Project Location). Yolo County is immediately to the west of the proposed project. Sacramento County's land uses range from urban to rural. The county's eastern and southwestern sections, as well as a portion of the northwestern section are agricultural. The county's central and northern areas are urban and built up.

Land use within the project vicinity consists of a mix of residential, commercial, industrial, and agricultural uses. (See Figure 5, Land Use) To the northwest of the interchange, there is some agriculture use, however, residential and commercial uses are fast encroaching. The other three quadrants are a mix of residential, commercial, and industrial uses. The majority of the land within the Study Area and within the region has been urbanized and urban uses are slowly encroaching upon the remaining agricultural land to the northwest. Two planned developments are on the map for land that is currently agriculture-- Greenbriar to the north and Camino Norte to the west of the study area. Recreational uses in the form of the American River Parkway and Bike Trail are adjacent to the southern project limit, and the confluence of the American River and the Sacramento River is within the Study Area to the southwest along with Discovery Park, a popular location in the summer to escape the heat and launch boats.

Figure 5 Land Use within Project Vicinity



2.1.2 Environmental Consequences

Alternatives 1A, 1B and 1C

The proposed project requires a small amount of additional right-of-way and thus only very minor effects to land use are anticipated. Temporary construction easements may be required in selected locations.

The proposed project is not expected to result in indirect impacts to land uses by causing lands to be converted to other uses. The degree to which the project would decrease commute times into the urban Sacramento area is negligible, and any momentum to develop the small amount of farmland and open space areas left in the study area would not likely be based upon the degree of congestion relief that is expected from construction of the proposed project. Please see Section 2.4 ("Growth") for more information on potential indirect effects to land use and other environmental resources resulting from the proposed project.

Alternative 2—No Build Alternative

The No Build Alternative would not have an impact on land use or planning. If the project is not constructed, past trends and data from other cities suggest that commuters are willing to tolerate lengthy commutes in order to maintain their preferred locations for home and work.

2.1.3 Avoidance, and Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation measures are required.

2.2 Jobs/Housing Balance

How land uses are distributed within communities has implications for local and regional commuting patterns. A city with very little land used for housing, relative to its supply of industrial or commercial land, will be a destination for commuters. A city that is predominantly residential will be a source of commuters.

Typically, a community is considered "balanced" when the number of employment opportunities is approximately equal to the number of homes. The ratio of jobs to housing units in a place provides an estimate of the overall tendency of workers to commute in or out of that place. In theory, a balanced community would be one in which no workers were obliged to leave the community for work.

At the same time, commuting patterns are more complicated than the jobs-housing balance alone would indicate. For example, according to SACOG data the City of Sacramento is the major employment center in the region, with 1.9 jobs for each housing unit (SACOG, n.d. (a)). However, even with an abundance of employment opportunities, almost 40 percent of the city's workers worked outside of the city in the year 2000 (up from 32 percent at the time of the 1990 Census).

SACOG projections show that, under the Preferred Blueprint Scenario, the City of Sacramento would have 1.7 jobs for each housing unit by the year 2050, compared to 2.6 if the Blueprint were not implemented. (SACOG, Summary Statistics for Sacramento City). The SACOG planning region as a whole is also expected to attract more jobs than homes overall, reaching an average ratio of 1.2 jobs for every household by the year

2050 (SACOG, n.d. (b)). The proposed regional network of HOV lanes is included in the MTP 2035, which is based upon the SACOG Blueprint Preferred Scenario, and so is part of a larger land use and transportation plan that encourages a balance of jobs and housing opportunities within the region's communities.

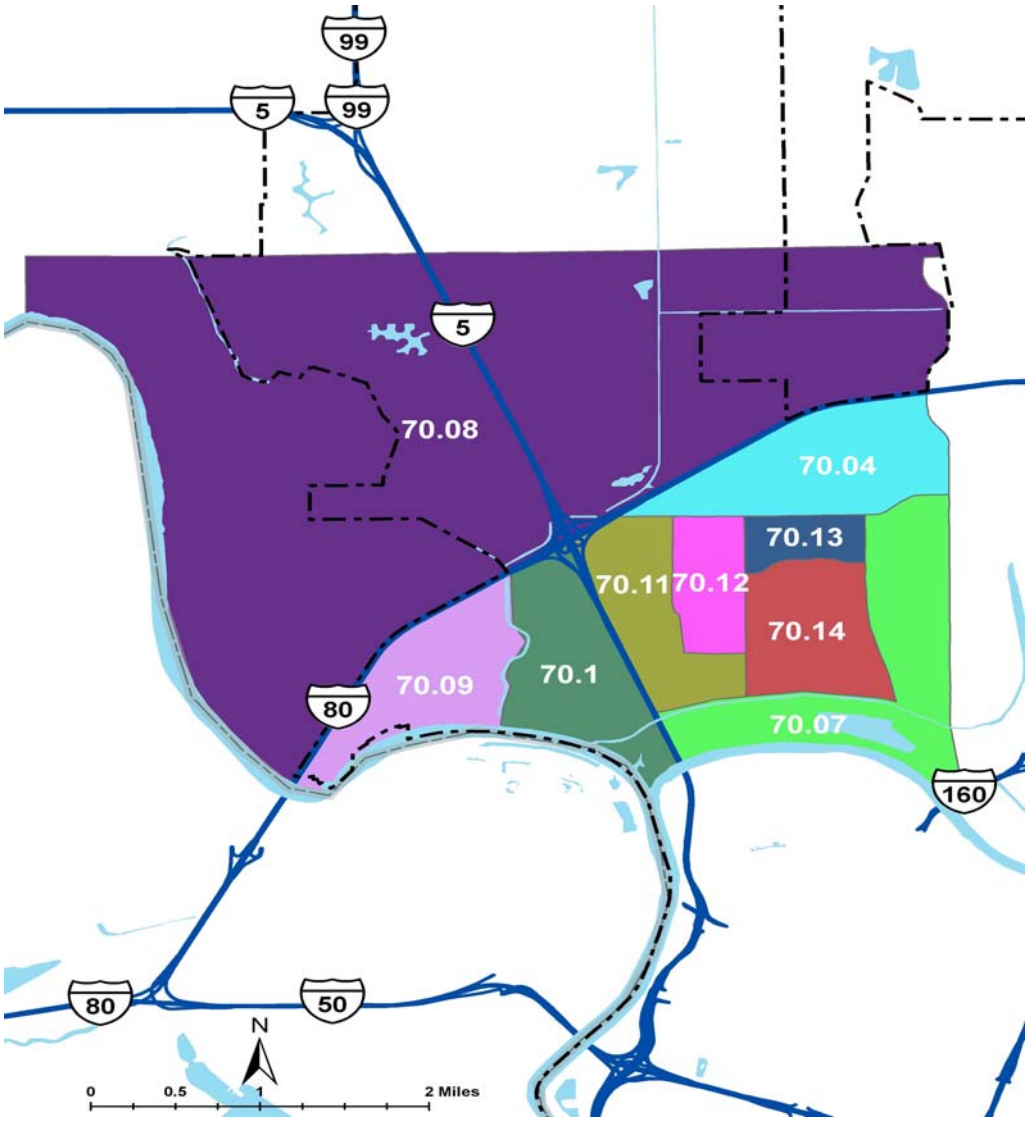
2.2.1 Affected Environment

Sacramento's employment base in 2005 was 339,000, with 179,000 total housing units, a ratio of 1.89 jobs for every housing unit, almost twice as many jobs as homes. Using SACOG projections for employment and housing units for 2035 (975,662 and 732,678, respectively) the countywide jobs/housing balance would be 1.33 jobs for every residence.

South Natomas has more multi-family residential development compared to other community plan areas. The majority of employment in South Natomas is in office uses, with very few industrial jobs. Office and business park development is located primarily along I-80 at Northgate Boulevard and I-5 where large-scale office parks provide a highly visible and well-defined entrance to downtown. The Riverfront District, located north of the Garden Highway on the Sacramento River, is a mixed-use district with restaurants, marine retail stores, and housing. Major corridors such as Truxel and West El Camino provide additional community-serving retail and services. South Natomas has a relatively balanced jobs-to-housing ratio with 0.75 job for each housing unit.

North Natomas is a major employment center for the Sacramento region with multiple office and light industrial employment centers. The majority of North Natomas jobs are either in office or industrial sectors. Unlike other areas of Sacramento that have large federal and state employment centers, only a small segment of North Natomas jobs are in the public sector. The jobs-to-housing ratio is relatively balanced with 1.2 jobs for every housing unit in the incorporated area. The Downtown-Natomas-Airport (DNA line) light rail transit will eventually link the employment centers and the airport to the greater Sacramento area.

Figure 6 Census Tract locations



Commuting Patterns

At the time of the 2000 Census, 75 percent of workers living in the county commuted to work in single occupant vehicles, while 14.4 percent traveled in carpools. Three percent of workers used public transit, two percent walked to work, and 3.4 percent worked at home. The average commute time for workers living in the county was 25.4 minutes, compared to 27.7 minutes statewide. Within the Study Area, 75 percent drove alone to work, while 16 percent carpooled and approximately 6 percent used other transportation, from public transit to biking or walking. The average commute time for workers living in the Study Area was between five and twenty minutes. On average, a little less than half (46percent) of residents in the Study Area work outside of the city of Sacramento. Figure 6 shows the locations of the census tracts that are referenced in Table 7.

Table 7 Means of travel to work

Census Tracts	Total	Drove alone	Carpool	Public transportation	Bicycle	Walked	Other means	Worked at home
70.04	3,287	2,430	630	115	8	38	0	66
70.07	1,912	1,368	365	96	17	17	0	49
70.08	538	443	41	7	0	8	0	39
70.09	802	650	87	0	0	0	29	28
70.10	1,857	1,499	211	50	0	33	0	64
70.11	3,130	2,299	524	103	58	75	4	67
70.12	1,914	1,583	202	74	0	24	8	23
70.13	1,396	1,023	230	82	7	15	0	39
70.14	3,366	2,366	610	164	33	61	24	103
Average Census Tracts		75%	16%	4%	1%	1%	>1%	3%
City of Sacramento	166,419	118,182	27,126	7,681	2,252	4,602	1,288	4,875
Sacramento County	536,310	404,130	77,021	16,502	4,573	10,999	3,598	18,290

Table 8 Commute time

Census Tracts	Less than 5 minutes	5-20 minutes	20-60 minutes	Over an hour	Worked at home
70.04	1%	48%	44%	6%	2%
70.07	2%	54%	38%	6%	3%
70.08	2%	33%	60%	5%	7%
70.09	0%	55%	37%	8%	3%
70.1	4%	56%	34%	6%	3%
70.11	2%	60%	35%	4%	2%
70.12	1%	53%	41%	5%	1%
70.13	2%	41%	51%	7%	3%
70.14	3%	48%	45%	4%	3%
City of Sacramento	2%	46%	47%	5%	3%
Sacramento County	2%	38%	54%	6%	3%
California	2%	38%	49%	10%	4%

Table 9 Location of Work

Census Tracts	Total:	Worked in Sacramento	Worked outside Sacramento	Percent working in Sacramento	Percent working out of Sacramento
70.04	3,287	1,805	1,482	55%	45%
70.07	1,912	1,058	854	55%	45%
70.08	405	187	218	46%	54%
70.09	794	394	400	50%	50%
70.1	1,857	987	870	53%	47%
70.11	3,130	1,816	1,314	58%	42%
70.12	1,914	1,103	811	58%	42%
70.13	1,396	743	653	53%	47%
70.14	3,366	1,989	1,377	59%	41%

Portions of census tract 70.08 and 70.09 lies outside Sacramento City limits
CT 70.08, 133 residents live outside of City limits and were not included in the total
CT 70.09, eight residents live outside City limits and were not included in the total

Existing Development and Planned Growth

While South Natomas has been developed for over 40 years, North Natomas is relatively new. Business parks and retail commercial areas have recently been constructed in the Natomas Crossing and Village 5 locations, which are close to the Arco Arena. There is very little remaining vacant land, and just a few buildings still in the process of being constructed.

Based on Census data, several areas in Sacramento County saw population growth of 25 percent between 1990 and 2000. SACOG projects that the county's population will increase 27 percent by 2025, from 1.36 million to 1.73 million. The number of jobs in the county is projected to increase 30 percent to 854,800.

The City of Sacramento is expected to continue to be the region's largest city and employment center. Sacramento is expected to grow by nearly 90,000 residents (20percent growth) to a 2025 population of 538,000. The city is expected to add 112,700 jobs during this period, a 38 percent increase, for a 2025 employment base of over 400,000 jobs.

2.2.2 Environmental Consequences

Alternatives 1A, 1B and 1C

The proposed project would require a minor amount of private or publicly owned right-of-way acquisition, thus, no very minor effects to land use are anticipated. Temporary construction easements may be required in selected locations.

The proposed project is not expected to result in indirect impacts to land uses, by causing lands to be converted to other uses. The degree to which the project would decrease commute times into the urban Sacramento area is nominal, and any impetus to develop these farmland and open space areas would not likely be based upon the degree of congestion relief that is expected from implementation of the proposed project. Please see Section 2.4 ("Growth") for more information on potential indirect effects to land use and other environmental resources resulting from the proposed project.

Alternative 2—No Build Alternative

The No Build Alternative would not have an impact on land use or planning. If the project is not constructed, past trends and data from other cities suggest that commuters are willing to tolerate lengthy commutes in order to maintain their preferred locations for home and work.

2.2.3 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation measures are required.

2.3 Consistency with State, Regional, and Local Plans

2.3.1 Affected Environment

SACOG Regional Blueprint

In 2002, the Sacramento Area Council of Governments (SACOG) began its Sacramento Regional Blueprint planning effort (Blueprint). SACOG consists of El Dorado, Placer, Sacramento, Sutter, Yolo, and Yuba Counties, along with their constituent municipal governments. The Blueprint's purpose is to establish a long-term plan for growth within the region.

In December 2004, a preferred Blueprint scenario was defined that focuses on compact, mixed-use development and a greater variety of transit choices. This Blueprint is intended to guide regional development through 2050. The proposed project is one of the transportation improvements included in the Blueprint's Preferred Scenario.

2009/2012 Metropolitan Transportation Improvement Plan

The Metropolitan Transportation Improvement Plan (MTIP) is a short-term listing of surface transportation projects that receive federal funds, are subject to a federally required action, or are regionally significant. Apart from some improvements to the region's airports and the Port of Sacramento, all regionally significant transportation projects and federally funded capital projects are part of the MTIP. This means that many--but not all--transit, highway, local roadway, bicycle, and pedestrian investments are included in the MTIP, which is prepared and adopted by SACOG about every two years.

Only projects included in the Metropolitan Transportation Plan (MTP) may be incorporated into the MTIP. The MTIP derives all its projects either directly from the MTP or indirectly from the policies and lump sums within it. The MTP is the long range policy and planning document while the MTIP is the short range implementing document that enables those planned projects to begin work. Specifically, the MTIP lists those projects from the MTP that have committed or reasonably available funding and intend to begin a phase of work during the 4 years of the MTIP.

The MTIP must comply with three key tests. First, it must give the public the opportunity to comment. Second, it must demonstrate that the amount of dollars programmed (committed) to the projects does not exceed the amount of dollars estimated to be available. Therefore the MTIP includes a financial summary that demonstrates financial constraint, namely that sufficient financial capacity exists for programmed projects to be implemented. Third, it must conform to the State Implementation Plan (SIP) for the region with consideration to the federal Clean Air Act.

SACOG's 2009/2012 MTIP endorses the concept of a regional network of HOV lanes, including the proposed project. In response to the idea that congestion management would be better accomplished with investments in public transit, the MTIP states that:

> With more than a million empty seats in autos, but fewer than 10,000 empty seats in buses every morning and afternoon, carpools clearly have a place in the picture. [The projected]…53 percent increase in travel by 2027 means that, even if transit use could be increased tenfold and bicycle/walk trips tripled, the region still would face a 40 percent increase in travel by auto. At least in some places the road system must be expanded too.

The project is included in the 2009/2012 MTIP.

2035 Metropolitan Transportation Plan (MTP 2035)

SACOG has prepared the MTP for 2035 to address anticipated transportation needs of the Sacramento Region forecasted for the year 2035. This MTP is a 28-year plan for transportation improvements in the six-county region based on projections for growth in population, housing and jobs. This is the first Metropolitan Transportation Plan to be significantly influenced by Blueprint growth principles. With the assumption that the land use base in this plan will be implemented, the MTP 2035 invests a far greater share of transportation resources to alternative modes and trip reduction. This balance of transportation investments will best serve a more compact land use pattern with the effect of shortening trips and improving air quality. In addition to investing directly in these travel modes and in transportation demand management programs such as rideshare and employer programs, the MTP 2035 also provides for carpool/express bus lanes on freeways, bridges that shorten distances for bicyclists and "complete streets" that safely accommodate vehicles, transit, bicyclists, and pedestrians. The proposed project is listed in the 2035 MTP as follows: "Reconstruct I-5/I-80 Interchange, including HOV lane connectors, and construction of HOV lanes from the I-5/I-80 Interchange to downtown Sacramento."

City of Sacramento General Plan

In November 2005, the City of Sacramento adopted its "Vision and Guiding Principles" document, which sets out the City's key values and goals for the future. This document is designed to guide the development of the General Plan throughout the update process. The "guiding vision" identified in this document is to make Sacramento "the most livable city in America." In terms of transportation choices, the City's guiding principles emphasize multi-modal transportation and greater investment in transit systems.

As background to the "Visions and Guiding Principles" document, the City has also adopted (in November 2005) a "Planning Issues Report" that identifies key planning issues. The first issue mentioned is "Smart Growth," typified by compact development, higher residential densities, mixed-uses, a range of transportation choices, walkable neighborhoods, and open space protection. The "Planning Issues Report" mentions SACOG's Regional Blueprint as advocating this type of growth.

2030 General Plan

March 3, 2009, the City of Sacramento adopted the "2030 General Plan." This General Plan is the first comprehensive revision of the City's General Plan in more than 20 years. The 2030 General Plan seeks to revitalize older communities by bringing new housing, shopping, and employment choices to existing neighborhoods. It also emphasizes a balanced transportation system that takes advantage of existing light rail and makes improvements for bicyclists and walkers. The Plan does not address HOV lanes in particular,

however does encourage commute trip reduction by encouraging employers to provide preferential parking for carpools/vanpools along with transit subsidies, bicycle facilities, alternative work schedules, ridesharing, telecommuting and work-at-home programs and employee education. In addition, Goal M 1.4.1 "Increase Vehicle Occupancy," states that the City shall work with a broad range of agencies (e.g., SACOG, Sacramento Air Quality Management District (SMAQMD), and Caltrans) to encourage and support programs that increase vehicle occupancy including the provision of traveler information, shuttles, preferential parking for carpools/vanpools, transit pass subsidies, and other methods.

Sacramento County General Plan

Sacramento County adopted its General Plan in December 1993. In its overall philosophy regarding future growth, the County's General Plan has much in common with SACOG's Regional Blueprint. The General Plan warns of problems associated with continuing the traditional pattern of low-density suburban development. The County's General Plan states:

> Maintaining the status quo is unrealistic: the incremental financial environmental cost of low-density urban fringe growth is greater than existing and new residents are willing to pay. The General Plan resolves the problems of increased development costs, premature development, and regional shifts by strategies, which direct the unincorporated area towards a more urban than suburban character.

The County's General Plan Circulation Element reflects this concern with sprawling development patterns. The Circulation Element is critical of what it calls the automobile and road-oriented transportation system, associating it with low density, sprawling communities. The Circulation Element states that:

> The present land use and transportation system is oriented towards private automobiles. A road network releases forces throughout the economy that causes increased driving because destinations are expanding outward…. Improving land use and transportation planning will reduce these future spillover effects.

The Circulation Element's overall objectives are described as seeking imaginative means to increase the supply of transportation options, managing the demand for transportation, and building a transportation system balanced between roads and transit.

Regarding proposed expansions of the freeway system, the County's General Plan supports the construction of a regional network of HOV lanes. Circulation Element Policy 24 describes HOV lanes as having a "significant potential to increase the effective carrying capacity of the existing road network by increasing the number of individuals in each vehicle." As a result, HOV lanes benefit air quality and transit operations.

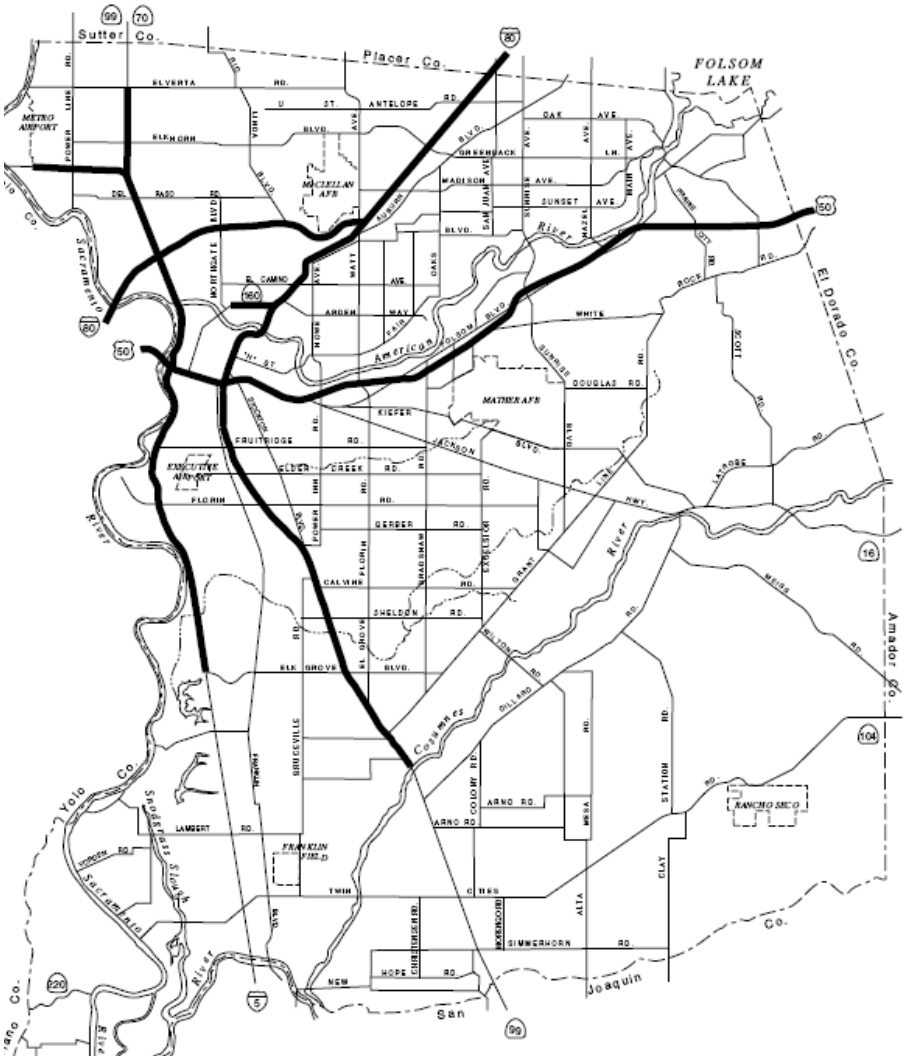
But the Circulation Element points out that "The traditional Caltrans policy to never take an existing lane for an HOV lane is outdated. That Caltrans policy would allow HOV lanes only when they are newly constructed, but new construction is only an inducement to additional automobile travel which will worsen congestion and air quality."

General Plan Update

Sacramento County is currently updating its General Plan. A Public Review Draft was released in November 2006 and included a Circulation Element. The latest draft can be found on the internet, dated April 13, 2009. Under High Occupancy Vehicle Lanes, it states:

> High Occupancy Vehicle (HOV) lanes are restricted to carpools, vanpools, and transit vehicles. Most HOV lanes may be used by any vehicle carrying two or more people, although some are restricted to vehicles with three or more passengers. HOV lanes are intended to increase the person-carrying capacity of the transportation system without requiring additional vehicle capacity. This is cost-effective for government, and improves air quality. Sacramento County supports the development of a regional network of HOV lanes as shown in the inset map on the Transportation Plan Map (See Figure 7).

Figure 7 HOV Lane Network



According to Sacramento County, the HOV inset on the updated Transportation Plan Map should be consistent with the current 1993 Transportation Plan Map, which shows HOV lanes along the entire length of I-80 within Sacramento County.

South Natomas Community Plan

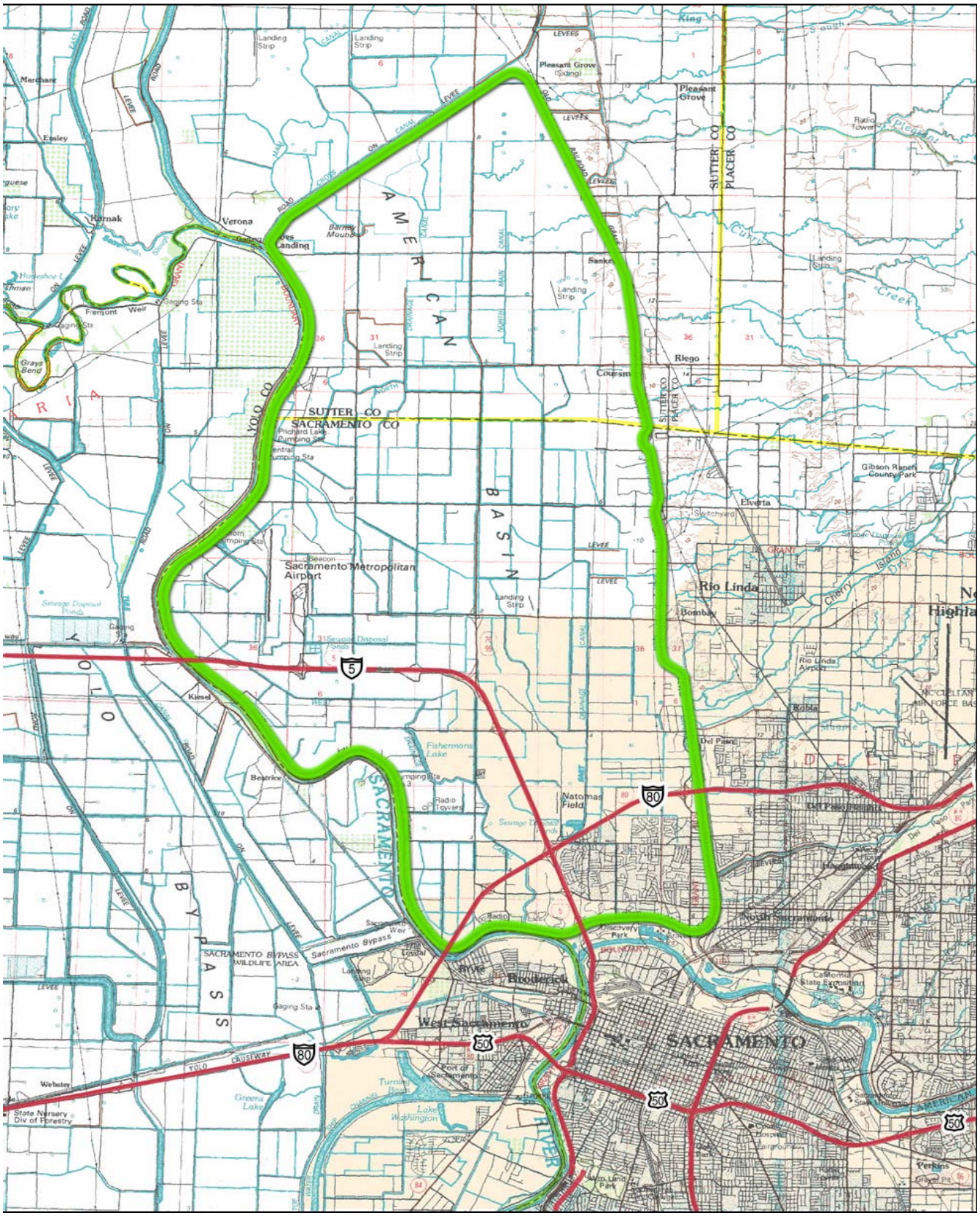
South Natomas developed predominantly as residential subdivisions between 1950 and 1980. The South Natomas Community Plan, adopted in 1978, envisioned a high-density, transit-oriented, residential community with a small amount of office space serving only local needs. By 1982, expectations had changed and plan amendments added 2.4 million square feet of office park adjoining either side of I-5. The City Council adopted a revised South Natomas Community Plan in 1988. The Plan included a total of 300 acres of existing and proposed parks, five elementary schools and six neighborhood shopping centers. Office/business park locations were intended to take advantage of freeway visibility, avoid disrupting residential areas, and minimize pressure on congested street intersections. In 1990, the City adopted a Facilities Benefit Assessment District that applied to all new development (including residential). This provided a funding mechanism to pay for infrastructure within the planning area. There are no policies in the South Natomas Community Plan that specifically address transportation.

Habitat Conservation Plans (HCP)

Natomas Basin Habitat Conservation Plan

The Natomas Basin HCP (NBHCP), adopted in November 1997 and revised in 2003, was designed to promote biological conservation along with economic development and continuation of agriculture in the 53,341-acre Natomas Basin, located in portions of northern Sacramento and southern Sutter Counties. The project is located within the Natomas Basin (See Figure 8, Natomas Habitat Conservation Basin).

Figure 8 Natomas Habitat Conservation Basin



The program implementation is under the direction of the U.S. Fish and Wildlife Service, California Department of Fish and Game as the permittors with the City of Sacramento, Sutter County, the Natomas Basin Conservancy, and Reclamation District 1000. The Natomas Basin Conservancy carries out the mitigation requirements of the NBHCP on behalf of the other permittees.

The NBHCP established a multi-species conservation program to mitigate the expected loss of habitat and incidental take of protected species that would result from urban development, operation of irrigation and drainage systems, and rice farming. Twenty-two species were included, but the primary species were giant garter snake *(Thamnophis gigas)* and Swainson's hawk *(Buteo swainsoni)*.

2.3.2 Environmental Consequences

Alternatives 1A, 1B and 1C

Because the project is an essential element of the HOV network within the SACOG planning area, and the HOV network is consistent with the state, county and city general plans, the proposed project is consistent with the relevant state, regional, and local plans and programs.

This project is located within the Natomas Basin Habitat Conservation Plan; however the impacts to the targeted species are minor and will be mitigated to a less than significant level. The project requires a minor amount of right-of-way, however, since the right-of-way required is adjacent to the existing freeway, and not desirable habitat for the targeted species of the NBHCP and the project is not expected to cause a change in land use, it would not have an impact on the NBHCP (See Section 2.26 for more information on Swainson's hawk and giant garter snake).

Alternative 2—No Build Alternative

The No Build Alternative is not consistent with the relevant state, regional, and local plans, which promote the policy of encouraging alternative modes of transportation, including the use of high occupancy vehicles.

2.3.3 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation measures are required.

2.4 Growth Inducement

Regulatory Setting

The Council on Environmental Quality regulations, which implement the National Environmental Policy Act of 1969, require evaluation of the potential environmental consequences of all proposed federal activities and programs. This provision includes a requirement to examine indirect consequences, which may occur in areas beyond the immediate influence of a proposed action and at some time in the future. The Council on Environmental Quality regulations, 40 Code Federal Regulations 1508.8, refer to these consequences as indirect impacts. Indirect impacts may include changes in land use, economic vitality, and population density, which are all elements of growth.

CEQA also requires the analysis of a project's potential to induce growth. CEQA guidelines, Section 15126.2(d), require that environmental documents "…discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment…"

2.4.1 Affected Environment

According to the Caltrans Growth-Related Guidance, key elements to look at when evaluating whether or not a project has the potential to have growth-related impacts include accessibility, project type, project location, and growth pressure.

Accessibility is the most direct link between transportation and land use and refers to the project's potential to reduce time-of-cost travel, either in terms of money or time, potentially enhancing the attractiveness of surrounding land to developers and consumers. The project does not provide additional accessibility to any particular area.

Project type is another important factor to consider when evaluating the need for a growth-related analysis. According to the Growth-Related Guidance:

> Adding high occupancy vehicle (HOV) lanes or mixed flow lanes are examples of projects that could cause growth-related impacts because they add capacity to an existing facility. These projects warrant closer consideration to determine whether an analysis of growth-related impacts will be necessary.

Project location is another element of growth-related impacts. The proposed project is located within the city limits of Sacramento and Sacramento County. The area surrounding the project limits is predominantly developed, except for the northwest quadrant, where farmland is still prevalent. According to the Growth-Related Guidance, undeveloped parcels on the urban/suburban fringe (such as those located in the northeastern quadrant), can be prime growth areas, particularly if the land is suitable, development regulations are favorable, and the area is in the path of an expanding urban/suburban core.

Finally, growth pressure must be considered when evaluating the potential for growth-related impacts. Growth pressure is influenced by circumstances such as land availability and price, existing infrastructure, the regional economy, vacancy rates, and land use controls, although the degree to which growth is influenced by these circumstances will vary from project to project.

The proposed project is consistent with regional planning efforts, including SACOG's Regional Blueprint Preferred Scenario and the MTP 2035. The population distribution anticipated in SACOG's planning is based on a future transportation network that includes the proposed project. As noted in the MTP 2035:

> Land use decisions are key to the success of this MTP. The 2035 land use base for this MTP, which is largely consistent with the 2050 growth vision, supports a transportation system that reduces growth in vehicle-miles-traveled and traffic congestion and makes

> walking, bicycling, and transit preferable choices for more trips. The transportation system in this plan has been custom designed to match this land use pattern, and about 75 percent of the improved performance of the system is directly due to land use, not to specific transportation projects. Thus, implementation of the locally-determined Blueprint land uses is the most important part of successfully implementing this MTP (SACOG, 2008a).

Development planned for downtown Sacramento consists almost exclusively of infill development, consistent with the "Smart Growth" principles advocated in the City's Draft General Plan update and SACOG's Blueprint Preferred Scenario.

There are three developments approved for Sacramento County; Camino Norte and Greenbriar and Township 9, near Richards Boulevard. No additional developments are planned in the immediate project area. Given the amount of past and planned growth in the region and along the project corridor, the proposed project would not add sufficient capacity to influence growth patterns.

2.4.2 Environmental Consequences

Alternative 1A, 1B and 1C

The proposed project is not expected to influence or alter development patterns in the study area and thus no measurable growth-related indirect effects to resources of concern are expected.

The proposed project seeks to reduce congestion and encourage alternative means of commuting through the addition of an HOV flyover connecting westbound I-80 and southbound I-5. The project would provide greater connectivity within the HOV lane system in the Sacramento region, which consists of existing and planned HOV lanes on I-80, I-5, US 50, and SR 99. These improvements are being proposed because of demands put on the region's transportation system due to the existing rapid rates of growth in the area. The projects are also part of a long-term Caltrans effort to encourage the use of transit and multi-passenger occupied vehicles.

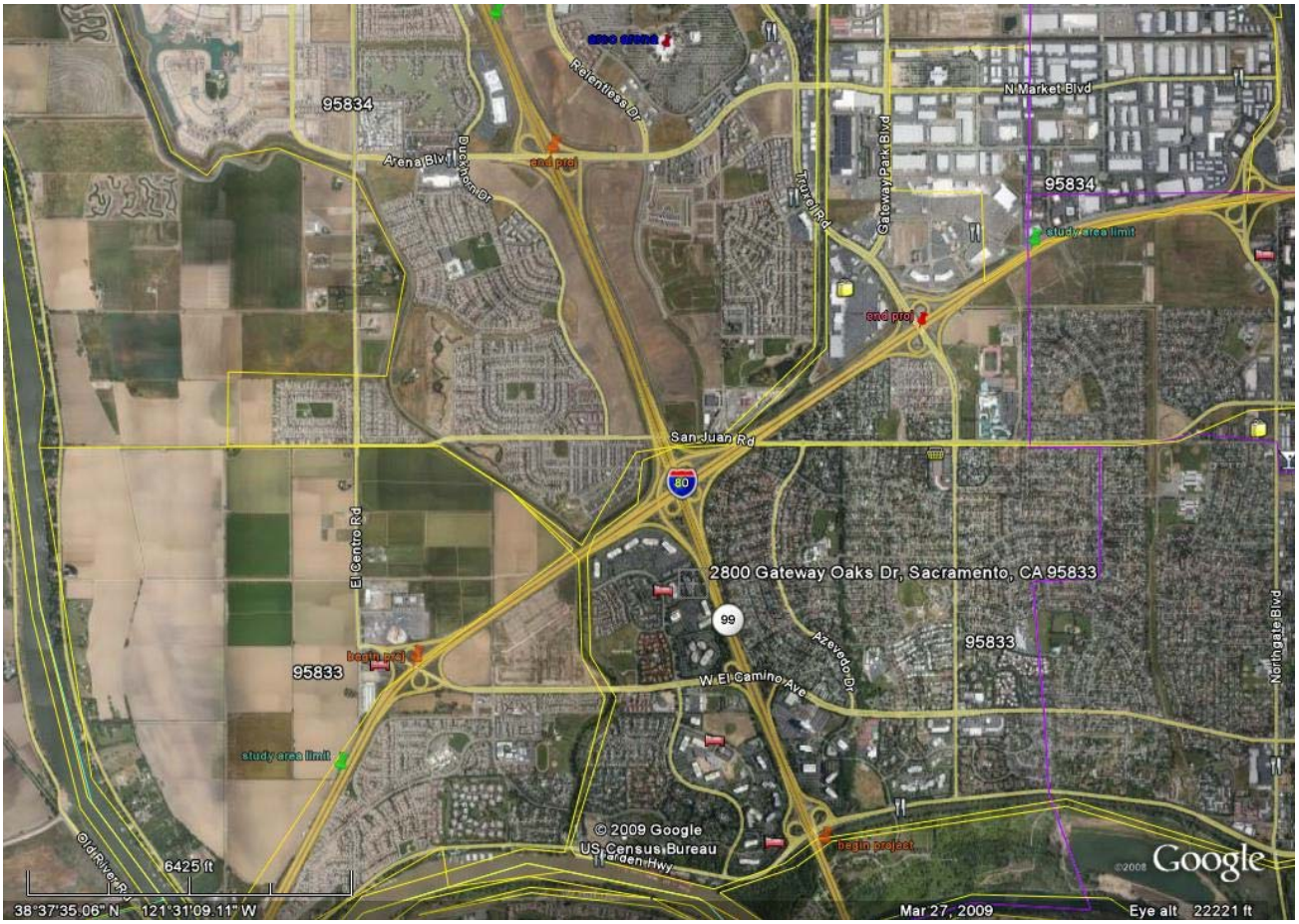
The proposed project would increase the capacity of an existing freeway that is currently heavily congested. The project would moderately improve travel times, especially for bus and carpool users. (See Table 15 for peak hour travel times) The HOV lane is designed to provide an alternative to single-occupancy vehicle travel and encourage drivers to combine vehicle trips, thus removing some cars from the freeway. The project would not create excessive new capacity that would induce new, unplanned growth or result in a shift in travel patterns. The design of the project does not create any new access points nor would the project remove any key restraints to growth—it would not change any land use designations or open any new areas to development.

Alternative 2—No Build Alternative

With the exception of the agricultural land in the northwest quadrant, there is very little vacant land available within the project area, Alternative 2 is equally unlikely to result in growth-related indirect impacts to resources. Figure 9 shows a recent "Google Earth" snapshot of the project area, showing the areas that are in

agricultural use and those currently vacant. It is not anticipated that the project will cause the conversion of farmland to other uses, such as housing or retail. Other factors, such as local planning and economic pressures, are affecting the conversion of agricultural lands. Community comprehensive plans and planning laws, such as land use and zoning regulations, are most often the primary means of controlling growth and development. County and local governments use these plans and regulations to encourage or discourage growth in their communities as they see appropriate. Any changes to these plans or regulations would involve considerable public review and input. Other constraints to growth can include public utility services such as water, natural gas, electric, and sewage.

Figure 9 Aerial of Project Area, March 27, 2009



2.4.3 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization or mitigation measures are required. The proposed project is not expected to alter development patterns or the pace of development in the study area, thus no growth-related indirect impacts to resources are expected to result from the implementation of the proposed project.

2.5 Community Impacts

2.5.1 Regulatory Setting

The National Environmental Policy Act of 1969, as amended, established that the federal government use all practicable means to ensure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings [42 U.S. Code 4331(b)(2)]. The Federal Highway Administration in its implementation of the National Environmental Policy Act [23 U.S. Code 109(h)] directs that final decisions regarding projects are to be made in the best overall public interest. This requires taking into account adverse environmental impacts, such as, destruction or disruption of human-made resources, community cohesion, and the availability of public facilities and services.

Under CEQA, an economic or social change by itself is not to be considered a significant effect on the environment. However, if a social or economic change is related to a physical change, then social or economic change may be considered in determining whether the physical change is significant. Since this project would result in physical change to the environment, it is appropriate to consider changes to community character and cohesion in assessing the significance of the project's effects.

2.5.2 Affected Environment

Population

At the time of the 2000 U.S. Census, Sacramento County had a population of just over 1.2 million and the City of Sacramento had a population of 407,018. Today's estimated populations are just over 1.4 million for Sacramento County and 475,743 for the City of Sacramento (California Department of Finance, 2008). Sacramento County's population is expected to increase by approximately 668,000 between 2005 and 2035, a 51 percent increase.

SACOG's projections included in the 2006 MTP indicate that between 2000 and 2025, the population of the SACOG region will increase 37 percent and employment will grow 39 percent (SACOG, 2006). Between 2005 and 2035, the region is expected to add 1.2 million residents requiring 535,000 jobs and 525,000 housing units (SACOG 2008a). The estimated January 1, 2008 population for Sacramento County is just over 1.4 million (California Department of Finance, 2008).

Ethnicity

The Study Area's ethnic composition is generally representative of the city and the county. White residents account for approximately 55 percent of the population of the Study Area and 48 percent of the city and 64 percent of the county. Asian residents make up approximately 10 percent of the Study Area and county and 17 percent of the city. African American residents make up 14 percent of the Study area and city and 10 percent of the county. People identifying themselves as Hispanic or Latino (which can include members of any race) made up approximately 26 percent of the Study Area and county and 22 percent of the city.

Housing

The Study Area's housing stock includes a combination of multi-story apartment buildings and single-family homes. Neighborhoods in downtown Sacramento include single-family homes, multi-family dwellings, and local businesses.

Table 10 provides data on the housing stock in the Study Area, the county and the City of Sacramento based on the 2000 Census. Between the 2000 Census and the 2004 American Community Survey (ACS), the county's housing supply increased by nearly 9 percent, from 474,800 housing units to 516,000 units. The vacancy rate increased from 4.5 percent in 2000 to 5.4 percent in 2004. The median home value in the county was $144,200 at the time of the 2000 Census, while the median household income was $43,800. Property values have risen slightly. According to the National Association of Realtors, the median value of homes in the Sacramento metropolitan area, which includes Arden-Arcade and Roseville, was $175,000 in June 2009.

Table 10 Housing data

Census Tracts	Number of housing units	Vacancy Rate	Median year structure built	Median value	Median Income
70.04	2,621	3%	1985	$117,800	$43,228
70.07	1,607	5%	1970	$102,600	$45,297
70.08	597	7%	1986	$154,100	$51,103
70.09	741	17%	1987	$220,100	$57,938
70.10	1,872	19%	1991	$217,600	$50,365
70.11	2,537	3%	1985	$131,900	$38,397
70.12	1,450	2%	1983	$113,000	$50,384
70.13	1,036	2%	1983	$119,200	$47,031
70.14	2,811	4%	1983	$118,100	$44,750
City of Sacramento	163,914	6%	1967	$126,000	$37,049
Sacramento County	474,814	4%	1974	$141,100	$43,816
California	12,214,549	6%	1970	$198,900	$47,493

Source: http://factfinder.census.gov/servlet/DTTable?_bm=y&-context=dt&-ds_name=DEC_2000_SF3_U&-_geoSkip=10&-CONTEXT=dt&-mt_name=DEC_2000_SF3_U_P052&-mt_name=DEC_2000_SF3_U_P053&-mt_name=DEC_2000_SF3_U_P054&-mt_name=DEC_2000_SF3_U_H001&-mt_name=DEC_2000_SF3_U_H085&-mt_name=DEC_2000_SF3_U_H084&-mt_name=DEC_2000_SF3_U_HCT020&-mt_name=DEC_2000_SF3_U_HCT019&-tree_id=403&-_skip=0&-redoLog=false&-all_geo_types=N&-geo_id=04000US06&-geo_id=05000US06067&-geo_id=14000US06067007004&-geo_id=14000US06067007007&-geo_id=14000US06067007008&-geo_id=14000US06067007009&-geo_id=14000US06067007010&-geo_id=14000US06067007011&-geo_id=14000US06067007012&-geo_id=14000US06067007013&-geo_id=14000US06067007014&-geo_id=16000US0664000&-search_results=16000US0664000&-_showChild=Y&-format=&-_lang=en&-_toggle

Employment

Workers based in the Study Area are employed in a range of industries. The top three industry categories in terms of employment of residents living in the South Natomas area include "Retail", "Office" and "Other."

The employment profile in the Study Area closely mirrors the types of businesses that are located in the region. Although a large portion of the county is dedicated to farming activities, the county relies on service industries as its economic base. The predominant employment in the study area is retail and office. The construction of the Natomas Center (a satellite of American River College) has recently provided jobs in the educational field.

Civilian unemployment rates in the Sacramento County and City of Sacramento were 8 percent and 7 percent, respectively (2000 Census). According to SACOG projections up to 2025, job growth is expected to outpace population growth. The average unemployment in the Study Area is 6 percent.

Schools

The Natomas Unified School District serves residents within the Study Area and its immediate vicinity.

2.5.3 Environmental Consequences

The proposed project will not have an effect on the community demographics, including the population, ethnicity, housing, or employment. The project does not change the land use within the project area, and does not eliminate access to areas where access was previously available.

2.5.4 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation measures are required.

2.6 Fiscal Impacts

Property Tax

The proposed project would require a minor reduction in property tax revenue to Sacramento County because of the acquisition of small sections of private property. Given the overall amount of Sacramento County's total property tax revenue, the reduction in revenue would be negligible. The acquisition of private property for the project right-of-way would make the property public, and therefore not subject to taxes.

Sales Tax

The proposed project will not impact any business operations in the Study Area. Sales tax revenues from businesses in the Study Area would remain unchanged.

Property Values

The proposed project is not likely to have a substantial impact on any of the factors that currently influence property values in the Study Area.

2.7 Environmental Justice

2.7.1 Regulatory Setting

All projects involving a federal action (funding, permit, or land) must comply with Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,* signed by President Bill Clinton on February 11, 1994. This Executive Order directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. Low income is defined based on the Department of Health and Human Services poverty guidelines. For 2009, this was $22,050 for a family of four.

Table 11 2009 Poverty Guidelines

Persons in family	**Poverty guideline**
1	$10,830
2	14,570
3	18,310
4	22,050
5	25,790
6	29,530
7	33,270
8	37,010
9+	Add $3,740 for each additional person

All considerations under Title VI of the Civil Rights Act of 1964 and related statutes have also been included in this project. Caltrans' commitment to upholding the mandates of Title VI is evidenced by its Title VI Policy Statement, signed by the Director, which can be found in Appendix B of this document.

A general approach for identifying potential environmental justice (EJ) population areas involves the use of comprehensive demographic information, normally U.S. Census Bureau data. For this EIR/EA, census data for the Year 1990 and Year 2000 were used to identify minority and low-income populations. Supplemental data from SACOG were used to augment the Year 1990 and Year 2000 census data, as appropriate. The census tract level data, instead of the census block group or block level, was used because it provides the best combination of demographic accuracy and data accessibility for the Study Area. Once identified, the locations of EJ population areas are then compared to areas in which environmental and socioeconomic impacts are predicted to occur to determine if these communities will be disproportionately affected compared to other nearby non-EJ population areas. If disproportionate impacts were identified in this process, avoidance or minimization measures to alleviate those impacts to those communities would be recommended.

In order for a locale to be considered a potential EJ population area of concern, either the minority or low-income population of the study area must be "meaningfully greater" than that of the study area. Any Census tracts with a percentage of residents above the minority or low-income thresholds established for the Study Area are identified as potential EJ population areas of concern.

2.7.2 Affected Environment

Minority Populations

According to the U.S. Bureau of Census, minority populations are those groups that include Black or African Americans, American Indians or Alaskan Natives, Asians, Native Hawaiian or Other Pacific Islanders, Hispanic or Latinos, and other races. These population categories were used to determine the minority percentage for each census tract in the Study Area.

A census tract with a minority population greater than the average minority population of the Study Area would be considered to be an EJ population area of concern. Minority populations are present in the Study Area, and Executive Order 12898 directs the project's government sponsors to determine whether the project could subject these populations to disproportionate adverse impacts. Census tract 70.04 has an 8 percent

higher population of Black or African American residents than the city and 13 percent higher population than Sacramento County. In census tract 70.04, there is an 8 percent higher percentage of Hispanic/Latino residents than the city and 14 percent higher population of Hispanic/Latino's than the County. Census tracts 70.07,70.11,70.12,70.13 and 70.14 all had higher than average populations of Hispanic/Latino and residents of one or more races, however, the project will not have a disproportionate impact on any minorities.

2.7.3 Environmental Consequences

As discussed above, there are minority populations found in the Study Area. However, because the proposed project would alter an existing freeway and have a minimal effect on the surrounding communities, it does not have the potential to cause local impacts. Other potential impacts to neighboring populations can include noise and air quality, however, noise and air quality impacts are distributed evenly through the Study Area and are not concentrated in any area of minority residents. Noise abatement measures are being assessed for most of the neighborhoods along the freeway, in both EJ population areas and non-EJ population areas. The proposed project is not expected to have significant impacts on air quality in the region; no adverse air quality impacts would exclusively affect EJ population areas. Impacts related to construction would similarly occur all throughout the project area, adjacent to both EJ population and non-EJ population areas.

2.7.4 Avoidance, Minimization, and/or Mitigation Measures

Based on the above discussion and analysis, the proposed project will not cause disproportionately high and adverse effects on any minority or low-income populations, as discussed in Executive Order 12898 regarding EJ. Thus, no avoidance, minimization, or mitigation measures are necessary.

2.8 Utilities and Public Services, Emergency Services

2.8.1 Affected Environment

Utilities and Public Services

Designated utility corridors and easements are located in the study area. Utilities such as water, storm drains, sanitary sewer systems, gas, and electrical lines traverse the study area.

Water Supply and Distribution

According to Sacramento County's General Plan, 28 public and private water purveyors are responsible for the treatment and distribution of surface and groundwater as well as securing surface water rights within the county. The county's water purveyors include dependent water districts, autonomous water districts, cities, and private and mutual water companies. Drinking water is supplied by various agencies, including the City of Sacramento's Department of Utilities (85 percent from the American River and 15 percent from groundwater), Sacramento County Department of Water Resources, Arden Water Service, and Southern California Water Company.

Flood Control

The Sacramento Area Flood Control Agency (SAFCA) has been charged with the responsibility of providing the Sacramento area with flood protection from the American and Sacramento rivers. Storm water drainage and flood control services in the study area are provided by the Sacramento County Stormwater Program within the Water Resources Department.

Wastewater Collection and Treatment

Sacramento Regional County Sanitation District (SRCSD), through its contributing agencies such as the Sacramento County Sanitation District, provides sewer and wastewater collection, conveyance, and treatment services in the urbanized areas of the county. Wastewater from the City of Sacramento is routed to the Sacramento Regional County Treatment Plant where it receives primary and secondary treatment. The study area is serviced by the Sacramento County Sanitation District and the City of Sacramento's Department of Utilities.

Solid Waste Disposal

Solid waste disposal and recycling services in the study area are provided by the City of Sacramento within the city's jurisdictional limits, and the Sacramento County Department of Waste Management and Recycling Division (WMRD). The City of Sacramento services all residential and a third of the commercial customers within the city, transporting the waste initially to a transfer station and then to the Lockwood Landfill in Sparks, Nevada. Private franchised haulers service the remaining commercial customers in the City of Sacramento and dispose of the waste at various facilities including the Sacramento County Kiefer Landfill, the Yolo County Landfill, L and D Landfill, Florin Perkins Landfill, and private transfer stations. WMRD disposes of their collected waste at Kiefer Landfill, which is the primary municipal solid waste disposal facility in Sacramento County. Kiefer Landfill is also the only landfill facility in the county permitted to accept household waste from the public.

Natural Gas and Electricity

The Sacramento Municipal Utility District (SMUD) provides electricity in the county and study area, while Pacific Gas and Electric Company (PG&E) provides gas.

Telecommunications

Multiple companies provide telecommunication services in the Sacramento area, offering landline and cellular services, cable television, and internet connectivity. The primary telecommunications service providers in the Sacramento area are AT&T, Sprint, Comcast, SureWest, Electric Lightwave, Inc. and Strategic Technologies, Inc.

Emergency Service Providers (Police, Fire, Ambulance)

Police

Primary public safety services are provided by the Sacramento Police Department within the City of Sacramento and by the Sacramento County's Sheriff Department in the unincorporated areas. The California Highway Patrol also provides public safety services along the freeways.

Fire Districts

Fire protection within the project area is provided by the City of Sacramento.

Hospitals

The project area is served by these major medical hospital facilities in the greater project area:

- Methodist Hospital of Sacramento
  7500 Hospital Drive
  Sacramento, CA 95823

- Sutter Memorial Hospital
  1726 28th Street
  Sacramento, CA 95816

2.8.2 Environmental Consequences

Access routes for emergency vehicles would not be affected by the proposed project. The proposed project would provide a benefit in terms of travel time on the freeway. Temporary impacts include a potential for delay during the construction of the project.

2.8.3 Avoidance and Minimization Measures

A transportation management plan to address congestion will be implemented during construction that will reduce the traffic impacts during construction. The freeway and ramps will remain open during construction. All work affecting traffic lanes will be at night and off-peak hours. Stage construction and temporary concrete barriers will be required. Construction of viaducts and other structures will require detouring/shifting traffic around the areas under work. Falsework for bridge span construction will require occasional facility closure, as well as horizontal and vertical clearance reduction for the duration of the bridge work. A public awareness campaign, portable changeable message signs, and Construction Zone Enhanced Enforcement Program (COZEEP) will be included in the project. Lane closure charts will be developed during the plans specifications and estimates (PS&E) phase of the project.

2.9 Transit, Bicycles, and Pedestrians

2.9.1 Regulatory Setting

Caltrans, as assigned by FHWA, directs that full consideration should be given to the safe accommodation of pedestrians and bicyclists during the development of federal-aid highway projects (see 23 CFR 652). It further directs that the special needs of the elderly and the disabled must be considered in all federal-aid projects that include pedestrian facilities. When current or anticipated pedestrian and/or bicycle traffic presents a potential conflict with motor vehicle traffic, every effort must be made to minimize the detrimental effects on all highway users who share the facility.

Caltrans is committed to carrying out the 1990 Americans with Disabilities Act (ADA) by building transportation facilities that provide equal access for all persons. The same degree of convenience, accessibility, and safety available to the general public will be provided to persons with disabilities.

2.9.2 Affected Environment

Operating agencies providing common carrier or public transportation services within or through the Corridor are Sacramento Rapid Transit (RT), Yolo County Transportation District (Yolobus), Yuba-Sutter Transit District, Amtrak, and Greyhound. Public transportation to the Airport consists largely of taxi, shared-ride van services, some dedicated hotel shuttles, and one public bus route (Yolobus).

2.9.2.1 Transit

Bus Service

RT runs the primary bus network for the metropolitan area. RT buses carry about three-quarters of all transit trips in Sacramento County on 99 bus routes. Altogether, the bus routes carry an average of 67,000 passenger trips each weekday. To handle this demand, RT has an existing fleet of 279 buses powered by compressed natural gas and 17 shuttle vans. RT bus routes with stops in the project area are the #11 Truxel Road, #13 Northgate, #14 Norwood, #86 San Juan/Silver Eagle, #87 Howe, and #88 West El Camino. These services connect from some locations in North or South Natomas to Downtown Sacramento or to the Arden/Del Paso Station.

Light Rail Transit Service

RT currently operates 76 light rail vehicles over 37.4 miles of track serving 47 stations and carries over 50,000 passengers on a typical weekday.

Other

The Yolo County Transit District provides Yolobus service for West Sacramento, Davis, Woodland, and other communities in Yolo County with 19 local fixed and express bus routes. Daily ridership on the system is about 3,000 trips.

Paratransit Inc., with funding provided by RT, provides services for the mobility-impaired population that cannot use conventional fixed-route transit. A fleet of 104 small bus vehicles handles the 2,100 daily paratransit trips—about 2.5 percent of all transit trips.

Greyhound offers intercity and interstate service through its station in Downtown Sacramento at 715 L Street, with several dozen schedules providing direct or connecting service to many cities in California, as well as interstate service.

Yuba-Sutter Transit provides commuter service on SR 99, SR 70, and I-5 but with no stops outside of Downtown Sacramento.

Amtrak provides service from the Rail station at I Street and Third. This station serves the Californian Zephyr, Capital Corridor, Coast Starlight, and San Joaquin train routes.

2.9.2.2 Bicyclists

The bike path on San Juan Road, beginning at Azevedo Road and ending at Airport Boulevard will be perpetuated. The City of Sacramento is proposing to extend the bicycle lane to West El Camino Avenue.

2.9.3 Environmental Consequences

2.9.3.1 Transit

Transit ridership is anticipated to increase as a result of the project. Based on the Traffic Report and data from previously completed bus/carpool lane projects, the proposed project could greatly improve travel time for commuter buses. Implementation of bus/carpool lanes on I-5 would allow buses to bypass congested mixed flow traffic lanes, resulting in improved travel times during peak commuting periods. As growth in the region continues, the need for additional public transit services will also continue to increase.

During construction, transit operations may experience delays due to construction activities.

2.9.3.2 Bicyclists

During construction, bicycle access to the bridge and thus the bike lane on the other side of the bridge will be constrained.

2.9.4 Avoidance and Minimization Measures

Transportation management measures will be in place to minimize impacts on emergency services and transit operators. All work affecting traffic lanes will be at night and off-peak hours. Stage construction and temporary concrete barriers will be required. Construction of viaducts and other structures will require detouring/shifting traffic around the areas under work. Falsework for bridge span construction will require occasional facility closure, as well as horizontal and vertical clearance reduction for the duration of the bridge work. A public awareness campaign, portable changeable message signs, and Construction Zone Enhanced Enforcement Program (COZEEP) will be included in the project. Lane closure charts will be developed during the PS&E phase of the project.

2.10 Traffic Capacity and Congestion

Traffic simulation software was used to develop traffic operations models of the AM and PM peak periods for both peak and off-peak directions. Existing conditions models were constructed from geometric data (aerial photographs, field observations, etc.), traffic control data (ramp meter signal timing plans), and traffic flow data (traffic counts, travel time measurements, field observations, etc.). The existing conditions models were calibrated and validated to observed traffic volumes, travel time, and queues.

2.10.1 Affected Environment

Existing Traffic Conditions

Under existing conditions, the main bottleneck in the morning is on southbound I-5 at the Garden Highway off-ramp although a smaller bottleneck exists at the SR 99 on-ramp from I-5. The primary bottleneck in the

evening on eastbound I-80 is currently at Northgate Boulevard. The Level of Service is an indicator of the existing traffic conditions.

Level of Service

Level of service (LOS) is a qualitative measure of traffic operating conditions as perceived by drivers, which varies from LOS A (un-congested conditions) to LOS F (congested conditions). Table 12 describes the LOS thresholds from the *Highway Capacity Manual* (HCM) for freeway sections.

Table 12 Freeway Mainline and Ramp Junction/Weave Section LOS Thresholds

Level of Service	Description	Density (vplpm)[1]	
		Mainline (Basic)	Ramp / Weave
A	Free-flow speeds prevail. Vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream.	≤ 11	≤ 10
B	Free-flow speeds are maintained. The ability to maneuver with the traffic stream is only slightly restricted.	> 11 to 18	> 10 to 20
C	Flow with speeds at or near free-flow speeds. Freedom to maneuver within the traffic stream is noticeably restricted, and lane changes require more care and vigilance on the part of the driver.	> 18 to 26	> 20 to 28
D	Speeds decline slightly with increasing flows. Freedom to maneuver with the traffic stream is more noticeably limited, and the driver experiences reduced physical and psychological comfort.	> 26 to 35	> 28 to 35
E	Operation at capacity. There are virtually no usable gaps within the traffic stream, leaving little room to maneuver. Any disruption can be expected to produce a breakdown with queuing.	> 35 to 45	> 35 to 43[2]
F	Represents a breakdown in flow.	> 45	> 43[2]

Notes: 1. Density is reported in vehicles per lane per mile (vplpm). The HCM uses passenger cars per lane per mile to set the LOS thresholds; however, the relatively low percentage of trucks in the study area makes the density as measured in vplpm similar to pcplpm.

2. The maximum density for ramp junctions under LOS E is not defined in the Highway Capacity Manual. The maximum density for weaving sections of 43 vplpm was assumed to apply to ramp junctions.

Source: *Highway Capacity Manual* (Transportation Research Board, 2000)

The PM peak period model has congested conditions on I-80 from the I-5 NB on-ramp through the Norwood Avenue on-ramp. The bottlenecks are located at the grades on Northgate Boulevard and Norwood Avenue. Northbound I-5 has only minor congestion at the I-80 off-ramp (queue back-up from eastbound I-80) and at Richards Boulevard, which is the bottleneck location that controls the amount of traffic entering the Study Area.

Table 13 AM/PM Peak-Hour Mainline Analysis for Existing Conditions

Location		Type[1]	Volume	Speed	LOS/Density[2]
AM Peak-Hour Mainline Analysis for Existing Conditions					
SB I-5	Airport Boulevard to SR 99	Basic	2,448	63	C / 21
	SR 99 to Del Paso Rd	Weave	4,944	62	D / 28
	Del Paso Rd to Arena Boulevard	Weave	6,127	50	**F / 62**
	Arena Boulevard to I-80	Basic	6,792	44	**F / 92**
	I-80 to W El Camino Ave	Merge[3]	6,928	59	**F / 65**
	W El Camino Ave to Garden Hwy	Weave	8,363	36	**F / 83**
	Garden Hwy to Richards Boulevard	Weave	7,988	50	D / 34
WB I-80	Norwood Ave to Northgate Boulevard	Basic	5,714	58	**F / 48**
	Northgate Boulevard to Truxel Rd	Basic	5,082	64	C / 23
	Truxel Rd to I-5	Weave	5,367	64	C / 23
	I-5 to W El Camino Ave	Basic	3,155	64	B / 18
	W El Camino Ave to Sacramento River	Basic	3,522	63	C / 20
PM Peak-Hour Mainline Analysis for Existing Conditions					
NB I-5	Richards Boulevard to Garden Hwy	Weave	7,394	46	**F / 70**
	Garden Hwy to W El Camino Ave	Weave	9,110	61	E / 39
	W El Camino Ave to I-80	Basic	8,042	59	E / 38
	I-80 to Arena Boulevard	Weave	7,227	63	C / 28
	Arena Boulevard to Del Paso Rd	Weave	6,273	62	D / 32
	Del Paso Rd to SR 99	Weave	5,257	62	D / 32
	SR 99 to Airport Boulevard and the San Juan Road Overcrossing	Basic	2,742	63	C / 23
EB I-80	Sacramento River to W El Camino Ave	Basic	3,298	64	C / 18
	W El Camino Ave to I-5	Diverge[3]	2,982	64	B / 19
	I-5 to Truxel Rd	Weave	5,149	57	**F / 82**
	Truxel Rd to Northgate Boulevard	Basic	4,701	24	**F / 78**
	Northgate Boulevard to Norwood Ave	Basic	5,436	61	D / 31

Notes: Bold and underline font indicate LOS F conditions.
1. Freeway analysis types are ramp merge (on-ramp), ramp diverge (off-ramp), weaving section (on-ramp to off-ramp), or basic freeway segment (for lane add or drop more than 2,500 feet from adjacent ramp).
2. Density is reported in vehicles per lane per mile.
3. The distance between the W El Camino Ave EB on-ramp and I-5 off-ramp is about 3,000 feet, so no basic freeway segment exists. Instead, the worst ramp junction (merge or diverge) LOS is shown.
Source: Fehr & Peers, 2008a

The AM peak period model shows congested LOS F conditions on I-5 from Del Paso Road to the Garden Highway on-ramp. The bottleneck is at the Garden Highway interchange. The lane drop to the off-ramp and, to a lesser extent, the upgrade to the American River Bridge reduces the mainline capacity.

Westbound I-80 has LOS E/F conditions between Norwood Avenue and Northgate Boulevard, which indicates that the freeway is operating at capacity. This is the bottleneck location that controls the amount of traffic entering the study area.

The PM peak period model has congested conditions on I-80 from the I-5 northbound on-ramp through the Norwood Avenue on-ramp. The bottlenecks are located at Northgate Boulevard and Norwood Avenue. Northbound I-5 has only minor congestion at the I-80 off-ramp (queue back-up from eastbound I-80) and at Richards Boulevard, which is the bottleneck location that controls the amount of traffic entering the study area.

2.10.2 Environmental Consequences

Future Year Model Development

Future year traffic volume forecasts are based on the SACOG land use and roadway network projections for year 2035 conditions. New land use and roadway network projects were incorporated into the updated sub-area model to forecast changes in future travel demands and travel patterns.

The traffic model showed that the build alternatives produced less delay, greater speeds and improved travel times when compared with the No Build Alternative, however; performance margins between all alternatives were small. The build alternatives out performed the No Build Alternative in years 2030 and 2040 by a nominal amount, but did not perform as well as expected in design year 2020. The small improvements were a result of the bottleneck conditions that exist outside of the project limits which limited traffic flow from entering the system, therefore affecting the traffic model results. Eventual highway improvements to the bottlenecks on each quadrant of the interchange would remove the bottlenecks and permit the build alternatives to reach their maximum potential.

Even without bottleneck improvements, the build alternatives out performed the No Build Alternative throughout most of the design life of the project. The primary bottleneck in the evening on eastbound I-80 is currently at Northgate Boulevard. The improved performance was a result of adding HOV direct connectors and replacing the existing loop connector in the southeast quadrant with a multilane flyover connector. Elimination of the existing connector would permit more efficient weave/merge movements and improve safety on eastbound I-80 under the I-5 overcrossing. The build alternative improvements are expected to reduce sideswipe, hit object, and overturn accidents for interchange loop ramps.

The 2040 conditions model shows a new bottleneck on northbound I-5 at SR 99, where the freeway splits and the proposed I-5 HOV lane ends. As a result of this bottleneck, traffic would queue back through downtown Sacramento on NB I-5 and past the Sacramento River Bridge on EB I-80.

Table 14 shows the peak hour mainline and ramp volumes along with the capacity of the roadway for the years 2005, 2020, 2030 and 2040. The bold numbers show where the volumes exceed capacity. The volumes shown are not the entire demand; they are only the vehicles actually able to use the freeway at peak time. Currently, there are more travelers that want to use the freeway than there is capacity on SB I-5 between Arena Boulevard and the interchange of I-5 and I-80.

Table 14 Peak Hour Mainline and Ramp Volumes and Capacity

Location	AM				PM				Capacity	
	2005	**2020**	**2030**	**2040**	**2005**	**2020**	**2030**	**2040**	**Now**	**Future**
EB 80 Mainline *W El Camino to 5/80*	1931	3015	3866	4640	3015	4320	5153	5993	6000	11500 (w/HOV)
EB 80 to SB 5	86	98	148	157	132	179	214	249	1500	1500
EB 80 to NB 5	531	776	941	1117	1040	**1381**	**1586**	**1832**	1300	3000 (w/Mix Flow)
WB 80 Mainline *Truxel to 5/80*	5192	5137	5748	7245	5392	5768	8113	9116	10000	11500 (w/HOV)
WB 80 to SB 5	2354	2569	2890	**3042**	2783	**3226**	**3797**	**4113**	3000	4500 (w/HOV)
WB 80 to NB 5	708	850	951	1053	877	1094	1252	1408	1500	1500
NB 5 Mainline *W El Camino to 5/80*	5019	6573	**8251**	**9368**	8221	**9810**	11517	**12498**	8000	11500 (w/HOV)
NB 5 to EB 80	1953	2303	**2859**	**3109**	2698	2953	**3505**	**3688**	3000	4500 (w/HOV)
NB 5 to WB 80	87	107	122	137	98	156	197	239	1300	1300
SB 5 Mainline *Arena to 5/80*	**7065**	**8589**	**10077**	**11928**	4108	5792	**7487**	**8717**	6000	13500 (w/HOV)
SB 5 to EB 80	844	940	1009	1078	749	937	1077	1211	1400	1400
SB 5 to WB 80	955	1214	1389	1574	509	782	984	1178	1500	3000

Table 15 Peak Hour travel time for years 2020, 2030 and 2040

Route	Type	No Build	Alt 1A	Alt 1B	Alt 1C	Route	Type	No Build	Alt 1A	Alt 1B	Alt 1C
2020 AM Peak-Hour Travel Time						**2020 PM Peak-Hour Travel Time**					
Southbound I-5:	All	13.5	8.8	14.9	14.5	Northbound I-5:	All	6.1	7.2	7.2	7.5
SR 99 to Richards Boulevard	HOV	12.9	5.4	14.1	13.8	Richards Boulevard to SR 99	HOV	6.1	7.2	7.2	7.5
Westbound I-80:	All	4.6	4.6	4.6	4.6	Eastbound I-80:	All	4.9	4.7	4.7	4.7
Norwood Ave to W El Camino Ave	HOV	4.6	4.6	4.6	4.6	W El Camino Ave to Norwood Ave	HOV	4.8	4.7	4.7	4.7
Westbound I-80 to Southbound I-5	All	8.7	6.3	5.7	5.7	Northbound I-5 to Eastbound I-80:	All	6.8	7	7	7
Norwood Ave to Richards Boulevard	HOV	8.6	5.7	5.4	5.4	Richards Boulevard to Norwood Ave	HOV	6.2	7	7	7
2030 AM Peak-Hour Travel Time						**2030 PM Peak-Hour Travel Time**					
Southbound I-5:	All	12.8	12.9	12.9	12.7	Northbound I-5:	All	16.6	14.8	14.3	14.4
SR 99 to Richards Boulevard	HOV	5.8	5.4	5.4	5.6	Richards Boulevard to SR 99	HOV	8.8	8.6	8.5	8.5
Westbound I-80:	All	13.9	4.6	4.6	4.7	Eastbound I-80:	All	7.6	6.7	6.1	5.8
Norwood Ave to W El Camino Ave	HOV	6.7	4.6	4.6	4.6	W El Camino Ave to Norwood Ave	HOV	5	5.1	4.8	4.9
Westbound I-80 to Southbound I-5:	All	23.7	10.4	10.8	11	Northbound I-5 to Eastbound I-80:	All	9.8	7.5	7.2	7.6
Norwood Ave to Richards Boulevard	HOV	18.4	5.7	5.7	5.8	Richards Boulevard to Norwood Ave	HOV	7.4	6.5	6.4	6.5
2040 AM Peak-Hour Travel Time						**2040 PM Peak-Hour Travel Time**					
Southbound I-5:	All	13.1	13.6	13.2	13.1	Northbound I-5:	All	15.4	16.6	17.5	16.9
SR 99 to Richards Boulevard	HOV	5.5	5.3	5.3	5.4	Richards Boulevard to SR 99	HOV	8	8.7	8.8	8.8
Westbound I-80:	All	20.3	9.1	9.1	9.1	Eastbound I-80:	All	10.5	8.5	8.4	8
Norwood Ave to W El Camino Ave	HOV	8.1	5.1	5.1	5.1	W El Camino Ave to Norwood Ave	HOV	5.6	5.4	5.5	5
Westbound I-80 to Southbound I-5:	All	30.5	17.5	17.3	16.7	Northbound I-5 to Eastbound I-80:	All	9.4	9.9	9.9	10
Norwood Ave to Richards Boulevard	HOV	21.3	6.2	6.2	6.2	Richards Boulevard to Norwood Ave	HOV	7.1	6.9	6.9	6.9

2020 AM Peak Period

Table 15 shows the average peak-hour travel time and speed for the project alternatives. Under the No Build Alternative, the southbound I-5 commute time from SR 99 to Richards Boulevard would be 13.5 minutes in

2020. With the additional lane from Arena Boulevard to Garden Highway, Alternative 1A would have an improved travel time of about 9 minutes; a savings of 4.5 minutes. Although an additional lane would be provided from I-80 to Garden Highway, the travel time under Alternatives 1B and 1C would be longer (14.5 to 15.0 minutes) compared to Alternative 1A since one less lane would be provided on I-5 at I-80.

The travel times for Alternatives 1B and 1C are shown to be longer than the No Build Alternative because the higher Build Alternative forecasts are used. With increased capacity on southbound I-5 at I-80 more traffic can reach I-5 south of I-80, causing more congestion, which leads to longer travel times from westbound I-80 to southbound I-5. Alternatives 1A, 1B, and 1C would have shorter average travel times for all vehicles for the westbound to southbound movement by about 4 minutes. Alternatives 1B and 1C would have the shortest travel times due to capacity constraints on southbound I-5 at I-80, which would improve traffic flow on I-5 south of I-80.

2020 PM Peak Period

The lower travel times for the No Build Alternative is likely related to the lower demand volumes, which results in less congestion than under the build alternatives, particularly on northbound I-5 between Richards Boulevard and Garden Highway. The HOV direct connector under Alternatives 1A, 1B, and 1C would reduce overall travel times by 1.3 minutes along the northbound to eastbound path.

2030 AM Peak Period

Under the No Build Alternative, the commute time from westbound I-80 at Norwood Avenue to southbound I-5 at Richards Boulevard would be about 24 minutes. For Alternatives 1A and 1B, the travel time would improve to about 11 minutes. For HOVs under Alternatives 1A, 1B, and 1C, the average travel time would improve to less than 6 minutes.

2030 PM Peak Period

Under the No Build Alternative, the commute time from northbound I-5 at Richards Boulevard to eastbound I-80 at Norwood Avenue would be 9.8 minutes. For the build alternatives, the travel time would be lower by 2 to 2.5 minutes compared to the No Build Alternative.

2040 AM Peak Period

Under the No Build Alternative, the travel time from westbound I-80 at Norwood Avenue to southbound I-5 at Richards Boulevard would be about 30 minutes. Alternatives 1A, 1B, and 1C would have travel times less than 18 minutes, but the travel time for HOVs would be much improved to less than 7 minutes with the median direct connectors.

2040 PM Peak Period

Under the No Build Alternative, the commute time from northbound I-5 at Richards Boulevard to eastbound I-80 at Norwood Avenue would be 9.4 minutes. For Alternatives 1A, 1B, and 1C, the travel time would be higher by about half a minute due to higher travel times for northbound I-5. For HOVs, the average travel time on this path would be similar for all alternatives although Alternatives 1A, 1B, and 1C would have the lowest travel times.

2.10.3 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, and/or mitigation measures are required.

2.11 Visual/Aesthetics

2.11.1 Regulatory Setting

NEPA establishes that the federal government use all practicable means to ensure all Americans safe, healthful, productive, and *aesthetically* (emphasis added) and culturally pleasing surroundings [42 U.S. Code 4331(b)(2)]. To further emphasize this point, the Federal Highway Administration in its implementation of the NEPA [23 U.S. Code 109(h)] directs that final decisions regarding projects are to be made in the best overall public interest taking into account adverse environmental impacts, including among others, the destruction or disruption of aesthetic values.

Likewise, CEQA establishes that it is the policy of the state to take all action necessary to provide the people of the state "with…enjoyment of aesthetic, natural, scenic and historic environmental qualities." [CA Public Resources Code Section 21001(b)]

2.11.2 Affected Environment

The assessment of visual impacts is based on several factors; existing visual qualities, viewer exposure and the level of concern the viewer has to change in the project area. Travelers include commuters, truck drivers, and others who drive to recreation areas, shopping centers and residential communities. These individuals view the project corridor as it is seen from the highway. Their trips may consist or one or more links between interchanges or the entire span of the corridor.

Neighbors include observers from adjacent land uses such as shopping centers, office buildings, fast food restaurants or residential areas. Their views vary greatly by location, elevation relative to the highway and density of existing vegetation.

Land uses adjacent to the highway right-of-way are varied and include urban residential, commercial, office complex, industrial and some remaining agricultural fields. There are also various on/off-ramps, interchanges, crossing support structures, and frontage roads adjacent to the highway which are a part of the visual environment. Throughout most of the project limits the traveled way is at grade with the surrounding neighborhoods. Developers installed several of the existing soundwalls located within the project limits. The right-of-way is landscaped with trees and shrubs and mowed seasonally.

Figure 10 Visual Simulation of Proposed Flyover

2.11.3 Environmental Consequences

I-5/I-80 Flyovers: EB 80 to NB 5 and NB 5 to EB 5

These proposed flyovers are typical of major interchanges throughout California. They would be similar in construction to the existing flyovers at I-80 and US 50, approximately 4 miles southwest of the project site. They will be approximately 65 feet tall at their highest points. They are at their closest proximity, to each other and to any adjacent neighborhoods, in the southeast quadrant of the existing cloverleaf interchange. There is an existing row of trees along the right-of-way between the existing neighborhood and the new flyovers. This line of trees, approximately 40 feet high, will not be disturbed. The greatest visual impact is the removal of a large number of trees in the two south quadrants for the construction of the flyovers. The construction of the flyovers will impact approximately four acres of mature vegetation. However, all disturbed areas will be replanted with trees, mulch and mowable grasses, and irrigation will also be installed. The long-term visual integrity of the landscape will be maintained.

San Juan Road Bridge

The bridge is being reconstructed to allow adequate clearance for the connection of the eastbound I-80 HOV lane. The new bridge location is approximately eight feet higher than the existing structure. The edges of the bridge will have a two to three foot concrete sidewall with a 6.5 foot chain link fence above. The chain link should have a black vinyl coating to minimize visual effect. The increased height will not be recognizable to the traveling public.

Retaining Walls

The retaining walls will be constructed in conjunction with the flyover abutments, reconstruction of the San Juan Bridge and one independent wall below the traveled way. The retaining walls will have aesthetic treatments. A plain concrete structure can become visually acceptable by adding texture, color, or enhancing the form. The selected aesthetic treatments will be compatible both with their surroundings and with the corridor.

Median Lanes and Barriers

Approximately 19 acres of existing mowed median will become the new asphalt HOV lanes. Metal beam guard railing (30 inches high) will be partially replaced on I-5, between PM 25.2 and 27.8. The mowed median will be partially covered over with asphalt for new traveled way. There will still be vegetation in the median. Heat and glare will increase with the additional concrete and asphalt. The concrete safety barriers would have an aesthetic treatment to compensate for the additional height and visual impact. Integral color or staining could be added to reduce glare and visual boredom.

Hard Surface

The project construction will remove 19 acres of vegetated, permeable surface and replace it with asphalt concrete.

2.11.4 Avoidance and Minimization Measures

All disturbed areas will be replanted with trees, shrubs, grasses, and new irrigation will be installed.

The concrete retaining walls will have an aesthetic treatment to compensate for the additional height and visual impact. Integral brown color will be added to reduce glare and visual boredom. The chain link fence will have a dark coating to make it inconspicuous.

With the above project features, there would be no negative impacts to the visual environment.

2.11.5 Mitigation Measures

Nineteen acres of new trees, shrubs and irrigation systems will be installed between the property line and the new auxiliary lanes as compensation for the loss of vegetation and highway planting.

2.12 Cultural Resources

2.12.1 Regulatory Setting

"Cultural resources" as used in this document refers to historic and archaeological resources, regardless of significance. Laws and regulations dealing with historic and archaeological resources include the following:

The National Historic Preservation Act of 1966, as amended, (NHPA) sets forth national policy and procedures regarding historic properties, defined as districts, sites, buildings, structures, and objects included

in or eligible for the National Register of Historic Places. Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings on such properties and to allow the Advisory Council on Historic Preservation the opportunity to comment on those undertakings, following regulations issued by the Advisory Council on Historic Preservation (36 CFR 800). On January 1, 2004, a Section 106 Programmatic Agreement (PA) between the Advisory Council, the FHWA, the State Historic Preservation Officer (SHPO), and Caltrans went into effect for Caltrans projects, both state and local, with FHWA involvement. The PA implements the Advisory Council's regulations, 36 CFR 800, streamlining the Section 106 process and delegating certain responsibilities to Caltrans. The FHWA's responsibilities under the PA have been assigned to Caltrans as part of the Surface Transportation Project Delivery Pilot Program (23 CFR 773) (July 1, 2007).

Historical resources are considered under CEQA, as well as California Public Resources Code (PRC) Section 5024.1, which established the California Register of Historical Resources. PRC Section 5024 requires state agencies to identify and protect state-owned resources that meet listing criteria for the National Register of Historic Places. It further specifically requires Caltrans to inventory state-owned structures in its rights-of-way.

Affected Environment

Caltrans prepared a Historic Property Survey Report (HPSR) in March 2008 in accordance with the Section 106 PA. The HPSR is bound separately and available at the Caltrans District Office, 2800 Gateway Oaks Dr. Sacramento, CA.

The Area of Potential Effects (APE) for the project includes ground disturbance from existing edge of pavement varying throughout the project limits, from approximately 10 to 60 feet and the locations for the proposed sound walls and minor ground disturbing activities on adjacent property through temporary construction easements.

The vertical construction extent of the APE includes maximum proposed vertical cuts that will be approximately 14 feet below existing grade. The depth of the foundations for structures will be 6 to 10 feet below ground surface. The depth of the piles will be about 60 to 100 feet. The piles will be driven into the ground.

The APE was established to include all construction activities within Caltrans existing right-of-way and proposed construction easements for work proposed outside the right-of-way as well as the staging and storage areas. No pre-construction, construction, or post construction activities will occur outside the area that has been surveyed for archaeological resources. This includes staging, storage, and parking of equipment.

Various sources of information were reviewed for the cultural resource analysis, including:

- National Register of Historic Places.
- California Register of Historical Resources.
- California Inventory of Historic Resources.
- California Historical Landmarks.

- California Points of Historical Interest.
- State Historic Resources Commission.
- Caltrans Historic Highway Bridge Inventory.
- Archaeological Site Records (North Central Information Center, California State University, Sacramento).

Other sources consulted:

- Sacramento Preservation Roundtable, California State Library, Caltrans cultural resources library.

Public participation and Native American consultation are an essential element of the Section 106 compliance process. The following agencies, tribes, groups, and individuals were contacted for this project:

Agencies:

- California Office of Historic Preservation.
- Native American Heritage Commission.
- Sacramento Historical Society.

Tribes:

- Shingle Springs Band of Miwok Indians.
- United Auburn Indian Community of the Auburn Rancheria.

Individuals:

- Rose Enos.
- Jeff Murray, Cultural Resources Manager, Shingle Springs Band of Miwok Indians.
- Nicholas Fonseca, Chairperson, Shingle Springs Band of Miwok Indians.
- Jessica Tavares, Chairperson, United Auburn Indian Community of the Auburn Rancheria.

The record search resulted in the identification of two prehistoric sites and three historic-era cultural resources previously recorded within 0.25-miles of the project area. One previously recorded historic district (Reclamation District 1000, previously determined eligible for the National Register of Historic Places) was identified within the project area during archival research along with three contributing features, Natomas East Main Canal and East Levee, West Drainage Canal, and the Main Drainage Canal. These resources were located and reexamined during the course of the study. The three contributing features to the District were found to be outside the vertical APE. The elements of the District found within the project area were not considered to be contributing to the eligibility for the National Register of Historic Places (HRHP), therefore, the project would not impact the previously recorded historic properties.

The bridges located within the APE (bridge numbers 24-0206F, 0207L, -0207R, -0208L, -0208R, -0209F, -0209L, -0209R, -0210, -0238, -0249. -0319, -0332, -0350F, -0362) are Category 5 structures, not eligible for

the National Register of Historic Places, per the 2006 Caltrans Highway Bridge Inventory and require no further management.

The San Juan Road (P-34-884-H) is a presently used conventional two to four-lane road and has had substantial revisions since it was originally constructed. Four additional resources were located outside of the APE. The proposed project does not have the potential to affect these resources.

2.12.2 Environmental Consequences

No historic or eligible pre-historic properties will be affected by the project, thus, no environmental consequences will occur to any historic or pre-historic property as a result of this project.

2.12.3 Avoidance and Minimization Measures

If cultural materials are discovered during construction, all earth-moving activity within and around the immediate discovery area would be diverted until a qualified archaeologist could assess the nature and significance of the find.

If human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall cease in any area or nearby area suspected to overlie remains, and the County Coroner contacted. Pursuant to Public Resources Code Section 5097.98, if the remains are thought to be Native American, the coroner will notify the Native American Heritage Commission (NACH), who will then notify the Most Likely Descendent (MLD). At this time, the person who discovered the remains will contact the Caltrans District 3 Archaeologist so that they may work with the Most Likely Descendent on the respectful treatment and disposition of the remains. Further provisions of Public Resources Code 5097.98 are to be followed as applicable.

2.12.4 Mitigation Measures

No mitigation measures are required.

2.13 Physical Environment

2.14 Hydrology and Floodplain

2.14.1 Regulatory Setting

Executive Order 11988 (Floodplain Management) directs all federal agencies to refrain from conducting, supporting, or allowing actions in floodplains unless it is the only practicable alternative. FHWA requirements for compliance are outlined in 23 CFR 650 Subpart A.

To comply, the following must be analyzed:

- The practicability of alternatives to any longitudinal encroachments.
- Risks of the action.
- Impacts on natural and beneficial floodplain values.
- Support of incompatible floodplain development.
- Measures to minimize floodplain impacts and to preserve/restore any beneficial floodplain values affected by the project.

The base floodplain is defined as "the area subject to flooding by the flood or tide having a one percent chance of being exceeded in any given year." An encroachment is defined as "an action within the limits of the base floodplain."

2.14.2 Affected Environment

A Floodplain Hydraulics Study and a Floodplain Evaluation Report Summary were prepared for the proposed project in November 2006 and is available for review at 2800 Gateway Oaks Dr, Sacramento, CA 95833 during normal business hours.

The site is located in the Sacramento Valley. The Sacramento River Valley drains to the south. Immediately adjacent is the American River Valley, which drains to the west. The Natomas East Drainage Canal (DC) and the Natomas West DC both go through the area and meet at the Natomas Main DC. The Natomas Main DC then drains into the Sacramento River. The existing highway elevation in the project is approximately 10 feet.

An area north of 1-80 and between the East and West Natomas DC is designated as Zone A, a 100-year floodplain with no base flood elevations determined. The East Natomas DC passes under 1-5 and then combines with the West DC to form the Natomas Main DC passing under 1-80 and ending at the Sacramento River pumping station.

South of Garden Highway, the floodplains are designated by FEMA as Zone-AE, a 100-year floodplain with base flood elevations determined. The limits of the floodplain are confined within the banks of the channel, flooding the American River Parkway and Discovery Park south of Garden Highway Levee.

It was found that during the 100-yr flood, water surface elevations did not exceed the banks of the Natomas Main DC. Large volumes of storage are present in both the East and West DCs. This floodway is encroached transversely by I-5 between PM 26.81 to PM 27.24 and longitudinally along I-80 in Sacramento County between PM 2.1 to PM 3.2.

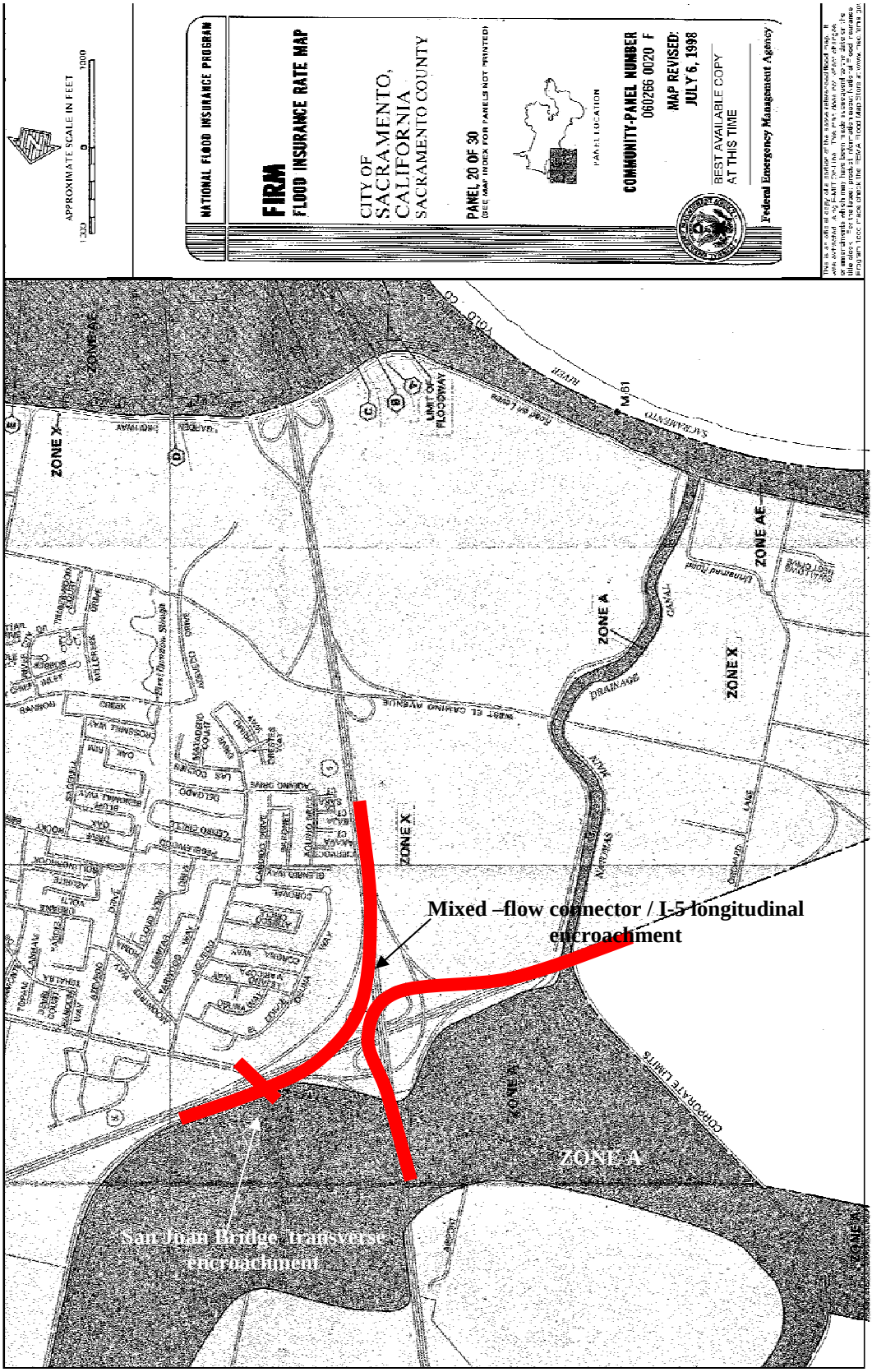
2.14.3 Environmental Consequences

As defined by FHWA, a floodplain encroachment is an action within the limits of the base floodplain. The floodway within the project area is encroached transversely by I-5 around the westbound I-80 to northbound I-5 connector and then longitudinally about one hundred feet. (See Figure 11) The proposed addition of a mixed flow connection between EB 1-80 to NB 1-5 encroaches upon the floodplain created by the East Natomas DC. The mixed-flow connector is a raised structure passing over 1-80 and San Juan Road and is

supported by an embankment from north of San Juan Rd to the end of the onramp. The west end of the San Juan Bridge replacement will encroach into the same floodplain. This construction will not reduce floodplain storage and will not impede flow, thus will not be a significant [1]impact on the FEMA regulatory floodplain.

[1] The term "significant" as used here is not used in the CEQA sense of the word.

Figure 11 FEMA Floodplain Map



2.14.4 Avoidance, Minimization, and/or Mitigation Measures

The mixed-flow connector and the San Juan Road Bridge will be designed to minimize their impacts on the floodplain. The project will not have a significant encroachment on the floodplain within the Study Area; thus, no mitigation measures are necessary.

2.15 Water Quality and Storm Water Runoff

2.15.1 Regulatory Setting

Section 401 of the Clean Water Act requires water quality certification from the State Water Resource Control Board (SWRCB) or a Regional Water Quality Control Board (RWQCB) when the project requires a Federal permit. Typically this means a Clean Water Act Section 404 permit to discharge dredge or fill into a water of the United States, or a permit from the Coast Guard to construct a bridge or causeway over a navigable water of the United States under the Rivers and Harbors Act.

Along with Clean Water Act Section 401, Section 402 establishes the National Pollutant Discharge Elimination System (NPDES) for the discharge of any pollutant into waters of the United States. The federal Environmental Protection Agency has delegated administration of the NPDES program to the SWRCB and the nine RWQCBs. To ensure compliance with Section 402, the SWRCB has developed and issued Caltrans an NPDES Statewide Storm Water Permit to regulate storm water and non-storm water discharges from Caltrans right-of-way, properties and facilities. This same permit also allows storm water and non-storm water discharges into waters of the State pursuant to the Porter-Cologne Water Quality Act.

Storm water discharges from Caltrans' construction activities disturbing one acre or more of soil are permitted under Caltrans' Statewide Storm Water NPDES permit. These discharges must also comply with the substantive provisions of the SWRCB's Statewide General Construction Permit. Non-Caltrans construction projects (encroachments) are permitted and regulated by the SWRCBs Statewide General Construction Permit. All construction projects exceeding one acre or more of disturbed soil require a Storm Water Pollution Prevention Plan (SWPPP) to be prepared and implemented during construction. The SWPPP, which identifies construction activities that may cause discharges of pollutants or waste into waters of the United States or waters of the State, as well as measures to control these pollutants, is prepared by the construction contractor and is subject to Caltrans review and approval.

Finally, the SWRCB and the RWQCBs have jurisdiction to enforce the Porter-Cologne Act to protect groundwater quality. Groundwater is not regulated by Federal law, but is regulated under the state's Porter-Cologne Act. Some projects may involve placement or replacement of on-site treatment systems (OWTS) such as leach fields or septic systems or propose implementation of infiltration or detention treatment systems which may pose a threat to groundwater quality.

2.15.2 Affected Environment

The proposed project is located within the jurisdictional boundaries of the Central Valley RWQCB.

Climate, Topography, and Soils

The climate in the project vicinity is characterized as Mediterranean with average temperatures ranging from lows in the 30's (Fahrenheit) in January to highs in the 90's in July. The average annual precipitation for the area is from 17 to 19 inches. The rainy season is defined as October 15th to April 15th.

The topography within the project area is generally flat to rolling hills. Elevation is four to 24 feet above mean sea level. South of the project, land use is primarily urban and to the north is farmland transitioning to urban land uses.

Soil in this area is most commonly Cosumnes silt loam. Levees, open and closed drains, and pumps have lowered the water table and altered the drainage of the Cosumnes soil. Permeability is slow in the Cosumnes soil and available water capacity is high. Plants roots are limited by the seasonal high water table in winter and early spring.

Surface Water

The project falls in Sacramento River Hydrologic Region (HR), Valley-American Hydrologic Unit (HU), Coon-American Hydrologic Area (HA) and Pleasant Grove Hydrologic Sub Area (HSA) 519.22. The average annual rainfall in this HSA is about 18.3 inches.

A Preliminary Drainage Report states that all surface water runoff from within the State's highway right-of-way drains to earthen drainage ditches along the shoulders of the highway where it eventually flows into either the East or West Natomas DC. The East Natomas DC travels under I-5 just north of the I-80 interchange, combining with the West Natomas DC to form the East Natomas Main DC. This canal passes under I-80 continuing to the Sacramento pumping plant. Excess water from these canals is pumped to the Sacramento River.

Quality of Existing Surface Waters

The portion of the Sacramento River within the Study Area, from the Colusa Basin Drain to the "I" Street Bridge, is listed in Section 303(d) of the Water Quality Control Plan[2] for the Central Valley Regional Water Board (Basin Plan) as impaired for water quality for the following constituents: Diazinon, Mercury, and Unknown Toxicity. No Total Maximum Daily Loads (TMDLs) have been established for these constituents to date. Potential sources for Diazinon and Mercury are Agriculture and Resource Extraction, respectively. The primary pollutant of concern for this project is sediment from the construction of cut and fill slopes.

Under the Porter-Cologne Water Quality Control Act, beneficial uses and water quality objectives are considered separately. Beneficial uses and water quality objectives to protect beneficial uses are to be

[2] Section 303(d) of the 1972 Federal Clean Water Act requires states to identify waterbodies that do not meet water quality objectives and are not supporting their beneficial uses. Each state must submit an updated list, called the 303(d) list, to the U.S. EPA every two years. In addition to identifying the waterbodies that are not supporting beneficial uses, the list also identifies the pollutant or stressor causing impairment, and establishes a priority for developing a control plan to address the impairment. The list also identifies waterbodies where 1) a TMDL has been approved by U.S. EPA and an implementation is available, but water quality standards are not yet met, and 2) waterbodies where the water quality problem is being addressed by an action other than a TMDL and water quality standards are not yet met. You may access information on California's Final 2006 Clean Water Act Section 303(d) List and related documents at http://www.waterboards.ca.gov/water_issues/programs/tmdl/303d_lists2006_epa.shtml.

established for all waters of the state, both surface (including wetlands) and groundwater. The Beneficial uses for this portion of the Sacramento River are:

AGR **Agricultural Supply**. Beneficial uses of waters used for farming, horticulture, or ranching, including, but not limited to, irrigation, stock watering, and support of vegetation for range grazing.

COLD **Cold Freshwater Habitat**. Beneficial uses of waters that support cold water ecosystems including, but not limited to, preservation and enhancement of aquatic habitats, vegetation, fish, and wildlife, including invertebrates.

MIGR **Migration of Aquatic Organisms**. Beneficial uses of waters that support habitats necessary for migration, acclimatization between fresh and salt water, or temporary activities by aquatic organisms, such as anadromous fish.

MUN **Municipal and Domestic Supply**. Beneficial uses of waters used for community, military, or individual water supply systems including, but not limited to, drinking water supply.

NAV **Navigation**. Beneficial uses of waters used for shipping, travel, or other transportation by private, military, or commercial vessels.

REC-1 **Water Contact Recreation**. Beneficial uses of waters used for recreational activities involving body contact with water where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, white water activities, fishing, and use of natural hot springs.

REC-2 **Non-contact Water Recreation**. Beneficial uses of waters used for recreational activities involving proximity to water, but not normally involving body contact with water where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking , sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, and aesthetic enjoyment in conjunction with the above activities.

SPWN **Spawning , Reproduction , and Development**. Beneficial uses of waters that support high quality aquatic habitat necessary for reproduction and early development of fish and wildlife.

WARM **Warm Freshwater Habitat**. Beneficial uses of waters that support warm water ecosystems including, but not limited to, preservation and enhancement of aquatic habitats, vegetation, fish, and wildlife, including invertebrates.

WILD **Wildlife Habitat**. Beneficial uses of waters that support wildlife habitats including, but not limited to, the preservation and enhancement of vegetation and prey species used by wildlife, such as waterfowl.

2.15.3 Environmental Consequences

Erosion and increased turbidity and sedimentation may occur during and immediately following construction phase of the project due to vegetation removal. However, this can be lessened through appropriate Best Management Practices (BMPs).

There will be an increase in the impervious surface area due to widening of the shoulders and additional roadway being constructed. The contribution of the runoff volume from this project to the overall runoff volume in the area is relatively minor.

It is not expected that the increased volume of traffic as a result of this project will substantially impact the level of typical roadside pollution into local drainages. Permanent stormwater treatment BMPs such as biofiltration strips/swales and detention devices are being considered for this project, which will help to prevent pollution from entering nearby water-bodies.

The project will be adding new impervious surface, which will increase the velocity and volume of flow from the project area. Caltrans will improve stormwater quality by implementing drainage improvements and utilizing treatment BMPs. During construction of the project, surface water bodies within the project area may have temporary impacts, however, appropriate construction site BMPs will be used to minimize or avoid impacts. The project site will be re-vegetated to the maximum extent practicable in disturbed areas once construction is completed.

The proposed project will allow for greater traffic volumes in the project area, however the impact of additional aerially deposited particles on the receiving water quality is not expected to be substantial. With the implementation of permanent treatment BMPs using technologically advanced and alternative treatment devices, the project as planned will not result in the creation of a substantial source of additional polluted runoff but rather is expected to improve storm water quality.

2.15.4 Avoidance and Minimization Measures

The SWRCB has issued Caltrans a Statewide NPDES Permit (Board Order 99-06-DWQ). This permit regulates the storm water and non-storm water discharges associated with project construction activities and discharges associated with normal maintenance and operations of Caltrans facilities. The permit also serves as a State of California Waste Discharge Requirement. Compliance with this permit requires that the appropriate BMPs are employed that achieve the performance standards of Best Available Technology Economically Achievable/Best Conventional Pollutant Control Technology to reduce or eliminate storm water pollution. To limit any sediments and pollutants from impacting drainages as well as diminish erosion in the project area, BMPs will be implemented during construction.

Construction Activity Permitting: Caltrans' NPDES permit is linked to the Construction General Permit; Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction Activities (Order No. 99-08 DWQ) which regulates discharges from construction sites. By law, all storm water discharges associated with construction activity where clearing, grading, and excavation results in soil disturbance of at least 1 acre of total land area, such as this project, must comply with the provisions of this NPDES Permit and develop and implement an effective Storm Water Pollution Prevention Plan (SWPPP). Caltrans' requires the submission of a Notification of Construction (NOC) to the RWQCB at least 30 days prior to construction and prepare the SWPPP prior to the beginning of construction. Implementation of the SWPPP starts with the commencement of construction and continues through the completion of the project.

Upon completion of the project, Caltrans must submit a Notice of Completion of Construction (NOCC) to the RWQCB to indicate that construction is complete.

Construction Dewatering Permit: Construction dewatering activity is defined as pumped or drained discharges of groundwater and/or storm water from excavations or other points of accumulation associated with a construction activity. Dewatering discharges cannot be considered as an automatic conditionally exempt discharge through the permit, but rather it may be conditionally exempt once the proposed discharge is reported, reviewed, and approved on case-by-case basis by the Central Valley RWQCB. Otherwise, Caltrans must implement the appropriate BMPs to meet the conditions of the Central Valley RWQCB to ensure dewatering is not a source of pollutants in the storm drain system or surface water once it is discharged. The project is not anticipating dewatering. However, any dewatering that may take place due to the number of irrigation ditches within the project limits will be coordinated with Central Valley RWQCB during the PS&E phase through the Caltrans district NPDES coordinator.

The proposed project is not expected to cause substantial downstream erosion or siltation. However, the practices outlined in the Storm Water Management Plan and Statewide Storm Water Practice Guidelines ensure that certain minimum design elements be incorporated into projects to maintain or improve water quality. The key elements are as follows:

- Prevent Downstream Erosion – design of drainage facilities to avoid causing or contributing to downstream erosion. Drainage outfalls, when appropriate, will discharge to suitable control measures.
- Stabilize Disturbed Soil Areas – design would incorporate stabilization of disturbed areas (when appropriate) with seeding, vegetative or other types of cover.
- Maximize Existing Vegetative Surfaces – design would limit footprints of cuts and fills to minimize removal of existing vegetation.

With the preceding measures in place through the design of the project , along with BMPs during construction, the project as planned would not create a substantial increase in downstream erosion or siltation.

2.15.5 Mitigation Measures

No mitigation measures are required.

2.16 Geology/Soils/Seismic/Topography

2.16.1 Regulatory Setting

For geologic and topographic features, the key federal law is the Historic Sites Act of 1935, which establishes a national registry of natural landmarks and protects "outstanding examples of major geological features." Topographic and geologic features are also protected under CEQA.

This section also discusses geology, soils, and seismic concerns as they relate to public safety and project design. Earthquakes are prime considerations in the design and retrofit of structures. Caltrans' Office of Earthquake Engineering is responsible for assessing the seismic hazard for Caltrans projects. The current policy is to use the anticipated Maximum Credible Earthquake (MCE), from young faults in and near California. The MCE is defined as the largest earthquake that can be expected to occur on a fault over a particular period of time.

2.16.2 Affected Environment

Geology

The project is in an area of Quaternary levee and channel deposits (Qa) (USGS 1987). Quaternary Basin deposits (Holocene) typically consist of soft to stiff silt and clay deposited 200 to 10,000 years ago by the streams and rivers that drain the surrounding mountain ranges.

The site is not in an area known to contain naturally occurring asbestos and presence of serpentine or ultra-mafic rock was not observed in the project limits (CARB 2000 and Caltrans 2001).

Site Seismicity

The Caltrans California Seismic Hazard Map indicates that the Dunnigan Hills Fault is located approximately 20.5 mi to the northwest (Caltrans 1996).

2.16.3 Environmental Consequences

Alternative 1A, 1B, 1C

The structures associated with the project will be constructed in such a way as to withstand a seismic event, thus, is not expected to expose people or structures to adverse effects resulting from earthquake hazards.

Alternative 2—No Build Alternative

The No Build Alternative would not modify I-5 or I-80; therefore, no geological impacts would occur.

2.16.4 Avoidance and Minimization Measures

In order to avoid or minimize geological risks and impacts, the design and construction of the project will adhere to state codes and criteria. The engineering design for the proposed project will be carried out in accordance with Caltrans Seismic Design Criteria.

Roadways and bridges will be designed and constructed to the seismic design requirements for ground shaking specified in the Uniform Building Code for Seismic Zone 3.

Additionally, the following geological hazard avoidance and minimization measures will be included in the design and construction of the proposed build alternative. A geologic and geotechnical investigation of the alignment of the build alternative and laboratory testing of the earth materials will be conducted during the final design phase.

- Site-specific exploratory borings and laboratory testing during final design of any bridge structures will be conducted to delineate any potentially liquefiable materials. Potentially liquefiable materials will either be removed or engineered to reduce their liquefaction potential, or the engineering design will incorporate deep foundations that extend beyond soils with the potential for liquefaction.
- Site-specific borings and testing will include identification of soils with high shrink-swell potential that could damage the roadway over time. Expansive soils will be over excavated and replaced with non-expansive fill or treated with appropriate soil amendments to reduce the potential for shrinking and swelling.
- Soil and slope stability measures will prevent or reduce erosion. Erosion of soils during construction will be minimized using temporary hydro-seeding to provide a vegetation cover with straw bales, plastic sheeting slope cover, and other temporary drainage measures to prevent excessive slope runoff, as needed.

2.16.5 Mitigation Measures

No mitigation measures are required.

2.17 Paleontology

2.17.1 Regulatory Setting

Paleontology is the study of life in past geologic time based on fossil plants and animals. A number of federal statutes specifically address paleontological resources, their treatment, and funding for mitigation as a part of federally authorized or funded projects. (e.g., Antiquities Act of 1906 [16 U.S. Code 431-433], Federal-Aid Highway Act of 1935 [20 U.S. Code 78]). Under California law, paleontological resources are protected by CEQA, the California Administrative Code of Regulations, Title 14, Division 3, Chapter 1, Section 4307 and 4309., and Public Resources Code Section 5097.5.

2.17.2 Affected Environment

The fossiliferous Riverbank Formation has been mapped within the limits of the proposed project and may be disturbed by project activities. Because the Riverbank formation and other potentially affected fossiliferous units of Pleistocene age are regionally extensive and there is a specific need for roadway improvements at the proposed project site, avoiding these paleontologically sensitive units is unlikely to be feasible. If a paleontological resource cannot be avoided, it is necessary to determine its significance or scientific importance before any mitigation measures are proposed. The paleontological evaluation report (PER) fulfills that requirement, and provides the basis for developing the required paleontological mitigation plan (PMP). The PER and PMP are available for review at the District 3 office, 2800 Gateway Oaks Dr., Sacramento, CA.

The project alignment extends along I-5 from the north of the Garden Highway Interchange to south of the Arena Boulevard Interchange, and along I-80, from southeast of the West El Camino Avenue Interchange to a point northwest of the Truxel Road Interchange. Only shallow grading would be required for roadway widening. However, retaining wall construction could require excavation to a depth of as much as 10 feet

below existing grade, and localized disturbance to depths of 60–100 feet below ground surface would be required to drive foundation piles for the new overpass bridges.

The majority of the project site is situated on alluvium of Holocene age. Short segments of the northern I-5 work alignment are situated on the older Holocene basin deposits and Pleistocene Riverbank Formation. Pleistocene and older sedimentary units, including the Riverbank Formation, and possibly also the Modesto Formation, likely occur in the subsurface where the project alignment is immediately underlain by materials of Holocene age.

Holocene Units

The Holocene alluvium consists of un-weathered gravel, sand, and silt. The basin deposits consist of fine-grained silt and clay.

Pleistocene Units

Modesto Formation

The Modesto Formation underlies the Holocene basin deposits across much of the Sacramento Valley. The Modesto Formation contains vertebrate fossils, including rodents and snakes, and is believed to record alluvial fan deposition.

Riverbank Formation

Local stratigraphy varies, but where it is present, the Pleistocene Riverbank Formation (130,000 to 450,000 years) underlies the basin deposits or Modesto Formation. Outcrops of the Riverbank Formation are mapped along I-5 in the northern portion of the proposed project alignment, so this formation is likely concealed at an unknown depth below the Holocene deposits and/or Pleistocene Modesto Formation throughout the remainder of the project footprint. According to Hilton et al. (2000), the Riverbank Formation is at an approximately 12–15 feet depth at the Arco Arena area, approximately 1,040 feet to the east and northeast from the proposed project limit. Caltrans boring logs suggest that the top of the Riverbank Formation is undulatory, or wavy, along the project route, perhaps because it is an erosional contact.

The Riverbank Formation contains an abundant and important Rancholabrean fauna recovered from excavations at the Arco Arena in 1989 and from other localities in the formation. The Arco fossils came from the discontinued Soccer/Baseball stadium construction adjacent to the Arco Arena structure. Some of the taxa recovered include ground sloth, dire wolf, horse, rabbit, birds, wood rat, bison, camel, coyote, antelope, deer and mammoth.

Turlock Lake Formation

The Pleistocene Riverbank Formation is in turn underlain by the Turlock Lake Formation of Late Pliocene to Pleistocene age. The Turlock Lake Formation contains early Pleistocene fossils, including remains of ground sloth, coyote, dire wolf, extinct wolf, saber-toothed cat, mammoth, horse, camel, extinct antolicaprids, deer, jackrabbit, rodents such as pocket gopher and kangaroo rat, duck, and pond turtle. It is interpreted as fine-grained fluvial overbank deposits.

Pre-Pleistocene Units

At greater depth, the Pliocene Laguna Formation and Miocene−Late Pliocene Merhten Formation occur. Exact depths to these formations at the proposed project site are unknown without careful subsurface investigation, but given the thickness of the Turlock Lake Formation, they are less likely to be affected than the strata of Pleistocene age, and need no further discussion.

Site Reconnaissance

The soils exposed at the proposed project site are believed to be artificial fill and/or highly disturbed native materials. No fossils were found during the survey; however, it is considered very likely that fossils will be found during construction in the area adjacent to the Arco site due to the known abundance of fossils in the area.

Based on the literature, fossil locality searches and input from local area experts, the Riverbank Formation near the project site and throughout the Sacramento area is known to contain abundant, scientifically important fossils. Because of their known vertebrate content, the Modesto, Riverbank, and Turlock Lake Formations are considered highly sensitive for paleontological resources. The Riverbank Formation is particularly sensitive because of the diverse and scientifically important fauna recovered from this unit at the nearby Arco Arena site.

Strata of Holocene age are not considered paleontologically sensitive except in unusual circumstances, and there is no known reason to consider Holocene deposits at the site sensitive.

2.17.3 Environmental Consequences

The proposed project would result in varying depths of ground disturbance. Disturbance for road widening would be limited to shallow grading, but retaining wall construction could require excavation to a depth of as much as 10 feet below existing grade, and pile driving for overpass foundations would cause localized disturbance to depths of 60–100 feet below ground surface.

Highly sensitive vertebrate-bearing deposits of Pleistocene age are exposed at the surface in portions of the northern I-5 work alignment (Riverbank Formation) and are presumed to be present in the shallow subsurface in the remainder of the project footprint (Riverbank Formation; possibly also Modesto Formation and older Turlock Lake Formation), based on regional stratigraphic relationships. The depth to the top of the Riverbank Formation varies from 0 where the unit is exposed at the surface, to an inferred maximum of about 20 feet below grade at the San Juan Road Overcrossing. Given the anticipated depths of ground disturbance required for project construction, there would be substantial potential for impacts on the Riverbank Formation. If the Modesto Formation were present in the subsurface above the Riverbank Formation, it would be encountered at shallower depths, and would also be subject to disturbance. In the limited areas where pile-driving is required, the older Turlock Lake Formation underlying the Riverbank Formation would likely also be impacted. All three of the fossiliferous units potentially subject to project-related impacts—the Modesto, Riverbank, and Turlock Lake Formations—are regionally extensive. Avoiding all impacts to these formations is not likely to be feasible.

2.17.4 Avoidance and Minimization Measures

A Paleontological Monitoring and Curation Plan would be implemented. This plan contains guidance in the following areas:

- The contract and task order requirements for monitoring and mitigation.
- The general field and laboratory methods proposed.
- Any relevant curation requirements.
- An overview of report content and format.
- Proposed report distribution.
- The staff qualifications needed to implement the PMP.

When the final grading plans are prepared, a qualified paleontologist responsible for conducting the mitigation will review the final depths of disturbance, assess the potential for disturbance of known and potentially fossiliferous strata, and adjust the mitigation plan if needed.

2.17.5 Mitigation Measures

No mitigation measures are required.

2.18 Hazardous Waste or Materials

2.18.1 Regulatory Setting

Hazardous materials and hazardous wastes are regulated by many State and Federal laws. These include not only specific statutes governing hazardous waste, but also a variety of laws regulating air and water quality, human health, and land use.

The primary Federal laws regulating hazardous wastes/materials are the Resource Conservation and Recovery Act of 1976 (RCRA) and the Comprehensive Environmental Response, Compensation and Liability Act of 1980.(CERCLA) The purpose of CERCLA, often referred to as Superfund, is to clean up contaminated sites so that public health and welfare are not compromised. The RCRA provides for "cradle to grave" regulation of hazardous wastes. Other Federal laws include:

- Community Environmental Response Facilitation Act of 1992 (CERFA).
- Clean Water Act.
- Clean Air Act.
- Safe Drinking Water Act.
- Occupational Safety & Health Act (OSHA).
- Atomic Energy Act.
- Toxic Substances Control Act (TSCA).
- Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA).

In addition to the acts listed above, Executive Order 12088, Federal Compliance with Pollution Control, mandates that necessary actions be taken to prevent and control environmental pollution when federal activities or federal facilities are involved.

Hazardous waste in California is regulated primarily under the authority of the Federal Resource Conservation and Recovery Act of 1976, and the California Health and Safety Code. Other California laws that affect hazardous waste are specific to handling, storage, transportation, disposal, treatment, reduction, cleanup and emergency planning.

Worker health and safety and public safety are key issues when dealing with hazardous materials that may affect human health and the environment. Proper disposal of hazardous material is vital if it is disturbed during project construction.

2.18.2 Affected Environment

The Caltrans Office of Environmental Engineering, Hazardous Waste completed an Initial Site Assessment (ISA) in November of 2006. The ISA consisted of a field review and a search of regulatory agency databases containing information on known hazardous materials sites. The database search identified no recorded active hazardous materials sites within the project area. Based on this investigation and considering the nature of work and distance to the listed known petroleum hydrocarbon contaminated sites, no petroleum hydrocarbon hazardous waste is expected to be encountered within the project limits.

Aerially Deposited Lead (ADL)

Lead-contaminated soil is found along highways due to the historical use of leaded gasoline, particularly along highways that may have had high vehicle emissions due to large traffic volumes, congestion, or stop and go driving conditions during the time period when leaded gasoline was in use. Most ADL due to vehicle emissions would have been deposited prior to 1986.

Lead-based paint

Bridges and other structures within the project limits may contain lead-based paint. Lead was a common ingredient of paints manufactured before 1978 and is still an ingredient in some industrial paints. Based on the As-Built Plans and a visual observation, the bridge structures within the project limits do not contain lead-based paint.

The existing yellow traffic stripe within the roadway may contain lead and other heavy metals such as chromium. The residue produced when the yellow traffic stripe is removed contains heavy metals in concentrations that may exceed established thresholds and may produce toxic fumes when heated.

Asbestos Containing Materials (ACMs)

Based on the As-Built Plans review via "Bridge Inspection Records Information System – BIRIS," asbestos containing materials (ACMs) are not present at the expansion joint fillers and abutment of I-5/80 separation Br. 24-0207L/R, San Juan Road Br. 24-0210 OC, or Natomas Main Canal Br. 24-0332. The As Built plans show the use of polyurethane seal.

Based on the As-Built Plans review via "Bridge Inspection Records Information System – BIRIS," asbestos containing materials (ACMs) may be present at the expansion joint fillers, abutment, and at the guardrail shims of North Connector Bridge 24-0208 L/R and San Juan Road Undercrossing Bridge 24-209.

Without the benefit of sampling and testing, ACMs are presumed to be present at the expansion joint fillers, abutment, and at the guardrail shims. Also, for structures built prior to 1980, ACMs should be presumed present at the structure joints.

2.18.3 Environmental Consequences

Build Alternatives

It is anticipated that ADL, lead-based paint, ACMs, and yellow traffic stripe containing lead and other heavy metals such as chromium may be encountered during construction of the project.

During construction, a number of materials will be used including gasoline, diesel fuel, oil, and lubricants for operation of construction equipment. These materials are typically used, handled, and stored by contractors on all roadway construction projects. No acutely hazardous materials would be used or stored on-site during construction. Construction of all the "build" alternatives could potentially result in small fuel spills from construction or vehicles.

Based on an ADL Investigation Report, completed in September 2002, low levels of ADL were detected in the soils along the Truxel Road overcrossing ramps on I-80 (6.58 mg/Kg Total Lead average and a 8.4 pH) concluding that the soil may be reused with no restrictions based on lead content and/or disposed of as a non-hazardous waste.

No Build Alternative

The No Build Alternative would not involve construction and would not have the potential to encounter or disturb hazardous waste or materials.

2.18.4 Avoidance and Minimization Measures

During project construction activities, removing ACMs must be accomplished by an appropriately certified contractor in a way that contains, collects, and disposes of the small quantity of ACM in accordance with state and federal law. Appropriate Special Provisions for this work should be included in the project's construction contract; the Contractor is responsible to do this notification in a timely manner.

Surplus excavated soil if any, along I-80 with the exception of Truxel Road ramps, will not be disposed of outside the project limits without being sampled and tested to determine the level of ADL contamination in order to ensure that the waste soil is appropriately disposed of as a hazardous, regulated or unregulated waste, or whether the soils are suitable for reuse or disposal with no restrictions.

Caltrans will ensure that a Health and Safety Plan is implemented and addresses the potential effects of the various chemical compounds that could be encountered within the project area. The Health and Safety Plan

will include evaluations of the suspected chemical hazards, including symptoms of exposure and emergency treatment, appropriate use of personal protection equipment, and air monitoring.

The Contractor shall prepare a project specific "Lead Compliance Plan" pursuant to Title 8 of the California Code of Regulations - Section 1532.1, to prevent or minimize worker exposure to lead.

Any removed yellow traffic stripe material will be tested prior to disposal at an appropriate waste facility. Appropriate Special Provisions for this work shall be included in the project's construction contract.

The routine use of hazardous materials, such as gasoline or diesel fuel for construction equipment, will be required by the project. Equipment to clean up fuel leaks and spills will be available at each project construction location. The Contractor will be required to safely store materials and immediately clean up spills if they occur.

2.19 Air Quality

This section discusses the potential impacts to air quality resulting from the proposed project. A copy of the Air Quality Report, prepared in April 2009, is available from Caltrans District 3 at 2800 Gateway Oaks Dr., Sacramento, CA, 95833.

2.19.1 Regulatory Setting

The Clean Air Act, as amended in 1990, is the federal law that governs air quality. Its counterpart in California is the California Clean Air Act of 1988. These laws set standards for the concentration of pollutants that can be in the air. At the federal level, these standards are called National Ambient Air Quality Standards (NAAQS). Standards have been established for six criteria pollutants that have been linked to potential health concerns: carbon monoxide (CO), nitrogen dioxide (NO2), ozone (O3), particulate matter (PM), lead (Pb), and sulfur dioxide (SO2).

Under the 1990 Clean Air Act Amendments, the U.S. Department of Transportation cannot fund, authorize, or approve federal actions to support programs or projects that are not first found to conform to the State Implementation Plan for achieving the goals of the Clean Air Act requirements. Conformity with the Clean Air Act takes place on two levels—first, at the regional level and second, at the project level. The proposed project must conform at both levels to be approved.

Regional level conformity is concerned with how well the region is meeting the standards set for carbon monoxide, nitrogen dioxide, ozone, and particulate matter. California is in attainment for the other criteria pollutants. At the regional level, Regional Transportation Plans are developed that include all of the transportation projects planned for a region over a period of years, usually at least 20. Based on the projects included in the Regional Transportation Plan (RTP), or in this case the Metropolitan Transportation Plan (MTP), an air quality model is run to determine whether or not the implementation of those projects would conform to emission budgets or other tests showing that attainment requirements of the Clean Air Act are met. If the conformity analysis is successful, the regional planning organization, which is Sacramento Area

Council of Governments (SACOG) for the six-county (El Dorado, Placer, Sacramento, Sutter, Yolo, and Yuba) Sacramento Region, and the appropriate federal agencies, such as the Federal Highway Administration, make the determination that the MTP is in conformity with the State Implementation Plan for achieving the goals of the Clean Air Act. Otherwise, the projects in the MTP must be modified until conformity is attained. If the design and scope of the proposed transportation project are the same as described in the MTP, then the proposed project is deemed to meet regional conformity requirements for purposes of the project-level analysis.

Conformity at the project-level also requires "hot spot" analysis if an area is "non-attainment" or "maintenance" for carbon monoxide (CO) and/or particulate matter. A region is a "non-attainment" area if one or more monitoring stations in the region fail to attain the relevant standard. Areas that were previously designated as non-attainment areas but have recently met the standard are called "maintenance" areas. "Hot spot" analysis is essentially the same, for technical purposes, as carbon monoxide or particulate matter analysis performed for National Environmental Policy Act. Conformity does include some specific standards for projects that require a hot spot analysis. In general, projects must not cause the carbon monoxide standard to be violated, and in "non-attainment" areas, the project must not cause any increase in the number and severity of violations. If a known carbon monoxide or particulate matter violation is located in the project vicinity, the project must include measures to reduce or eliminate the existing violation(s) as well.

2.19.2 Affected Environment

A copy of the Air Quality Report is available for review at the Caltrans District 3 Sacramento Office, 2800 Gateway Oaks Drive, Sacramento, CA 95833 during normal business hours.

The proposed project is located within the Sacramento Valley Air Basin (SVAB). The SVAB has a Mediterranean climate characterized by hot, dry summers and cool, rainy winters. During the winter, the North Pacific storm track intermittently dominates valley weather, and fair-weather alternates with periods of extensive clouds and precipitation. Also characteristic of winter weather in the valley are periods of dense and persistent low-level fog, which is most prevalent between storms. The frequency and persistence of heavy fog in the valley diminishes with the approach of spring. The average yearly temperature range for the Sacramento Valley is between 20 and 115° Fahrenheit (F), with summer high temperatures often exceeding 90°F and winter low temperatures occasionally dropping below freezing.

Prevailing wind in the Sacramento Valley is generally from the southwest due to marine breezes flowing through the Carquinez Strait. Associated with the influx of air through the Carquinez Strait is the Schultz Eddy. The Schultz Eddy is an eddy formed when mountains on the valley's western side divert incoming marine air. The eddy contributes to the formation of a low-level southerly jet between 500 and 1,000 feet above the surface that is capable of speeds in excess of 35 mph. This jet is important for air quality in the Sacramento Valley because of its ability to transport air pollutants over large distances.

The SVAB's climate and topography contribute to the formation and transport of photochemical pollutants throughout the region. The region experiences temperature inversions that limit atmospheric mixing and trap pollutants; high pollutant concentrations result near the ground surface. The highest concentrations of

photochemical pollutants occur from late spring to early fall when photochemical reactions are greatest because of intensifying sunlight and lowering altitude of daytime inversion layers. Surface inversions (those at altitudes of 0 to 500 feet above sea level) are most frequent during winter, and subsidence inversions (those at 1,000 to 2,000 feet above sea level) are most common in the summer.

Existing Air Quality Conditions

Direct emissions from automobiles contain primarily hydrocarbons, NO2, and CO. Indirect emissions include ozone and PM10. Lead emissions from automobiles have declined in recent years through the increased use of unleaded gasoline. Ozone is formed when nitrogen oxides (NOx) and reactive organic gases (ROG) react in the presence of sunlight. PM10 emissions from vehicular sources are largely due to aerosols formed in the atmosphere from NOx and ROG compounds and, to a lesser extent, directly from vehicle travel over materials previously deposited on the road or tire and brake wear. Due to their formation and/or dispersion patterns, hydrocarbons, NO2, and O3 can only be reasonably analyzed from a regional perspective. PM10 is a project-level pollutant as well as a regional pollutant. CO is a relatively stable and site-specific pollutant with major concentrations found immediately adjacent to roadways. It is analyzed to determine air quality impacts at the project specific microscale level.

Table 16 summarizes the National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS). The NAAQS are comprised of both primary and secondary standards. Primary standards are designed to protect public health, while secondary standards protect public welfare from known or anticipated adverse effects of air pollutants (e.g., reduced visibility or property damage). For the purposes of this project, the importance of an impact will be based upon comparison with the more stringent primary standards.

Table 16 State and Federal Criteria Air Pollutant Standards, Effects, Sources, and Status

Pollutant	Averaging Time	State Standard (CAAQS)	Federal Standard (NAAQS)	Health and Atmospheric Effects	Typical Sources
Ozone (O_3) [2] **State Status:** Non-Attainment **Federal Status:** Non-Attainment	1 hour 8 hours	0.09 ppm 0.070 ppm	--- [3] 0.075 ppm	High concentrations irritate lungs. Long-term exposure may cause lung tissue damage. Long-term exposure damages plant materials and reduces crop productivity. Precursor organic compounds include a number of known toxic air contaminants.	Low-altitude ozone is almost entirely formed from reactive organic gases (ROG) and nitrogen oxides (NO_x) in the presence of sunlight and heat. Major sources include motor vehicles and other mobile sources, solvent evaporation, and industrial and other combustion processes. Biologically-produced ROG may also contribute.
Carbon Monoxide (CO) **State Status:** Attainment **Federal Status:** Attainment	1 hour 8 hours 8 hours (Lake Tahoe)	20 ppm 9.0 ppm [1] 6 ppm	35 ppm 9 ppm ---	Asphyxiant. CO interferes with the transfer of oxygen to the blood and deprives sensitive tissues of oxygen.	Combustion sources, especially gasoline-powered engines and motor vehicles. CO is the traditional signature pollutant for on-road mobile sources at the local and neighborhood scale.
Respirable Particulate Matter (PM_{10})	24 hours Annual	50 µg/m^3 20 µg/m^3	150 µg/m^3 ---	Irritates eyes and respiratory tract. Decreases lung capacity. Associated with increased cancer	Dust- and fume-producing industrial and agricultural operations; combustion

Pollutant	Averaging Time	State Standard (CAAQS)	Federal Standard (NAAQS)	Health and Atmospheric Effects	Typical Sources
State Status: Non-Attainment **Federal Status:** Non-Attainment				and mortality. Contributes to haze and reduced visibility. Includes some toxic air contaminants. Many aerosol and solid compounds are part of PM_{10}.	smoke; atmospheric chemical reactions; construction and other dust-producing activities; unpaved road dust and re-entrained paved road dust; natural sources (wind-blown dust, ocean spray).
Fine Particulate Matter ($PM_{2.5}$) **State Status:** Non-Attainment **Federal Status:** Attainment	24 hours Annual	--- 12 µg/m^3	35 µg/m^3 15 µg/m^3	Increases respiratory disease, lung damage, cancer, and premature death. Reduces visibility and produces surface soiling. Most diesel exhaust particulate matter – considered a toxic air contaminant – is in the $PM_{2.5}$ size range. Many aerosol and solid compounds are part of $PM_{2.5}$.	Combustion including motor vehicles, other mobile sources, and industrial activities; residential and agricultural burning; also formed through atmospheric chemical (including photochemical) reactions involving other pollutants including NO_x, sulfur oxides (SO_x), ammonia, and ROG.
Nitrogen Dioxide (NO_2)	1 hour Annual	0.18 ppm 0.030 ppm	--- 0.053 ppm	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown. Contributes to acid rain.	Motor vehicles and other mobile sources; refineries; industrial operations.
Sulfur Dioxide (SO_2)	1 hour 3 hours 24 hours Annual	0.25 ppm --- 0.04 ppm ---	--- 0.5 ppm 0.14 ppm 0.030 ppm	Irritates respiratory tract; injures lung tissue. Can yellow plant leaves. Destructive to marble, iron, steel. Contributes to acid rain. Limits visibility.	Fuel combustion (especially coal and high-sulfur oil), chemical plants, sulfur recovery plants, metal processing.
Lead (Pb)[2]	Monthly Quarterly	1.5 µg/m^3 ---	--- 1.5 µg/m^3	Disturbs gastrointestinal system. Causes anemia, kidney disease, and neuromuscular and neurological dysfunction. Also considered a toxic air contaminant.	Primary: lead-based industrial process like batter production and smelters. Past: lead paint, leaded gasoline. Moderate to high levels of aerially deposited lead from gasoline may still be present in soils along major roads, and can be a problem if large amounts of soil are disturbed.
Sulfate	24 hours	25 µg/m^3	---	Premature mortality and respiratory effects. Contributes to acid rain. Some toxic air contaminants attach to sulfate aerosol particles.	Industrial processes, refineries and oil fields, mines, natural sources like volcanic areas, salt-covered dry lakes, and large sulfide rock areas.
Hydrogen Sulfide (H_2S)	1 hour	0.03 ppm	---	Colorless, flammable, poisonous. Respiratory irritant. Neurological damage and premature death. Headache, nausea.	Industrial processes such as: refineries and oil fields, asphalt plants, livestock operations, sewage treatment plants, and mines. Some natural sources like volcanic areas and hot springs.
Visibility Reducing Particles (VRP)	8 hours	Visibility of 10 miles or more (Tahoe: 30 miles) at relative humidity less than 70%	---	Reduces visibility. Produces haze. NOTE: not related to the Regional Haze program under the Federal Clean Air Act, which is oriented primarily toward visibility issues in National Parks and other "Class I" areas.	See particulate matter above.
Vinyl Chloride[2]	24 hours	0.01 ppm	---	Neurological effects, liver damage, cancer. Also considered a toxic air contaminant.	Industrial processes

Notes: ppm = parts per million; µg/m^3 = micrograms per cubic meter

[1.] Rounding to an integer value is not allowed for the State 8-hour CO standard. A violation occurs at or above 9.05 ppm.

[2.] The ARB has identified lead, vinyl chloride, and the particulate matter fraction of diesel exhaust as toxic air contaminants. Diesel exhaust particulate matter is part of PM_{10} and, in larger proportion, $PM_{2.5}$. Both the ARB and U.S. EPA have identified various organic compounds that are precursors to ozone and $PM_{2.5}$ as toxic air contaminants. There is no threshold level of exposure for adverse health effect determined for toxic air contaminants, and control measures may apply at ambient concentrations below any criteria levels specified for these pollutants or the general categories of pollutants to which they belong.
[3.] 12/22/2006 Federal court decisions may affect applicability of Federal 1-hour ozone standard. Prior to 6/2005, the 1-hour standard was 0.12 ppm. Case is still in litigation.
Greenhouse Gases and Climate Change:
Carbon dioxide and similar "greenhouse gases" are not considered "pollutants" under the Federal Clean Air Act by U.S. EPA, and are not subject to current national ambient air quality standards. A Supreme Court decision on 4/2/2007 may change that position, but further litigation will most likely occur before the situation is settled. EPA is active in the climate change arena. For more information, see: http://yosemite.epa.gov/oar/globalwarming.nsf/content/index.html.
Carbon dioxide and similar "greenhouse gases" are not criteria pollutants under the California Clean Air Act, and ambient air quality standards have not been set. They are, however, regulated by the California Air Resources Board (ARB) based on legislation and Governor's executive orders. Carbon dioxide emission reduction measures adopted to date are in litigation. For more information on ARB's climate change program see: http://www.arb.ca.gov/cc/cc.htm.
There are a number of greenhouse gases, of varying potency. Since carbon dioxide (CO2) is the most prevalent greenhouse gas, most "GHG" analyses express greenhouse gas emissions in terms of "CO2 equivalent." CO2 emissions themselves are closely related to fuel consumption.
Sources:
California Air Resources Board Ambient Air Quality Standards chart (http://www.arb.ca.gov/aqs/aaqs2.pdf)
Sonoma-Marin Area Rail Transit Draft EIR Air Pollutant Standards and Effects table, November 2005, page 3-52.
U.S. EPA and California Air Resources Board air toxics websites, 05/17/2006
U.S. EPA Final Rulemaking (Federal Register, 17 October 2006, 71 FR 61144)
DC Circuit Court decision, South Coast AQMD v. EPA; opinion at the Court's web site accessed 4/2/2007: http://pacer.cadc.uscourts.gov/docs/common/opinions/200612/04-1200a.pdf
Supreme Court decision, Mass. v. EPA; slip opinion at the Court's web site accessed 4/2/2007: http://www.supremecourtus.gov/opinions/06pdf/05-1120.pdf
Updated: 4/12/2009

The primary NAAQS and CAAQS are based on medical studies that relate pollutant concentration and duration of exposure to morbidity and mortality rates for "at risk" populations. The standard must therefore specify both a concentration and an averaging time. Higher concentrations can be tolerated when exposure (or averaging) times are shorter. The averaging time plays a critical role in the modeling process.

The NAAQS for CO is established for two averaging times: 1-hour and 8-hours. These standards are not to be exceeded more than once per year. The procedures described in the Caltrans Transportation Project-Level CO Protocol are designed to estimate the second highest 1-hour and 8-hour annual CO concentrations (called the second annual maximum) (Institute of Transportation Studies 1997). If either of these values exceeds the NAAQS, the impact is considered substantial. This approach is often referred to as a "worst case" analysis. Predictions made for an assumed set of concurrent, worst case conditions guarantee a conservative estimate of the impacts. The California CO standards are not to be exceeded at any time.

The nearest air quality monitoring station in the vicinity of the project area is the Sacramento Airport Road monitoring station, located at 3801 Airport Road in Sacramento, which monitors for ozone, CO, PM10 and NO2. Air quality monitoring data from the Sacramento Airport Road monitoring station is summarized in Table 17. This table represents air quality monitoring data for the last three years (2005–2007) in which complete data is available.

Table 17 Ambient Air Quality Monitoring Data Measured at the Sacramento Airport Road Monitoring Station

Pollutant Standards	2005	2006	2007
Ozone			
Maximum 1-hour concentration (ppm)	0.100	0.105	0.119
Maximum 8-hour concentration (ppm)	0.074	0.086	0.102
Number of days standard exceeded			
CAAQS 1-hour (>0.09 ppm)	4	5	2
CAAQS 8-hour (>0.070 ppm)	8	13	8
Carbon Monoxide (CO)			
Maximum 8-hour concentration (ppm)	2.97	3.15	5.58
Maximum 1-hour concentration (ppm)	3.9	4.7	6.3
Number of days standard exceeded			
NAAQS 8-hour (>9.0 ppm)	0	0	0
CAAQS 8-hour (>9.0 ppm)	0	0	0
NAAQS 1-hour (>35 ppm)	0	0	0
CAAQS 1-hour (>20 ppm)	0	0	0
Particulate Matter (PM_{10})			
National maximum 24-hour concentration (μg/m3)	56.0	81.0	94.0
National second-highest 24-hour concentration (μg/m3)	44.0	71.0	56.0
Stated maximum 24-hour concentration (μg/m3)	99.8	84.0	98.0
Stated second-highest 24-hour concentration (μg/m3)	89.0	74.0	57.0
National annual average concentration (μg/m3)	20.4	25.7	22.4
State annual average concentration (μg/m3)	20.8	–	23.0
Number of days standard exceeded			
NAAQS 24-hour (>150 μg/m3)	–	0.0	0.0
CAAQS 24-hour (>50 μg/m3)	6.4	–	36.4

Notes: – = insufficient data available to determine the value.
ppm = parts per million.
$\mu g/m^3$ = micrograms per cubic meter.

Sources: California Air Resources Board 2008b; U.S. Environmental Protection Agency 2008.

As shown in Table 17, the Sacramento Airport Road monitoring station has experienced 11 violations of the state 1-hour ozone standard, 29 violations of the state 8-hour ozone standard, no violations of the federal and state CO standards, no violations of the federal 24-hour PM10 standard, and 42.8 violations of the state 24-hour PM10 standard during the 3-year monitoring period between January 2005 and December 2007.

Areas are classified as either attainment or non-attainment with respect to state and federal ambient air quality standards. If a pollutant concentration is lower than or meets the state or federal standard over a designated period of time, the area is classified as being in attainment of the standard for that pollutant. If a pollutant violates the standard, the area is considered a non-attainment area for that pollutant. If data are insufficient to determine whether a pollutant is violating the standard, the area is designated unclassified. This typically occurs in un-urbanized areas where levels of the pollutant are not a concern.

The EPA has classified Sacramento County as a serious non-attainment area with regards to the federal 8-hour ozone standard. With regards to the federal CO standard, the EPA has classified the Sacramento County as a moderate (≤ 12.7 ppm) maintenance area. The EPA has classified Sacramento County as a moderate non-attainment area with regards to the federal PM10 standard and an nonattainment area with regards to the federal PM2.5 standard.

The California Air Resources Board (CARB) has classified Sacramento County as a serious non-attainment area with regards to the State 1-hour ozone standard. With regards to the State CO standard, the CARB has classified Sacramento County as an attainment area. The CARB has classified Sacramento County as a non-attainment area with regards to the State PM10 and PM2.5standards.

Sensitive Receptors

The Sacramento Metropolitan Air Quality Management District (SMAQMD) defines sensitive receptors as facilities that house or attract children, the elderly, people with illnesses, or others who are especially sensitive to the effects of air pollutants or may experience adverse effects from unhealthful concentrations of air pollutants. Hospitals and clinics, schools, elderly housing and convalescent facilities, and residential areas are examples of sensitive receptors. Sensitive receptors in the vicinity of the Project Area include residential land uses to the north, west, and south. Within the project area, sensitive land uses include residential subdivisions located in the areas adjacent to northbound I-5 and eastbound I-80. In addition, residential subdivisions are also located in the areas adjacent to southbound I-5 and westbound I-80. South of I-80, office park developments are located adjacent to southbound I-5. In addition, several motels (Marriott Springhill Suites, Residence Inn, and Hilton Garden Inn) are located adjacent to southbound I-5 south of I-80. Figure 12 indicates the locations of sensitive receptors located in the vicinity of the project area.