

## 2.1 Human Environment

### 2.1.1 Land Use

The information below is summarized from the community impact assessment (CIA) prepared for the proposed project (CirclePoint 2008a). This section describes the existing land uses in the study area. This includes a discussion of existing land uses and applicable *Solano County General Plan* (Solano County 2001) goals and policies that relate to land use in the project area.

#### Existing and Future Land Use

The project area lands south of I-80 are used primarily for agricultural purposes. There are two residences and associated outbuildings located within the project footprint. Surrounding land uses are also mainly agricultural in nature and include several residences located along Cordelia Road to the south of the project footprint. Suisun Creek crosses the project footprint and runs under I-80 in this area. The north/south-running creek has a narrow riparian corridor associated with it. To the west of the project footprint, land uses include commercial and retail uses situated around the I-80/Suisun Valley Road interchange. Land uses to the east include warehousing and industrial/manufacturing uses near the SR 12/Chadbourne Road interchange.

Within the immediate project area, the agricultural land uses have remained stable and have not changed in the last several decades. Because of Solano County's (the County's) general plan land use designation and zoning restricting use to agricultural activities, this is expected to continue into the foreseeable future. In the current *Draft General Plan Update for Solano County Land Use Diagram*, the project area is still designated for agricultural uses (Solano County 2008).

Development trends in surrounding areas are also relatively stable. Land uses to the west surrounding the I-80/Suisun Valley Road interchange have changed over the last decade as infill development of retail and commercial uses has occurred on vacant parcels. There remain several vacant parcels in this area that most likely will be developed with retail/commercial uses. The industrial, manufacturing, and warehousing uses to the east also have remained relatively stable, with some infill development occurring. However, the limits of the development in this area are well-defined and are not anticipated to expand because the project area is bound by lands zoned for agricultural use and the Suisun Marsh to the south and west. Land uses to the northwest are changing as a formerly agricultural parcel is being developed with residential and mixed-use development (the Fairfield Corporate Commons project). This development is located within Fairfield and is a continuation of development that has occurred along the north side of I-80 along Business Center Drive within the city of Fairfield. This development trend is not anticipated to continue eastward beyond Suisun Creek. Suisun Creek marks the border between Fairfield and Solano County.

#### Consistency with State, Regional, and Local Plans and Programs

All cities and counties in California are required to adopt a "comprehensive, long-term general plan for [their] physical development" (Government Code, Section 65300). The general plan acts

as a policy blueprint for the location of land uses, open space, agricultural land, and transportation facilities; for the conservation of natural resources; and for the avoidance of physical hazards. A general plan is implemented by the city's or county's zoning ordinance (which establishes specific development standards and regulations), subdivision ordinance (which establishes the rules for subdividing land), and other adopted plans and regulations. Each city and each county has a unique general plan and unique implementing ordinances.

The proposed project is generally consistent with the goals and objectives included in the Land Use Element of the *Solano County General Plan*. A primary goal of the general plan (Goal 5) is to “[p]rovide and maintain a safe, economical and efficient circulation and transportation system to ensure adequate multi-modal movement of people and goods within, to and from, the County while incurring the least social, economic, and environmental harm to existing or planned activities and land uses.” The project would improve transportation and reduce congestion, which directly serves and is consistent with this goal.

Another land use goal applicable to the project is a goal within the *Solano County General Plan* Development Strategy, which provides for “orderly growth which assures a harmonious relationship of land uses, both rural and urban, and maintains the distinctive character of each community in Solano County.” Although the project would affect and remove agricultural land and remove two existing residences, it would not otherwise affect the continued agricultural use of the surrounding area, and the project itself would not divide or otherwise have an adverse effect on communities or neighborhoods in Solano County.

The proposed project is included in the Metropolitan Transportation Commission's (MTC's) *Transportation 2030 Plan* and *2007 Transportation Improvement Plan* (identified as reference number 22701), and is therefore consistent with both of these plans.

The Solano County Water Agency has initiated preparation of the Solano Multi-Species Habitat Conservation Plan. The Draft Plan is anticipated to be available for public review in the Spring of 2009 and with adoption of the Habitat Conservation Plan sometime in the Winter of 2009.

### Affected Environment

Several small parcels of undeveloped land, as well as portions of several larger agricultural parcels, are located within the project area. The project area also includes two existing residences and several associated buildings (e.g., barns and sheds). It does not appear that access to any parcels in the project area would be severed by the project.

### Environmental Consequences

#### **Impact LU-1: Minor Land Acquisition of Five Parcels and Full Acquisition of Eight**

Several small parcels of undeveloped land would be acquired and used for the project, as well as portions of several larger agricultural parcels. The project would require the demolition of two existing residences and several associated buildings (e.g., barns and sheds). One residence, located on parcel 5 (Assessor's Parcel Number [APN] 0027-272-080), would be displaced to accommodate the new truck scales facility. The other residence, located on parcel 9 (APN 0027-

252-080), would be displaced to accommodate the braided on-ramps to I-80 and eastbound SR 12.

All parcels for which only a portion of the parcel would be affected by the project (listed as partial acquisitions in Table 2.1-1 below) are currently in agricultural use and appear to be able to remain in agricultural production, with the exception of parcel 9 (APN 0027-252-080). The majority of this parcel that is currently in agricultural production would be affected by the project for the truck scales on-ramps to I-80 and eastbound SR 12 and the eastbound I-80-to-eastbound SR 12 connector. The remaining portion of this parcel contains an electrical substation, which would not be affected by the project.

Direct land use impacts are summarized in Table 2.1-1.

**Table 2.1-1. Property Acquisition and Displacement for the Project**

Parcel Number <sup>a</sup>	APN	Existing Use	Partial or Full Acquisition	Displacement	Area to be Acquired in Square Feet (Acres)
1	0027-260-120	Agricultural	Partial	No	142,305 (3.3)
2	0027-272-070	Undeveloped	Full	No	10,584 (0.2)
3	0027-272-130	Undeveloped	Full	No	48,381 (1.1)
4	0027-272-120	Undeveloped	Full	No	16,749 (0.4)
5	0027-272-080	Agricultural/ Fairwind Farms	Partial	Yes (one residence and associated buildings)	417,002 (9.6)
6	0027-272-140	Agricultural (conservation easement)	Full	No	439,492 (10.1)
7	0027-272-180	Agricultural	Partial	No	272,045 (6.2)
8	0027-272-160	Agricultural	Partial	No	22,619 (0.5)
9	0027-252-080	Agricultural/residence/ substation	Partial	Yes (one residence and associated buildings)	446,374 (10.2)
10	0027-252-090	Undeveloped	Full	No	4,849 (0.1)
11	0027-252-100	Undeveloped	Full	No	3,454 (0.1)
12	0027-252-110	Undeveloped	Full	No	3,316 (0.1)
13	0028-200-560	Undeveloped	Full	No	5,396 (0.1)

<sup>a</sup> Parcel numbers are presented as in Figure 2.1-1.

**Avoidance, Minimization, and/or Mitigation Measures**

Measures for farmlands (Section 2.1.3, below) and relocations (Section 2.1.4) would address the acquisition of agricultural land and the relocation of residential units.

**Effects of the No-Project Alternative**

Under the No-Project Alternative, no new effects associated with land use would occur.

## 2.1.2 Growth

### Regulatory Setting

The Council on Environmental Quality (CEQ) regulations, which implement the National Environmental Policy Act of 1969 (NEPA), 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 project and at some time in the future. The CEQ regulations, 40 Code of Federal Regulations (CFR) 1508.8, refer to these consequences as secondary impacts. Secondary impacts may include changes in land use, economic vitality, and population density, which all are 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.”

### Affected Environment

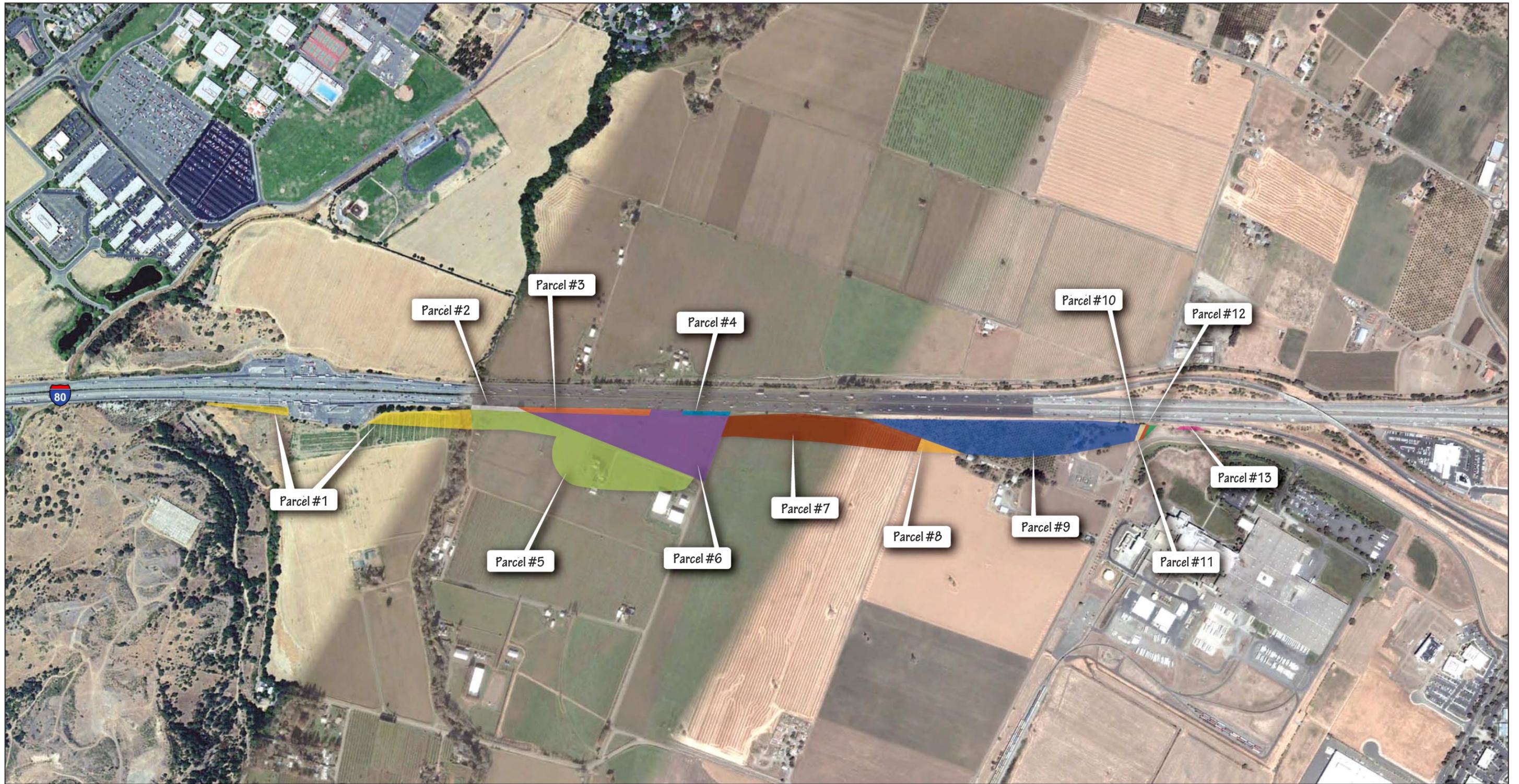
This discussion is based primarily on the CIA prepared for this project (CirclePoint 2008a).

The Cordelia Truck Scales facility is located within the I-80/I-680/SR 12 interchange in Solano County, in the vicinity of Fairfield and Suisun City. The project area encompasses the existing facility, the site of the new facility, and all associated on- and off-ramps and utility relocations. The project area extends along I-80 from the Scandia Family Center (at PM 13.8) east to the SR 12E/I-80 interchange and continues east along SR 12E to Chadbourne Road, a distance of 2.1 miles (see Figure 1-2).

The project area lands south of I-80 are used primarily for agricultural purposes. There are two residences and associated outbuildings located within the project footprint. Surrounding land uses are also mainly agricultural in nature and include several residences located along Cordelia Road to the south of the project footprint. Suisun Creek crosses the project footprint and runs under I-80 in this area. The north/south-running creek has a narrow riparian corridor associated with it. To the west of the project footprint, land uses include commercial and retail uses situated around the I-80/Suisun Valley Road interchange. Land uses to the east include warehousing and industrial/manufacturing uses near the SR 12/Chadbourne Road interchange.

### Environmental Consequences

*Caltrans Environmental Handbook Volume 4: Community Impact Assessment* states that “growth inducement is defined as the relationship between the proposed transportation Project and growth within the Project area.” The Department has developed a checklist for determining whether a project is considered to be growth-inducing. The questions from this checklist are presented below (Table 2.1-2). A “yes” response to any of the questions would indicate the potential for growth inducement to occur as a result of the project. No “yes” answers were provided. Therefore, there is no potential for growth inducement impacts due to the project.



Parcel #	Area (sf)
Parcel 1	142,035
Parcel 2	10,584
Parcel 3	48,381
Parcel 4	16,749
Parcel 5	417,002
Parcel 6	439,492
Parcel 7	272,045
Parcel 8	22,619
Parcel 9	446,374
Parcel 10	4,849
Parcel 11	3,454
Parcel 12	3,316
Parcel 13	5,398

Sources: CirclePoint 2008, Google Earth 2008.

Source: Google Earth, 2008; CirclePoint, 2008



NOT TO SCALE

**Figure 2.1-1**  
Property to be Acquired for the Project



**Avoidance, Minimization, and/or Mitigation Measures**

There is no need for avoidance, minimization, and/or mitigation measures because the project would not be growth-inducing.

**Effects of the No-Project Alternative**

Under the No-Project Alternative, no new effects associated with growth would occur.

**Table 2.1-2. Growth-Inducement Checklist**

Question	Answer
1. Will the project attract more residential development or new population into the community or planning area?	No. The project does not include any residential development.
2. Will the project encourage the develop of more acreage of employment generating land uses in the area (such as commercial, industrial or office)?	No. The project only involves the construction of a new truck scales facility.
3. Will the project lead to the increase of roadway, intersection, sewer, water supply, or drainage capacity?	No. The project would replace an existing truck scale facility.
4. Will the project encourage the rezoning or reclassification of lands in the community general plan from agriculture, open space or low density residential to a more intensive land use?	No. The project would result in direct conversion of agricultural lands to nonagricultural uses for the truck scales facility but would not result either directly or indirectly in the rezoning of surrounding lands.
5. Is the project not in conformance with the growth related policies, goals or objectives of the local general plan or the area growth management plan?	No. The project would replace an existing truck scales facility that is already located in the project area.
6. Will the project lead to the intensification of development densities or accelerate the schedule for development or will it facilitate actions by private interests to redevelop properties within four miles of a limited access highway interchange?	No. The project would replace an existing truck scales facility and would not provide improved access or other features that would lead to the intensification of surrounding properties.
7. Will the project measurably and significantly decrease home to work commuter travel times to and from or within the project area (more than 10% overall reduction or five minutes or more in commute time savings)?	No. The project would improve traffic flow on I-80 by increasing the capacity of the existing truck scales facility and providing longer off- and on-ramps for improved truck weaving; however, this improvement in traffic flow would not be at the levels to induce additional travel demand.
8. Is the project directly related to the generation of cumulative effects as defined by the CEQA guidelines?	No. The project is not directly related to cumulative growth in Solano County and surrounding communities. Future growth envisioned in the county and surrounding communities would not be altered substantially by relocating and expanding the existing truck scales facility.

**2.1.3 Farmlands**

**Regulatory Setting**

NEPA and the Farmland Protection Policy Act (FPPA) (7 U.S. Code [USC] 4201–4209); and its regulations, 7 CFR Part 658) require federal agencies, such as the Federal Highway Administration (FHWA), to coordinate with the Natural Resources Conservation Service (NRCS) if their activities may irreversibly convert farmland (directly or indirectly) to nonagricultural use. For purposes of the FPPA, farmland includes prime farmland, unique farmland, and land of statewide or local importance.

CEQA requires the review of projects that would convert California Land Conservation Act of 1965 (Williamson Act) contract land to nonagricultural uses. The main purposes of the Williamson Act are to preserve agricultural land and to encourage open space preservation and efficient urban growth. The Williamson Act provides incentives to landowners through reduced property taxes to deter the early conversion of agricultural and open space lands to other uses.

### Affected Environment

The following discussion is based on the CIA for this project, prepared by CirclePoint (CirclePoint 2008a).

As stated in *Caltrans Environmental Handbook Volume 4: Community Impact Assessment*, “The intent of the California Department of Transportation is to avoid, whenever practical, locating public improvements within agricultural preserves or acquiring high quality agricultural land for transportation improvements.” This section presents a discussion of the agricultural resources and nature of agriculture in the project area, including a description of farmland preservation policies.

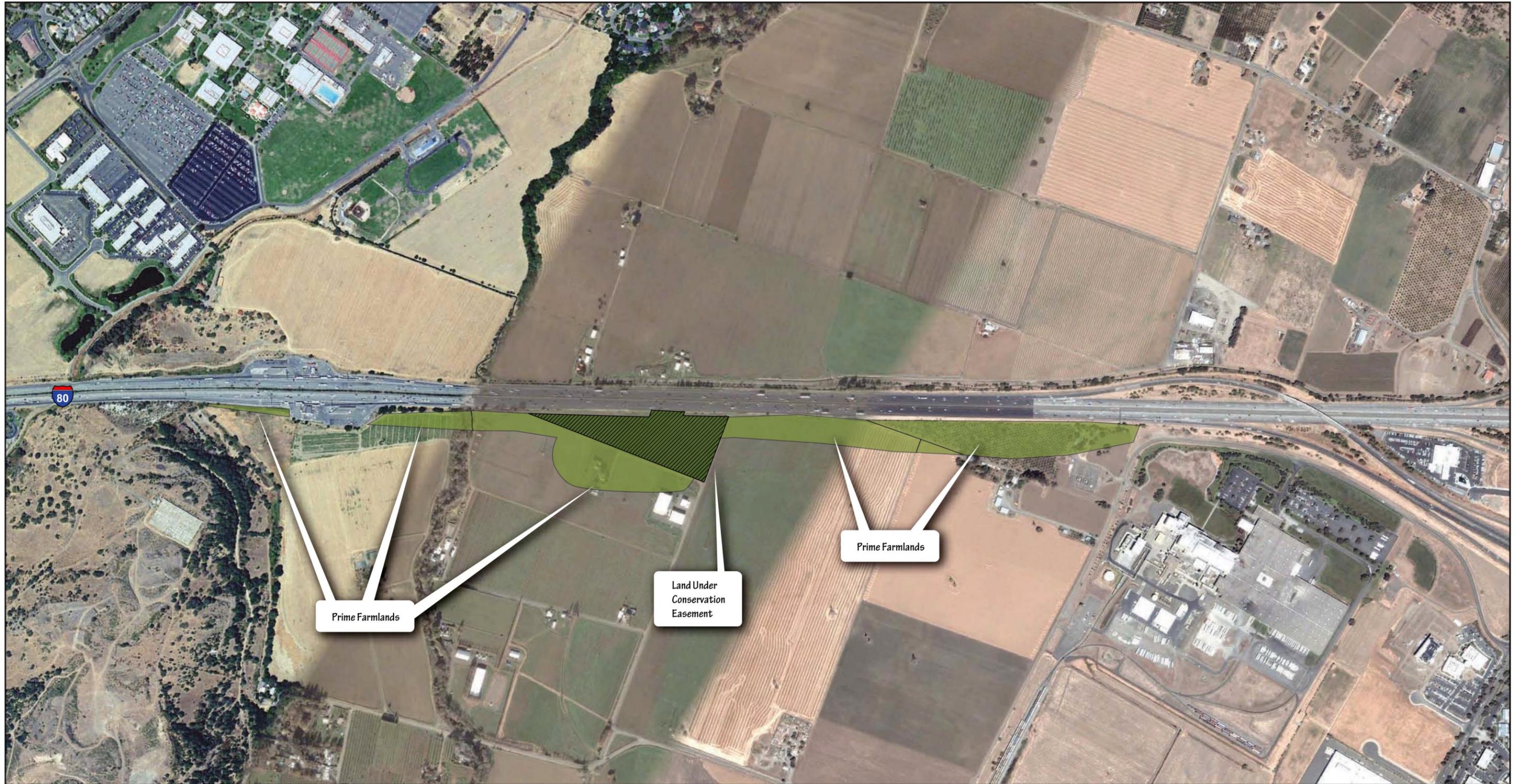
The California Department of Conservation (DOC) Farmland Mapping and Monitoring Program (FMMP) classifies farmland according to four types. *Prime Farmland* is considered land with the best physical and chemical features able to sustain long-term production of crops. *Farmland of Statewide Importance* is land that is similar to Prime Farmland but has minor faults, such as slopes or limited ability to store soil moisture. *Unique Farmland* has lesser-quality soils, used for the production of the state’s leading crops and may be irrigated or include non-irrigated orchards or vineyards. Together, these three farmland classifications constitute *Important Farmland*. The fourth classification is *Grazing Land*, which contains existing vegetation suitable for livestock but is not considered “important” farmland.

The lands within the project area are designated for “Intensive Agriculture,” according to the *Solano County General Plan Land Use Map* dated March 29, 2006. Lands designated by the County for Intensive Agriculture are those lands in the county that also are considered Prime Farmlands under the FMMP. Figure 2.1-2 depicts the lands within the project area that are considered Prime Farmlands.

As of 2006, Solano County had a total of 360,562 acres of land under cultivation (Solano County 2006). Of this total, 139,536 acres were designated as Prime Farmland, 7,164 acres were designated as Farmland of Statewide Importance, 11,036 acres were designated as Unique Farmland, and 202,826 acres were used for grazing purposes (California Department of Conservation 2006a). Between 1992 and 2006, 1,838 acres of Prime Farmland were converted to nonagricultural uses in Solano County (California Department of Conservation 2006b).

### *Williamson Act*

In 2007, there were 265,629 acres of land held under Williamson Act contracts in Solano County. The project footprint does not include any properties that are currently under a Williamson Act contract.



Prime Farmlands

Land Under Conservation Easement

Prime Farmlands

**Legend**  
Prime Farmland  
Land Under Conservation Easement

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NOT TO SCALE

Sources: CirclePoint 2008, Google Earth 2008.

**Figure 2.1-2**  
**Agricultural Land within the Project Area**



### ***Conservation Easements***

Conservation easements are legal agreements between property owners and government agencies or nonprofit organizations that permanently limit land development. Easements can restrict land to a prior use or preserve land for the purposes of creating and maintaining open space.

Within the project area, approximately 43 acres are within an agricultural conservation easement held by the Solano Land Trust. The agricultural conservation easement held by the Solano Land Trust covers APNs 0027-272-070, 0027-272-080, 0027-272-120, 0027-272-130, and 0027-272-140. Of these, 10.1 acres (APN 0027-27-2401) are located south of I-80 within the project footprint. Figure 2.1-2 depicts the lands in the project area under agricultural conservation easement.

### **Environmental Consequences**

#### **Impact FA-1: Direct Conversion of Important Farmlands**

Policy 1 of the *Solano County General Plan* Land Use Element seeks to “[p]reserve and maintain essential agricultural lands including intensive agricultural areas comprised of high quality soils and irrigated lands and extensive agricultural areas with unique or significant dryland farming or grazing activities.”

The project would result in the direct conversion of agricultural lands to nonagricultural uses. The direct impact of the project on agricultural lands would be the conversion of approximately 39.9 acres to nonagricultural uses (Table 2.1-1). Of this total, approximately 10.1 acres (APN 0027-272-140) are under agricultural conservation easement held by the County. This conversion of agricultural lands to nonagricultural uses would be an adverse effect.

#### **AD-1006 Farmland Conversion Impact Rating**

The AD-1006 form, which was completed in conjunction with the National Resource Conservation Service (NRCS), helps to determine the impact the proposed project may have on farmlands within the project area. Specific criteria are looked at by both the NRCS and the federal agency involved. The NRCS must complete the land evaluation portion of the form, whereas the federal agency must complete the site assessment portion. Each criterion has a set number of points it may be awarded. Once those points are added up, they are compared to the “significance score” of 160 points created by the U.S. Department of Agriculture. If the total site assessment is less than 160 points, a minimal level of consideration of protection would be given, but no further alternative analysis would be needed.<sup>1</sup> The completed form may be found in Appendix A. The total site assessment rating for this project is 97, or 63 points below the significance score.

### **Avoidance, Minimization, and/or Mitigation Measures**

No avoidance, minimization and/or minimization measures are feasible under NEPA. Additional measures are discussed in Chapter 3 under CEQA.

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<sup>1</sup> Caltrans Environmental Handbook Volume 4, Community Impact Assessment, Appendix C.

### Effects of the No-Project Alternative

Under the No-Project Alternative, the proposed new truck scales would not be constructed. Therefore, no new effects associated with farmland would occur.

## **2.1.4 Community Impacts**

### ***Community Character and Cohesion***

#### Regulatory Setting

NEPA, 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 USC 4331[b][2]). In its implementation of NEPA (23 USC 109[h]), the FHWA 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 impact 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. Because this project would result in a physical change to the environment, it is appropriate to consider changes to community character and cohesion in assessing the significance of the project's impacts.

#### Affected Environment

The following discussion is based on the CIA prepared for the project (CirclePoint 2008a). The community socioeconomic characteristics analyzed in the CIA include population, housing and households, employment, and income. The data presented are primarily from the 2000 census and Association of Bay Area Governments' (ABAG's) *Projections 2007*, the basis for regional planning activities by the Department. Other data sources include the *Solano County General Plan*. The data are summarized below.

The project area is located in the nine-county Bay Area region, the 12th-largest metropolitan area in the United States. The population of the Bay Area region increased 13% between 1990 and 2000. The population of Solano County has grown the fastest of the nine counties, with an increase of 68% between 1980 and 2000. This trend is expected to continue well into the 21st century.

Solano County has the second-highest average household size in the region, with an estimated 2.9 persons per household in 2000. Solano County is expected to experience a 50% increase in the number of households between 2000 and 2035.

The smallest geographic unit for which the U.S. Census Bureau publishes both demographic and socioeconomic data is the block group (BG). BGs are generally the size of several city blocks and are therefore useful in representing the characteristics of a "community." The project area is located primarily within census tract (CT) 2523.05, BG 1.

The BG consists of 193 housing units with an average household size of 2.52 persons. More than 75% of the residential units are owner-occupied. The population of the BG is predominantly white (nearly 80%). The median annual household income is \$56,111, and 9% of the population is in poverty.

### *Environmental Consequences*

The project would not alter the location or density of population substantially because it would replace the existing truck scales facility already located within the project area. For similar reasons, the project would not disrupt or divide an established community, and the location of the new truck scales facility would be in an area of predominantly agricultural uses and undeveloped land. No recreational or educational uses or facilities would be affected by the project.

Although the project would displace two residences, the area is not considered a low-income community.

Finally, the project would change the aesthetic of the immediate project area, and a separate visual impact assessment (VIA) has been prepared to evaluate that issue. (See Section 2.1.7.)

### *Avoidance, Minimization, and/or Mitigation Measures*

No avoidance, minimization, or mitigation is necessary for the reasons cited above.

## ***Relocations***

### *Regulatory Setting*

The Department's Relocation Assistance Program (RAP) is based on the federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (as amended) and Title 49 CFR Part 24. The purpose of the RAP is to ensure that persons displaced as a result of a transportation project are treated fairly, consistently, and equitably, so that such persons will not suffer disproportionate injuries as a result of projects designed for the benefit of the public as a whole. Please see Appendix B for a summary of the RAP.

All relocation services and benefits are administered without regard to race, color, national origin, or sex in compliance with Title VI of the Civil Rights Act (42 USC 2000d, et seq.). Please see Appendix C for a copy of the Department's Title VI Policy Statement.

### *Affected Environment*

Two residences are located within the project area. One residence is located at 2525 Cordelia Road and is associated with an agricultural business, Fairwind Farms. The second residence is located at 4015 Hale Ranch Road. Figure 2.1-3 depicts the location of these two residences.

### *Environmental Consequences*

## **Impact REL-1: Displacement of Two Residences**

The project would displace two residences within the project area. Fairwind Farms, the agricultural business associated with one of the residences, would not be affected by the project.

According to the Solano County Housing Element, the overall housing vacancy rate in unincorporated Solano County was six percent (2000 Census) which indicates that adequate replacement housing is available for those residents displaced by the project.

### **Avoidance, Minimization, and/or Mitigation Measures**

The Department will provide relocation advisory assistance to any person, business, farm, or nonprofit organization displaced as a result of the Department's acquisition of real property for public use. The Department will assist residential displacees in obtaining comparable decent, safe, and sanitary replacement housing by providing current and continuing information on sales prices and rental rates of available housing.

Residential replacement dwellings will be in equal or better neighborhoods, at prices within the financial means of the individuals and families displaced, and reasonably accessible to the displacees' places of employment. Before any displacement occurs, displacees will be offered comparable replacement dwellings that are open to all persons regardless of race, color, religion, sex, or national origin and are consistent with the requirements of Civil Rights Act Title VIII. This assistance also will include supplying information concerning federal and state-assisted housing programs and any other known services being offered by public and private agencies in the area.

The Department will carry out the relocation plan to help eligible displaced individuals move with as little inconvenience as possible. Appraisals to determine fair market value will be conducted for each displaced property after the record of decision is signed.

### ***Environmental Justice***

#### **Regulatory Setting**

All projects involving a federal action (funding, permit, or land) must comply with Executive Order (EO) 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations), signed by then-President Bill Clinton on February 11, 1994. This EO 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 populations are defined based on the U.S. Department of Health and Human Services poverty guidelines. For 2008, this was \$21,200 for a family of four.

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

#### **Affected Environment**

As described above under Community Character (Section 2.1.4) the population of the immediate project area is predominately white (nearly 80%) and has a relatively low poverty rate (9%). As a result, the demographic makeup of the project area does not meet the criteria necessary for consideration of a minority or low-income population that would be protected under the provisions of EO 12898.



**Figure 2.1-3  
Displaced Residences**



### Environmental Consequences

There would be no environmental justice impacts.

### Avoidance, Minimization, and/or Mitigation Measures

Based on the above discussion and analysis, the project would not cause disproportionately high and adverse impacts on any minority or low-income populations as per EO 12898 regarding environmental justice.

### Effects of the No-Project Alternative

Under the No-Project Alternative, no new effects associated with community impacts would occur.

## **2.1.5 Utilities/Emergency Services**

Public utilities in the project area are regulated by various entities, including (depending on the utility) the Federal Energy Regulatory Commission (FERC), the PUC, and local ordinances.

### Affected Environment

The information below is summarized from the CIA prepared for the proposed project (CirclePoint 2008a). This section describes the existing utilities and public services in the study area.

#### *Water Service*

Water service within the project area is provided by the Solano County Water Agency (SCWA). The county has four main sources of water: the Solano Project, the North Bay Aqueduct (NBA), groundwater reservoirs, and Sacramento River entitlements. The SCWA stores and distributes water to 29 urban and agricultural water suppliers in northern California, the Bay Area, the San Joaquin Valley, the Central Coast, and Southern California.

The project area also is located within the service area of the Solano Irrigation District (SID). The SID delivers recycled water from the SCWA treatment plant to a small number of agricultural customers within Solano County for crop irrigation. The SID also provides water to the city of Fairfield for street landscaping and commercial property landscape irrigation.

The most significant utility infrastructure in the project area is a State Department of Water Resources (DWR) water pipeline, known as the NBA. The NBA pipeline runs underground from Barker Slough in the Sacramento River Delta to Cordelia Forebay, just outside Vallejo. The pipeline varies in diameter, ranging from 72 inches at Barker Slough to 54 inches at Cordelia Forebay. A portion of the NBA runs just north of and parallel to I-80 between Abernathy Road and Suisun Creek.

#### *Wastewater Service*

The project area is located in unincorporated Solano County and outside the boundaries of the wastewater service providers for the city of Fairfield. The project area contains no wastewater infrastructure. Wastewater needs in these locations are met by septic systems installed by individual landowners.

### *Electricity and Natural Gas*

Solano County is provided with electric and natural gas service by Pacific Gas and Electric Co. (PG&E). PG&E's service area covers most of central and northern California, and the company maintains 123,054 circuit miles of electrical distribution lines, 18,610 circuit miles of interconnected transmission lines, 40,123 miles of natural gas distribution pipelines, and 6,136 miles of natural gas transportation pipelines. PG&E currently maintains natural gas pipelines and electrical transmission lines throughout Solano County, including lines adjacent to the I-80 corridor.

### *Schools*

There is one elementary school and one high school located near the project area. Nelda Mundy Elementary School is located at 570 Vintage Valley Drive, north of I-80 and the project area. Angelo Rodriguez High School is located at 5000 Red Top Road, just west of I-680. In addition, three colleges are located in the project vicinity. Solano Community College is located just north of the project area, at 4000 Suisun Valley Road; the University of Phoenix is located at 5253 Business Center Drive; and Chapman University is located at 4820 Business Center Drive.

### *Police and Fire*

The CHP has jurisdiction over I-80, I-680, and SR 12 for matters involving both traffic and emergency services. The local CHP office is located at 3050 Travis Boulevard in Fairfield. The project area is under the jurisdiction of the Solano County sheriff. The Solano County Sheriff's Office is located at 530 Union Avenue in Fairfield.

The project area is served by the Suisun Fire Protection District (SFPD). SFPD headquarters are located at 445 Jackson Street in Fairfield, and the district serves 1,136 properties within a 136-square-mile area. The SFPD currently employs one fire chief, two fire captains, and 45 volunteer firefighters.

### *Parks and Recreation Facilities*

There are no parks or recreational facilities located within or adjacent to the project area.

### *Environmental Consequences*

Some adjustment to overhead power lines would be necessary. To facilitate the realignment of the overhead power line, it would be necessary to remove some utility poles and towers and relocate them. It is expected that five new utility poles would be located along the south and west sides of the proposed truck scales facility, and that two poles would need to be removed in that area. In the vicinity of the I-80/SR 12E interchange, one pole and two towers would be removed and relocated. During construction, it is expected there will be brief (one- to two-hour) power shutdowns at the Truck Scale facility itself in order to make necessary connections. Distribution and transmission of PG&E electrical facilities will undergo service interruptions for short periods of time during construction as well.

Once construction had been completed, and operation of the project had begun, on a local and community level, roadway improvements would improve access and circulation in the vicinity of the project area by relieving congestion and improving safety. Public services in the study area, including police, fire, and emergency services and hospitals, largely would be unaffected by operation of the project because existing access routes to and through the study area would be

maintained and enhanced by the project. The project would not adversely affect police, fire, and emergency vehicle response times to neighborhoods within the study area, and the roadway improvements and changes would not affect public or school bus routes.

### **Impact UT-1: Impacts on Police, Fire, and Emergency Service Providers during Construction**

Potential short-term impacts on police, fire, and emergency service providers may result from construction-related impacts. Potential impacts may include increased emergency response times within the project area caused by congestion during project construction, and temporary lane closures. Lane closures are expected to be short-term and occur in off-peak hours. No ramps would be closed, and no local roads would be affected. The effect is expected to be minimal. In addition, as part of its standard procedure, the Department prepares a Transportation Management Plan (TMP). Before initiating construction, this TMP will be provided to all emergency service providers in the area. The TMP will serve to notify all emergency service providers in the project area of the project construction schedule, and the time and location of lane closures for K-rail placement. The TMP will identify anticipated dates and hours of construction, as well as any anticipated limits on access. Notice will be provided at least 1 week before construction begins. To the extent possible, emergency vehicles will be allowed through roadway segments temporarily closed for construction purposes. Therefore, this would not be considered an adverse effect.

#### Effects of the No-Project Alternative

Under the No-Project Alternative, no new effects associated with utilities or emergency services would occur. As traffic congestion increases in the study area (shown in Tables 2.1-8 and 2.1-1), access in the area for emergency response vehicles would become more limited.

### **2.1.6 Traffic and Transportation**

This section addresses the potential transportation-related impacts of the proposed project under existing conditions, as well as under construction-year (2015) and design-year (2035) conditions.

The information presented here has been summarized from technical reports prepared for the proposed project and the Interstate 80/Interstate 680/State Route 12 Interchange Project. These reports, listed below, are available for review at the Department's District 4 office and are hereby incorporated by reference:

- I-80/I-680/SR 12 Interchange PR/ED: AM Peak Hour VISSIM Model Calibration/Validation Technical Memorandum (October 8, 2003) (Fehr & Peers 2003a);
- I-80/I-680/SR 12 Interchange PR/ED: PM Peak Hour VISSIM Model Calibration/Validation Technical Memorandum (October 8, 2003) (Fehr & Peers 2003b);
- I-80/I-680/SR 12 Interchange PR/ED: VISSIM Model Calibration/Validation for the Project Expansion Area Technical Memorandum (February 14, 2005) (Fehr & Peers 2005a);

- I-80/I-680/SR 12 Interchange PR/ED: Existing Weekday (Tuesday through Thursday) Traffic Operating Conditions for the Expanded Project Area—Technical Memorandum (February 2005) (Fehr & Peers 2005b);
- Cordelia Truck Scales Relocation Study: Summary Report and Recommendations, prepared by the STA (February 16, 2005) (Solano Transportation Authority 2005a);
- I-80/I-680/SR 12 Interchange PR/ED: Design Year 2035 Demand Forecasts at Project Gateways Technical Memorandum (July 14, 2006) (Fehr & Peers 2006);
- I-80/I-680/SR 12 Interchange PR/ED: Updated Validation of the VISSIM Traffic Operations Model to 2007—2008 Conditions Technical Memorandum (August 4, 2008) (Fehr & Peers 2008a); and
- Draft Traffic Operations Report, Interstate 80 Eastbound Cordelia Truck Scales Relocation Project (July 2008) (Fehr & Peers 2008b) (referred to below as the Draft Traffic Operations Report).

The *Solano Comprehensive Transportation Plan* (Solano Transportation Authority 2005b) calls for maintenance of level of service (LOS) E on roadways of regional significance, including freeways. LOS E represents at-capacity operation. When traffic volumes exceed capacity, stop-and-go conditions result, and operations are designated as LOS F.

For freeway mainline segments, weave segments, and ramp merge and diverge areas, the LOS is related to the vehicle density in vehicle miles per hour (mph) per lane and is calculated for the a.m. and p.m. commute peak hours. For intersection operations, the LOS is related to the average control delay per vehicle, during the a.m. and p.m. commute peak hours. Tables 2.1-3 and 2.1-4 provide the LOS thresholds for freeway and intersection analysis, respectively.

**Table 2.1-3. Freeway Mainline, Weaving, and Ramp Junction Level of Service Criteria**

Level of Service <sup>a</sup>	Maximum Density (passenger cars per mile per lane)	
	Basic Freeway Sections	Freeway Weaving Segments and Ramp Junctions
A	11	10
B	18	20
C	26	28
D	35	35
E	45	>35
F	45	Demand exceeds capacity

Source: Transportation Research Board 2000.

<sup>a</sup> Freeway mainline LOS based on a 65 mph free-flow speed.

**Table 2.1-4. Intersection Level of Service Definitions for Highway Capacity Manual Methodology**

Level of Service	Description of Traffic Conditions	Average Control Delay Per Vehicle (seconds)
<b>Signalized (Signal-Controlled) Intersections</b>		
A	Insignificant delays: No approach phase is fully used, and no vehicle waits longer than one red indication	≤10
B	Minimal delays: An occasional approach phase is fully used, and drivers begin to feel restricted	>10–20
C	Acceptable delays: Major approach phase may become fully used, and most drivers feel somewhat restricted.	>20–35
D	Tolerable delays: Drivers may wait through more than one red indication; queues may develop but dissipate rapidly, without excessive delays	>35–55
E	Significant delays: Volumes are approaching capacity, vehicles may wait through several signal cycles, and long vehicle queues form upstream	>55–80
F	Excessive delays: Conditions are at capacity, with extremely long delays; queues may block upstream intersections	>80
<b>Unsignalized Intersections</b>		
A	No delay for stop-controlled approaches	≤10
B	Operations with minor delay	>10–15
C	Operations with moderate delays	>15–25
D	Operations with some delays	>25–35
E	Operations with high delays and long queues	>35–50
F	Operation with extreme congestion, with very high delays and long queues unacceptable to most drivers	>50

Source: Transportation Research Board 2000.

Other “measures of effectiveness” (MOEs) used in the traffic analysis include vehicle hours of travel (VHT), defined as the total number of vehicle hours traveled per hour within the study area; vehicle hours of delay (VHD), defined as the number of vehicle hours of delay per hour resulting from congestion within the study area; vehicle miles traveled (VMT), defined as the total number of vehicle miles traveled during the peak hours in the study area; and the average travel times for trips within the study area.

### Affected Environment

The study area for the traffic operations analysis includes components of the regional freeway system and ramp terminal intersections in the eastbound direction on I-80 from Red Top Road to Air Base Parkway; on I-680 northbound between Gold Hill Road and I-80; and on SR 12E from I-80 to Civic Center Drive. I-80 is a major east-west freeway extending from San Francisco to the East Coast of the United States, and it serves as a major connection between the Bay Area and Sacramento regions. It is also a major truck route of statewide and national significance. The study area on I-80 extends east to Air Base Parkway because congestion that develops in this area affects traffic flow upstream in the area of the eastbound I-80 Cordelia Truck Scales. The existing eastbound I-80 Cordelia Truck Scales are located between Suisun Valley Road and SR 12E. SR 12E extends eastward from I-80 into the California Central Valley and foothills. SR 12E is included in the study area because p.m. peak-hour congestion in the eastbound direction affects the eastbound I-80 corridor. I-680 connects I-80 to the Benicia-Martinez Bridge and Contra Costa County to the south of the study area.

The existing conditions analysis presented below represents fall 2004 conditions.<sup>2</sup> At that time, westbound I-80 had four mixed-flow lanes plus a fifth auxiliary lane between the SR 12E connector and the I-680 southbound connector. Eastbound I-80 had four mixed-flow lanes because the fifth auxiliary lane between the I-680 northbound connector and SR 12E connector had not been completed when the September 2004 data collection was conducted. SR 12E provided two lanes in each direction, an interchange at Chadbourne Road, and at-grade intersections at Beck Avenue and Pennsylvania Avenue. I-680 provided two lanes in each direction within the study area.

### Data Collection

Traffic counts for the a.m. and p.m. peak periods were conducted in the study area in September 2004. The peak hours in the project study area are generally 7:30–8:30 a.m. and 4:30–5:30 p.m. Truck counts at the I-80 eastbound Cordelia Truck Scales indicated an a.m. peak hour volume of 344 trucks and a p.m. peak hour volume of 216 trucks. The Draft Traffic Operations Report includes graphics showing the traffic volumes throughout the study area.

### Operations Analysis

The existing (Fall 2004) operating conditions for the freeway sections and ramp terminal intersections within the project study area were analyzed using 13 model runs of the validated and calibrated peak period VISSIM traffic operations model. The modeling methodology is described in the *Draft Traffic Operations Report*. The text below summarizes the analysis results.

### Mainline and Ramp Operations

The system-wide measures of effectiveness for existing conditions are summarized in Table 2.1-5, and mainline segment and ramp junction results are summarized in Table 2.1-6. Detailed calculations are contained in *I-80/I-680/SR 12 Interchange PR/ED: Existing Weekday (Tuesday through Thursday) Traffic Operating Conditions for the Expanded Project Area—Technical Memorandum* (Fehr & Peers 2005b).

**Table 2.1-5. Existing (Fall 2004) Measures of Effectiveness**

MOE	A.M. Peak Hour	P.M. Peak Hour
VMT (per hour)	50,690	75,120
VHT (per hour)	860	1,835
VHD (per hour)	60	665

*Note:* The study area extends on I-80 eastbound from west of Red Top Road to east of Air Base Parkway/Waterman Boulevard and on northbound I-680 south of Gold Hill Road to I-80. The study area also includes eastbound SR 12 east of I-80 and all ramps.

<sup>2</sup> Note that although this report contains fall 2004 baseline data, Fehr & Peers has conducted a revalidation of the VISSIM traffic analysis model to ensure that the model accurately reflects current (2008) conditions. This effort was undertaken at the request of Caltrans Highway Operations, to ensure that the forecasts produced with the model remain reliable. This work is described in *I-80 / I-680 / SR 12 Interchange PR/ED: Updated Validation of the VISSIM Traffic Operations Model to 2007—2008 Conditions Technical Memorandum* (Fehr & Peers 2008a). The work did not include a complete reassessment of existing conditions throughout the study area, which is why the fall 2004 data remain the baseline presented in this environmental document.

**Table 2.1-6. Existing (Fall 2004) Mainline and Ramps Analysis**

Segment	A.M. Peak Hour		P.M. Peak Hour	
	Density <sup>a</sup>	LOS	Density <sup>a</sup>	LOS
<b>Mainline and Weave Sections</b>				
<b>I-680</b>				
Northbound I-680, between Gold Hill Road and Central Way	12	B	16	B
<b>I-80</b>				
Eastbound I-80, west of Red Top Road	13	B	19	C
Eastbound I-80, between Red Top Road and the SR 12W connector	14	B	30	D
Eastbound I-80, between the SR 12W connector and Lopes Road (weave) <sup>b</sup>	17	B	<b>56</b>	<b>F</b>
Eastbound I-80, between the northbound I-680 Connector and Pittman Road (weave) <sup>b</sup>	21	C	<b>84</b>	<b>F</b>
Eastbound I-80, between Pittman Road and the truck scales (weave) <sup>b</sup>	19	B	<b>57</b>	<b>F</b>
Eastbound I-80, between the truck scales and the SR 12E connector	22	C	30	D
Eastbound I-80, between SR 12E and Abernathy Road	18	B	25	C
Eastbound I-80, between Abernathy Road and Auto Mall Parkway (weave) <sup>b</sup>	16	B	24	C
Eastbound I-80, between Beck Avenue and Travis Boulevard (weave) <sup>b</sup>	16	B	<b>40</b>	<b>F</b>
Eastbound I-80, between Travis Boulevard and Air Base Parkway/Waterman Boulevard	18	C	43	E
Eastbound I-80, east of Air Base Parkway/Waterman Boulevard	17	B	27	D
<b>On-Ramp Merge Sections</b>				
<b>I-680</b>				
Northbound I-680, at Gold Hill Road	16	B	16	B
<b>I-80</b>				
Eastbound I-80, at Red Top Road	11	B	19	B
Eastbound I-80, at the truck scales	17	B	57	E <sup>c</sup>
Eastbound I-80, at AutoMall Parkway	12	B	32	D
Eastbound I-80, at Travis Boulevard	14	B	55	E <sup>c</sup>
Eastbound I-80, at Air Base Parkway/Waterman Boulevard	13	B	26	C
<b>SR 12</b>				
Eastbound SR 12E, at Chadbourne Road	12	B	18	B
<b>Off-Ramp Diverge Sections</b>				
<b>I-680</b>				
Northbound I-680, at Gold Hill Road	13	B	23	C
Northbound I-680, at Central Way	15	B	<b>43</b>	<b>F</b>
<b>I-80</b>				
Eastbound I-80, at Red Top Road	12	B	18	B
Eastbound I-80, at the eastbound SR 12E Connector	16	B	23	C
Eastbound I-80, at Abernathy Road	13	B	21	C
Eastbound I-80, at Air Base Parkway/Waterman Boulevard	13	B	23	C
<b>SR 12</b>				
Eastbound SR 12E, at Chadbourne Road	12	B	16	B

Notes: **Bold font** indicates unacceptable operations.

<sup>a</sup> Density is expressed in vehicles per hour per lane and is based on the average of 13 model runs.

<sup>b</sup> LOS thresholds for weaving sections are different from those for mainline sections. Refer to Table 1 in the *Draft Traffic Operations Report* for thresholds.

<sup>c</sup> This ramp operates at capacity and is by definition LOS E, per discussions with Department staff.

The primary results of the eastbound I-80 a.m. peak hour analysis are listed below.

- All freeway mainline, on-ramp merge sections, and off-ramp diverge sections operate at acceptable LOS C conditions or better.
- All study locations operate at LOS D conditions or better.

The primary results of the eastbound I-80 p.m. peak hour analysis are listed below.

- Four of the 11 freeway mainline segments (37%) operate at unacceptable LOS F conditions.
- Two of the six on-ramp merge sections (33%) operate at LOS E conditions.
- All the off-ramp diverge sections operate at acceptable LOS C conditions or better.
- Sixteen of the 22 study locations (73%) operate at acceptable LOS D conditions or better.

### **Ramp Terminal Intersections Operations**

The ramp terminal intersection analysis results are summarized in Table 2.1-7; the detailed calculations are contained in I-80/I-680/SR 12 Interchange PR/ED: Existing Weekday (Tuesday through Thursday) Traffic Operating Conditions for the Expanded Project Area—Technical Memorandum (Fehr & Peers 2005b). Table 2.1-7 shows that 10 of the 11 (91%) study intersections operate at acceptable LOS C or better conditions during the a.m. peak hour. The all-way stop-controlled intersection of I-80 eastbound ramps/Red Top Road operates at LOS F in the a.m. peak hour as a result of a combination of heavy traffic volumes and all-way stop-controlled operations. During the p.m. peak hour, 11 of the 11 (100%) of the study intersections operate at acceptable LOS D conditions or better.

**Table 2.1-7. Existing (Fall 2004) Intersection Analysis**

Intersection		Traffic Control	A.M. Peak Hour		P.M. Peak Hour	
			Delay	LOS	Delay	LOS
1	I-80 eastbound ramps/Red Top Road	All-way stop	>50	F	5	A
2	I-80 eastbound ramps/Pittman Road	Signal	10	A	9	A
3	SR 12E eastbound ramps/Chadbourne Road	Side-street stop	1	A	8	A
4	I-80 eastbound ramps/Abernathy Road	All-way stop	4	A	25	D
5	I-80 eastbound ramps/Magellan Road	All-way stop	11	B	21	C
6	I-80 eastbound off-ramp/West Texas Street	Signal	3	A	4	A
7	I-80 eastbound on-ramp—Beck Avenue/West Texas Street	Signal	17	B	42	D
8	SR 12E/Beck Avenue	Signal	26	C	35	D
9	SR 12E/Pennsylvania Avenue	Signal	21	C	28	C
10	I-80 eastbound ramps/Travis Boulevard	Signal	2	A	9	A
11	I-80 eastbound ramps/Air Base Parkway	Signal	14	B	17	B

Notes: **Bold font** indicates unacceptable operations.

The signalized and all-way stop intersection LOS is based on the weighted average control delay of all movements measured in seconds per vehicle. Peak hour traffic volumes, lane configurations, and signal timing plans are used as inputs in the LOS calculations. At side-street stop-controlled intersections, the LOS rating is based on the control delay for each minor movement.

### ***Accident History***

Accident data for three years (2004–2006) from the Department’s TASAS were evaluated for the I-80 and SR 12E segments in the study area. Table 1-3 summarizes the TASAS data and highlights locations where the actual accident rate exceeds the statewide average for the westbound and eastbound directions.

As indicated in Table 1-3, the total accident rates for most segments of I-80 between Red Top Road and Air Base Parkway exceed the average rate for similar facilities. Fatal or fatal-plus-injury accident rates, or both, exceed the statewide average on each I-80 segment. The total accident rate also exceeds the statewide average for similar facilities for three of the four segments of SR 12E. The fatal-plus-injury accident rate exceeds the statewide average on the same three segments of SR 12E.

### ***Environmental Consequences***

This section describes the impacts of the project on traffic operations in the construction year (2015) and the design year (2035).

#### ***Methodology***

The detailed methodology used to develop the travel demand forecasts is described in *I-80/I-680/SR 12 Interchange PR/ED: Design Year 2035 Demand Forecasts at Project Gateways Technical Memorandum* (Fehr & Peers 2006). The methodology used to develop the construction year (2015) travel demand forecasts is described in the *Draft Traffic Operations Report*. In summary, 2035 passenger car travel demand forecasts were developed using the STA Travel Demand Model and VISUM modeling software, while heavy vehicle forecasts were developed using *peak truck hour* growth projections provided in *Cordelia Truck Scales Relocation Study: Summary Report and Recommendations*, applying the growth factor to the existing commute peak hour truck counts. The construction year (2015) travel demand and truck forecasts were developed for the project by interpolating between existing and design year (2035) volumes.

#### ***Construction Year (2015) Traffic Operations Analysis***

### **Impact TRA-1: Improved Network-Wide Freeway Operations during the Construction Year (2015)**

Table 2.1-8 presents the key network-wide MOEs in 2015 with the project and without the project, as well as the change in each MOE with the project. These MOEs are the most informative measure of what a motorist traveling eastbound on I-80 would expect on a trip through the project area. As shown in the table, the project would improve operations in 2015, relative to conditions without the project, for all MOEs in both the a.m. and p.m. peak hours.

**Table 2.1-8. Year 2015 with Project—Eastbound Measures of Effectiveness<sup>a</sup>**

MOE	A.M. Peak Hour		P.M. Peak Hour	
	Without Project	With Project <sup>b</sup>	Without Project	With Project <sup>b</sup>
VMT (per hour)	116,055	116,095 (0%)	176,960	176,490 (0%)
VHT (per hour)	2,020	1,925 (-5%)	4,945	4,810 (-3%)
VHD (per hour)	115	75 (-35%)	2,145	2,050 (-4%)
Study locations operating at LOS E or F <sup>c</sup>	1	1 (0%)	16	16 (0%)
Network-wide average travel times (minutes:seconds)	7:31	7:10 (-5%)	27:56	22:10 (-26%)

- <sup>a</sup> The study area extends on I-80 eastbound from west of Red Top Road to east of Air Base Parkway/Waterman and on northbound I-680 south of Gold Hill Road to I-80. The study area also includes eastbound SR 12 east of I-80 and all ramps.  
<sup>b</sup> Percent change from no-project conditions is presented in parentheses.  
<sup>c</sup> Total of 38 study locations under no-project conditions and 37 study locations under with-project conditions.

In the a.m. peak hour in 2015, eastbound I-80 traffic volumes are projected to increase by more than 15% over existing conditions in the vicinity of the truck scales facility with or without the proposed project. Nevertheless, eastbound I-80 would continue to be the off-peak direction during the a.m. peak hour. The analysis shows that all network-wide MOEs would improve or remain the same with the project.

In 2015, eastbound I-80 p.m. peak hour traffic volumes are projected to increase by more than 40% over existing conditions in the vicinity of the truck scales facility with or without the proposed project. The eastbound travel direction is the peak direction during the p.m. peak hour, and severe congestion would occur without the project. Although the project would improve eastbound p.m. operations in nearly all respects, its benefits would be limited by the fact that at-grade signalized intersections would remain at Pennsylvania Avenue and Beck Avenue on SR 12E, causing vehicle queues to extend back from SR 12E onto eastbound I-80. This would constrain the amount of traffic that could enter the project area from northbound I-680, eastbound SR 12W, and eastbound I-80 both with and without the project, causing significant congestion. Nevertheless, as shown in Table 2.1-8, the proposed project would improve freeway operations overall, resulting in a decrease in system-wide delay.

This would be a beneficial effect.

**Impact TRA-2: Improved Conditions or No Change at Most Freeway System Analysis Locations in 2015**

Conditions would be improved or would not change at all freeway system analysis locations except one in 2015: on eastbound I-80 at the eastbound SR 12E connector in the p.m. peak hour.

Table 2.1-9 presents the freeway mainline, off-ramp, and on-ramp operations results.

**Table 2.1-9. Year 2015 with Project—Mainline and Ramps Analysis**

Segment	A.M. Peak Hour <sup>a</sup>				P.M. Peak Hour <sup>a</sup>			
	No Project		With Project		No Project		With Project	
	Density	LOS	Density	LOS	Density	LOS	Density	LOS
<b>Mainline and Weave Sections</b>								
<b>I-680</b>								
Northbound I-680, between Gold Hill Road and Central Way	21	C	20	B	135	F	115	F
<b>I-80</b>								
Eastbound I-80, west of Red Top Road	17	B	17	B	25	C	25	C
Eastbound I-80, between Red Top Road and the SR 12W connector	17	B	14	B	23	C	23	C
Eastbound I-80, between SR 12W and Green Valley Road/ I-680 southbound (weave) <sup>b</sup>	17	B	17	B	28	C	28	C
Eastbound I-80, between Pittman Road and the truck scales (weave) <sup>b</sup>	20	B	18	B	110	F	96	F
Eastbound I-80, between the truck scales and Abernathy Road (weave) <sup>b, c</sup>	N/A <sup>c</sup>		19	B	N/A <sup>c</sup>		22	C
Eastbound I-80, between Abernathy Road and West Texas Street (weave) <sup>b</sup>	18	B	16	B	23	C	21	C
Eastbound I-80, between Beck Avenue and Travis Boulevard (weave) <sup>b</sup>	17	B	15	B	23	C	21	C
Eastbound I-80, between Travis Boulevard and Air Base Parkway/Waterman Boulevard	16	B	14	B	26	C	24	C
Eastbound I-80, east of Air Base Parkway/Waterman Boulevard	19	C	18	C	29	D	28	D
<b>SR 12</b>								
Eastbound SR 12E, between the truck scales and Chadbourne Road (weave) <sup>b, c</sup>	N/A <sup>c</sup>		10	A	N/A <sup>c</sup>		159	F
Eastbound SR 12E, between Webster Street and Civic Center Boulevard (weave) <sup>b</sup>	11	B	11	B	18	B	18	B
<b>On-Ramp Merge Sections</b>								
<b>I-680</b>								
Northbound I-680, at Gold Hill Road	19	B	19	B	127	F	105	F
<b>I-80</b>								
Eastbound I-80, at Red Top Road	9	A	9	A	18	B	18	B
Eastbound I-80, at Green Valley Road	11	B	11	B	40	F	40	F
Eastbound I-80, at the connector from northbound I-680	18	B	18	B	114	F	100	F
Eastbound I-80, at the truck scales <sup>d</sup>	22	C	N/A <sup>d</sup>		92	F	N/A <sup>d</sup>	
Eastbound I-80, at Travis Boulevard	9	A	10	A	18	B	18	B
Eastbound I-80, at Air Base Parkway/Waterman Boulevard	12	B	13	B	22	C	22	C

Segment	A.M. Peak Hour <sup>a</sup>				P.M. Peak Hour <sup>a</sup>			
	No Project		With Project		No Project		With Project	
	Density	LOS	Density	LOS	Density	LOS	Density	LOS
<b>SR 12</b>								
Eastbound SR 12E, at Chadbourne Road	13	B	12	B	<b>143</b>	<b>F</b>	<b>143</b>	<b>F</b>
Eastbound SR 12E, at Civic Center Boulevard	14	B	14	B	24	C	24	C
<b>Off-Ramp Diverge Sections</b>								
<b>I-680</b>								
Northbound I-680, at Gold Hill Road	20	B	20	B	<b>124</b>	<b>F</b>	<b>98</b>	<b>F</b>
Northbound I-680, at Central Way	21	C	21	C	<b>138</b>	<b>F</b>	<b>124</b>	<b>F</b>
Northbound I-680, at Suisun Valley Road	17	B	17	B	<b>144</b>	<b>F</b>	<b>126</b>	<b>F</b>
<b>I-80</b>								
Eastbound I-80, at Red Top Road	14	B	14	B	20	B	20	B
Eastbound I-80, at the connector to eastbound SR 12E	23	C	11	B	<b>89</b>	<b>F</b>	<b>136</b>	<b>F</b>
Eastbound I-80, at Abernathy Road <sup>e</sup>	12	B	N/A <sup>e</sup>		25	C	N/A <sup>e</sup>	
Eastbound I-80, at Air Base Parkway/Waterman Boulevard	13	B	12	B	19	B	19	B
<b>SR 12</b>								
Eastbound SR 12E, at Chadbourne Road <sup>e</sup>	16	B	N/A <sup>e</sup>		<b>131</b>	<b>F</b>	N/A <sup>e</sup>	
Eastbound SR 12E, at Webster Street	16	B	15	B	21	C	21	C

Notes: **Bold font** indicates unacceptable operations. **Dark shading** indicates an impact for CEQA considerations.

- <sup>a</sup> Density is expressed in vehicles per hour per lane. Speed is expressed in mph and is the speed within the influence area.
- <sup>b</sup> LOS thresholds for weaving sections are different from mainline sections.
- <sup>c</sup> This analysis segment only applies to the with-project case. The corresponding no-project segments appear as standard merges in the on-ramp merge section and as standard diverges in the off-ramp diverge section.
- <sup>d</sup> This analysis location is not a standard merge in the with-project case and so does not appear in the on-ramp merge section. Instead, for the with-project case, it is included within the applicable weave section.
- <sup>e</sup> This analysis location is not a standard diverge in the with-project case and so does not appear in the off-ramp diverge section. Instead, for the with-project case, it is included within the applicable weave section.

The analysis shows that during the a.m. peak hour, both with and without the project, all freeway mainline segments, on-ramp merge sections, and off-ramp diverge sections are projected to continue to operate at acceptable LOS E conditions or better.

During the p.m. peak hour, 12 analysis locations are projected to operate at LOS F without the project, and 11 locations are projected to operate at LOS F with it.<sup>3</sup> Although most individual analysis locations either would improve or have no change with the project, one analysis location would worsen with the project. Eastbound I-80 at the connector to eastbound SR 12E would be somewhat more congested with the project because there is only a single mainline lane plus a long deceleration lane serving the off-ramp, whereas without the proposed project, there is a full mainline lane plus a shared mainline lane—in effect two full mainline lanes feeding the off-ramp. This analysis location is denoted with shading in Table 2.1-9. The vehicle density at this location is projected to be well over capacity without the proposed project and is projected to

<sup>3</sup> Note that certain analysis segments cannot be directly compared between the cases because the project design changes the lane geometry in the segment; these locations are noted in Table 2.1-10.

increase with it. Note that the ramp diverge analysis considers only the outside lanes associated with the diverge. Because this location is projected to operate at LOS F with or without the project, this is not considered an adverse effect. The Interstate 80/Interstate 680/State Route 12 Interchange Project is being designed to address congestion as a result of high travel demand growth through the project area.

### Impact TRA-3: Ramp Terminal Intersections Operating at LOS F in the A.M. and P.M. Peak Hours in 2015

In 2015, one ramp terminal intersection would operate at LOS F in the a.m. peak hour, and four ramp terminal intersections would operate at LOS F in the P.M. peak hour, both with and without the project.

Table 2.1-10 presents the ramp terminal intersection operations results. The intersections that are projected to operate at LOS F, with or without the project, are:

- Pittman Road/I-80 eastbound ramps (p.m. peak hour only),
- I-80 eastbound on-ramp/Beck Avenue/West Texas Street (p.m. peak hour only),
- Beck Avenue/SR 12 (a.m. and p.m. peak hours), and
- Pennsylvania Avenue/SR 12 (p.m. peak hour only)

**Table 2.1-10. Year 2015 with Project—Intersection Analysis**

Intersection <sup>a</sup>		A.M. Peak Hour				P.M. Peak Hour			
		No Project		With Project		No Project		With Project	
		Delay	LOS	Density	LOS	Density	LOS	Density	LOS
1	Red Top Road/I-80 eastbound ramps	22	C	20	B	13	B	12	B
2	Jameson Canyon Road (SR 12)/ Red Top Road	28	C	28	C	14	D	49	D
3	Green Valley/Lopes Road/ I-80 eastbound ramps	15	B	16	B	11	B	12	B
4	Pittman Road/ I-80 eastbound ramps	16	B	16	B	<b>&gt;80</b>	<b>F</b>	<b>&gt;80</b>	<b>F</b>
5	Chadbourne Road/SR 12 eastbound ramps	5	A	4	A	35	C	39	D
6	Abernathy Road/ I-80 eastbound ramps	7	A	7	A	34	C	61	E
7	West Texas Street/I-80 eastbound off-ramp	5	A	5	A	10	A	11	B
8	I-80 eastbound on-ramp/Beck Avenue/West Texas Street	18	B	18	B	<b>&gt;80</b>	<b>F</b>	<b>&gt;80</b>	<b>F</b>
9	Beck Avenue/SR 12	<b>&gt;80</b>	<b>F</b>	<b>&gt;80</b>	<b>F</b>	<b>&gt;80</b>	<b>F</b>	<b>&gt;80</b>	<b>F</b>
10	Pennsylvania Avenue/SR 12	48	D	49	D	<b>&gt;80</b>	<b>F</b>	<b>&gt;80</b>	<b>F</b>
11	I-80 eastbound ramps/Travis Boulevard	2	A	2	A	6	A	6	A
12	I-80 eastbound ramps/Air Base Parkway	11	B	11	B	14	B	14	B

Notes: **Bold font** indicates unacceptable operations. **Dark shading** indicates an impact for CEQA considerations.

<sup>a</sup> All intersections are signalized. Signalized intersection LOS is based on the weighted average control delay of all movements measured in seconds per vehicle. Peak hour traffic volumes, lane configurations, and signal timing plans are used as inputs in the LOS calculations.

These LOS F conditions result from the highly congested conditions in the corridor that are projected to occur with or without the project. At the first two intersections, capacity improvements are being planned as part of the Interstate 80/Interstate 680/State Route 12 Interchange Project, currently in the environmental clearance phase. The second two intersections are planned to be replaced by grade-separated interchanges, as part of the same interchange project. This is not an adverse effect.

#### **Impact TRA-4: Temporary Disruption of Traffic Patterns and Emergency Services during Construction**

Construction activities associated with the proposed project would result in disruptions of traffic patterns and emergency services during the construction period. Temporary construction impacts would be substantial but are anticipated to be minimized because the construction work would occur south of the existing freeway and because phasing is planned. Temporary construction impacts are anticipated to be the greatest at the eastbound SR 12E connector from eastbound I-80. As part of the Department's standard procedures, the following measures to reduce construction-related traffic impacts would be implemented:

- The contractor will be required to prepare and implement a TMP that will identify the locations of temporary detours and signage to facilitate local traffic patterns and through-traffic requirements.
- The project special provisions of the highway contract will require that emergency service providers (i.e., law enforcement, fire protection, and ambulance services) be given adequate advance notice of any street closures during the construction phases of the proposed project.
- The TMP will address short-term disruptions in existing circulation patterns during construction; for example, the TMP will identify the locations of temporary detours or temporary roads to facilitate local traffic circulation and through-traffic requirements.
- The project special provisions of the highway contract will require a parking plan to accommodate construction equipment and construction workers. For each construction phase, the parking plan will identify sites for construction parking.

With implementation of these measures, there would be no adverse effect related to temporary disruption of traffic patterns and emergency services during construction.

#### *Design Year (2035) Traffic Operations Analysis*

#### **Impact TRA-5: Improved Network-wide Freeway Operations during the Design Year (2035)**

Table 2.1-11 presents the key network-wide MOEs during the design year (2035) with and without the proposed project, as well as the change in each MOE with the project. The network-wide MOEs shown in Table 2.1-11 are the most informative measure of what a motorist traveling eastbound on I-80 would expect on a trip through the project area. As shown in the table, the proposed project would improve operations in 2035, relative to the no-project scenario, for all MOEs in both the a.m. and p.m. peak hours.

**Table 2.1-11. Year 2035 with Project—Eastbound Measures of Effectiveness**

MOE	A.M. Peak Hour		P.M. Peak Hour	
	No Project	With Project <sup>a</sup>	No Project	With Project <sup>a</sup>
VMT (per hour)	153,660	152,570 (0%)	160,445	172,395 (+7%)
VHT (per hour)	2,820	2,660 (-6%)	6,585	6,455 (-2%)
VHD (per hour)	280	225 (-20%)	4,045	3,745 (-7%)
Study locations operating at LOS E or F <sup>b</sup>	10	9 (-10%)	24	22 (-8%)
Network-wide average travel times (minutes:seconds)	8:03	7.27 (-10%)	36:42	34.12 (-6%)

Notes: The study area extends on I-80 **eastbound** from west of Red Top Road to east of Air Base Parkway/Waterman Boulevard and on northbound I-680 south of Gold Hill Road to I-80. The study area also includes eastbound SR 12E of I-80 and all ramps.

<sup>a</sup> Percent change from no-project conditions is presented in parentheses.

<sup>b</sup> Total of 38 study locations under no-project conditions and 37 study locations under with-project conditions.

In the a.m. peak hour in 2035, eastbound I-80 traffic volumes are projected to increase by more than 50% over existing conditions in the vicinity of the truck scales facility with or without the proposed project. Nevertheless, eastbound I-80 would continue to be the off-peak direction during the a.m. peak hour. The analysis shows that all network-wide MOEs improve or remain the same with the project.

In the p.m. peak hour in 2035, eastbound I-80 traffic volumes are projected to increase by more than 80% over existing conditions in the vicinity of the truck scales with or without the proposed project. The eastbound travel direction is the peak direction during the p.m. peak hour, and severe congestion would occur without the project. Although the project would improve eastbound p.m. operations in nearly all respects, its benefits would be limited by the fact that at-grade signalized intersections would remain at Pennsylvania Avenue and Beck Avenue on SR 12E, causing vehicle queues to extend back from SR 12E onto eastbound I-80. This would constrain the amount of traffic that could enter the project study area from northbound I-680, eastbound SR 12W, and eastbound I-80 both with and without the project. Nevertheless, as shown in Table 2.1-11, the project would improve freeway operations overall, resulting in a decrease in system-wide delay. Overall, this would be a beneficial effect.

### **Impact TRA-6: Improved Conditions or No Change at Most Freeway System Analysis Locations in 2035**

Conditions would improve or would not change at all freeway system analysis locations in 2035, except one: on eastbound I-80 at the Red Top Road on-ramp in the p.m. peak hour.

Table 2.1-12 presents the freeway mainline, off-ramp, and on-ramp operations results.

**Table 2.1-12. Year 2035 with Project—Mainline and Ramps Analysis**

Segment	A.M. Peak Hour <sup>a</sup>				P.M. Peak Hour <sup>a</sup>			
	No Project		With Project		No Project		With Project	
	Density	LOS	Density	LOS	Density	LOS	Density	LOS
<b>Mainline and Weave Sections</b>								
<b>I-680</b>								
Northbound I-680, between Gold Hill Road and Central Way	36	E	36	E	163	F	148	F
<b>I-80</b>								
Eastbound I-80, west of Red Top Road	31	D	34	D	79	F	79	F
Eastbound I-80, between Red Top Road and the SR 12W connector	18	C	18	C	74	F	79	F
Eastbound I-80, between SR 12W and Green Valley Road I-680 southbound (weave) <sup>b</sup>	22	C	22	C	70	F	67	F
Eastbound I-80, between Pittman Road and the truck scales (weave) <sup>b</sup>	29	D	26	C	106	F	103	F
Eastbound I-80, between truck scales and Abernathy Road (weave) <sup>b, c</sup>	N/A <sup>c</sup>		25	C	N/A <sup>c</sup>		24	C
Eastbound I-80, between Abernathy Road and West Texas Street (weave) <sup>b</sup>	25	C	21	C	19	B	19	B
Eastbound I-80, between Beck Avenue and Travis Boulevard (weave) <sup>b</sup>	25	C	21	C	18	B	18	B
Eastbound I-80, between Travis Boulevard and Air Base Parkway/Waterman Boulevard	23	C	20	C	22	C	22	C
Eastbound I-80, east of Air Base Parkway/Waterman Boulevard	25	C	23	C	25	C	25	C
<b>SR 12</b>								
Eastbound SR 12E, between the truck scales and Chadbourne Road (weave) <sup>b, c</sup>	N/A <sup>c</sup>		13	B	N/A <sup>c</sup>		157	F
Eastbound SR 12E, between Webster Street and Civic Center Boulevard (weave) <sup>b</sup>	15	B	15	B	15	B	17	B
<b>On-Ramp Merge Sections</b>								
<b>I-680</b>								
Northbound I-680, at Gold Hill Road	37	F	36	F	158	F	148	F
<b>I-80</b>								
Eastbound I-80, at Red Top Road	12	B	12	B	83	F	104	F
Eastbound I-80, at Green Valley Road	14	B	14	B	82	F	64	F
Eastbound I-80, at the connector from northbound I-680	26	C	26	C	126	F	96	F
Eastbound I-80, at the truck scales <sup>d</sup>	36	E	N/A <sup>d</sup>		135	F	N/A <sup>d</sup>	
Eastbound I-80, at Travis Boulevard	14	B	13	B	18	B	18	B
Eastbound I-80, at Air Base Parkway/Waterman Boulevard	18	B	17	B	20	B	18	C
<b>SR 12</b>								
Eastbound SR 12E, at Chadbourne Road	20	B	15	B	157	F	147	F
Eastbound SR 12E, at Civic Center Boulevard	17	B	17	B	24	C	24	C

Segment	A.M. Peak Hour <sup>a</sup>				P.M. Peak Hour <sup>a</sup>			
	No Project		With Project		No Project		With Project	
	Density	LOS	Density	LOS	Density	LOS	Density	LOS
<b>Off-Ramp Diverge Sections</b>								
<b>I-680</b>								
Northbound I-680, at Gold Hill Road	<b>38</b>	<b>F</b>	<b>36</b>	<b>F</b>	<b>152</b>	<b>F</b>	<b>143</b>	<b>F</b>
Northbound I-680, at Central Way	<b>36</b>	<b>F</b>	<b>36</b>	<b>F</b>	<b>165</b>	<b>F</b>	<b>131</b>	<b>F</b>
Northbound I-680, at Suisun Valley Road	27	C	27	C	<b>166</b>	<b>F</b>	<b>104</b>	<b>F</b>
<b>I-80</b>								
Eastbound I-80, at Red Top Road	<b>36</b>	<b>F</b>	<b>44</b>	<b>F</b>	<b>88</b>	<b>F</b>	<b>88</b>	<b>F</b>
Eastbound I-80, at Connector to eastbound SR 12E	33	D	13	B	<b>119</b>	<b>F</b>	<b>119</b>	<b>F</b>
Eastbound I-80, at Abernathy Road <sup>e</sup>	18	B	N/A <sup>e</sup>		13	B	N/A <sup>e</sup>	
Eastbound I-80, at Air Base Parkway/Waterman Boulevard	19	B	16	B	18	B	18	B
<b>SR 12</b>								
Eastbound SR 12E, at Chadbourne Road <sup>e</sup>	22	C	N/A <sup>e</sup>		<b>145</b>	<b>F</b>	N/A <sup>e</sup>	
Eastbound SR 12E, at Webster Street	20	B	20	B	15	B	15	B

Notes: **Bold font** indicates unacceptable operations. Dark shading indicates an impact for CEQA considerations.

- <sup>a</sup> Density is expressed in vehicles per hour per lane. Speed is expressed in mph and is the speed within the influence area.
- <sup>b</sup> LOS thresholds for weaving sections are different from mainline sections.
- <sup>c</sup> This analysis segment only applies to the with-project case. The corresponding no-project segments appear as standard merges in the on-ramp merge section and as standard diverges in the off-ramp diverge section.
- <sup>d</sup> This analysis location is not a standard merge in the with-project case and so does not appear in the on-ramp merge section. Instead, for the with-project case, it is included within the applicable weave section.
- <sup>e</sup> This analysis location is not a standard diverge in the with-project case and so does not appear in the off-ramp diverge section. Instead, for the with-project case, it is included within the applicable weave section.

The analysis shows that, during the a.m. peak hour, both with and without the proposed project, one merge section and three diverge sections are projected to operate at LOS F; all other mainline, weave, merge, and diverge sections would operate at acceptable LOS E conditions or better.

During the p.m. peak hour, 17 analysis locations are projected to operate at LOS F without the proposed project, and 16 locations are projected to operate at LOS F with it.<sup>4</sup> While most individual analysis locations either would improve or have no change with the project, two analysis locations would worsen with it. Eastbound I-80 at the Red Top Road on-ramp merge section and Eastbound I-80 between Red Top Road and the SR 12W connector are somewhat more congested with the project because of the longer queue backing up from the eastbound I-80-to-eastbound SR 12 connector; this queue affects the outside lanes at the Red Top Road on-ramp merge area and between Red Top Road and the SR 12W connector. These analysis locations are denoted with shading in Table 2.1-12. The vehicle density at these locations are projected to be well over capacity without the project and the vehicle densities are projected to increase slightly to moderately with the project. These effects would be minimal.

Note that the on-ramp merge analysis considers only the outside lanes associated with the merge. These locations are projected to operate at LOS F with or without the project. The Interstate

<sup>4</sup> Note that certain analysis segments cannot be directly compared between the cases because the project design changes the lane geometry in the segment; these locations are noted in Table 2.1-13.

80/Interstate 680/State Route 12 Interchange Project is being designed to address congestion as a result of high travel demand growth through the project area.

**Impact TRA-7: Intersections Operating at LOS F in the A. M. and P.M. Peak Hours in 2035**

In 2035, four ramp terminal intersections would operate at LOS F in the a.m. peak hour, both with and without the project. In the p.m. peak hour, eight intersections would operate at LOS F without the project, and seven intersections would operate at LOS F with the project.

Table 2.1-13 presents the 2035 ramp terminal intersection operations results. The LOS F conditions indicated in bold would result from the highly congested conditions in the corridor that are projected to occur with or without the project. Capacity improvements are being planned for these locations as part of the Interstate 80/Interstate 680/State Route 12 Interchange Project, currently in the project report phase. In the case of Beck Avenue/SR 12E and Pennsylvania Avenue/SR 12E, grade-separated interchanges are being planned as part of the interchange project. This is not considered an adverse effect.

The intersection of Abernathy Road/I-80 eastbound ramps would improve from LOS F to LOS E with the proposed project. This would be a beneficial effect.

**Table 2.1-13. Year 2035 with Project: Intersections Analysis**

Intersection <sup>a</sup>		A.M. Peak Hour				P.M. Peak Hour			
		No Project		With Project		No Project		With Project	
		Delay	LOS	Density	LOS	Density	LOS	Density	LOS
1	Red Top Road/I-80 eastbound ramps	>80	<b>F</b>	>80	<b>F</b>	>80	<b>F</b>	>80	<b>F</b>
2	Jameson Canyon Road (SR 12)/Red Top Road	>80	<b>F</b>	>80	<b>F</b>	>80	<b>F</b>	>80	<b>F</b>
3	Green Valley/Lopes Road/ eastbound I-80 ramps	52	D	51	D	27	C	42	D
4	Pittman Road/I-80 eastbound ramps	21	C	22	C	>80	<b>F</b>	>80	<b>F</b>
5	Chadbourne Road/SR 12 eastbound ramps	5	A	4	A	>80	<b>F</b>	>80	<b>F</b>
6	Abernathy Road/I-80 eastbound ramps	9	A	9	A	>80	<b>F</b>	77	E
7	West Texas Street/I-80 eastbound off-ramp	7	A	7	A	75	E	26	C
8	I-80 eastbound on-ramp/Beck Avenue/West Texas Street	23	C	22	C	>80	<b>F</b>	>80	<b>F</b>
9	Beck Avenue/SR 12	>80	<b>F</b>	>80	<b>F</b>	>80	<b>F</b>	>80	<b>F</b>
10	Pennsylvania Avenue/SR 12	>80	<b>F</b>	>80	<b>F</b>	>80	<b>F</b>	>80	<b>F</b>
11	I-80 eastbound ramps/Travis Boulevard	3	A	3	A	15	B	17	B
12	I-80 eastbound ramps/Air Base Parkway	15	B	15	B	41	D	38	D

Notes: **Bold font** indicates unacceptable operations. Light shading indicates a beneficial impact.

<sup>a</sup> All intersections are signalized. Signalized intersection LOS is based on the weighted average control delay of all movements measured in seconds per vehicle. Peak hour traffic volumes, lane configurations, and signal timing plans are used as inputs in the LOS calculations.

### **Impact TRA-8: Reduced Potential for Accidents in the Corridor**

The project would lessen the potential for accidents in the corridor by providing standard-length ramps for the I-80 eastbound truck scales and braiding the truck scales' ramps with the I-80 eastbound connector to SR 12 eastbound.

The higher-than-average accident rates experienced in the project corridor are partially related to the congestion caused by slow-moving trucks in the outside lanes and to truck queues backing up onto mainline lanes, combined with passenger car and truck weave, merge, and diverge movements in close proximity to the truck ramp diverge and merge areas. The project would provide standard-length ramps that would be braided—i.e., the flows would be separated—with one of the key nearby diverge movements, the I-80 eastbound-to-SR 12 eastbound connector ramp. This would promote smooth traffic flow and reduce the potential for accidents. This would be a beneficial effect.

### **Impact TRA-9: Improved Mobility for Emergency Service Providers, Transit Vehicles, and Goods Movement Vehicles**

As discussed under Impact TRA-1 and Impact TRA-5, the project would improve network-wide measures of effectiveness in the corridor, reducing VHD and the average travel time for trips through the corridor, in the eastbound direction. These improvements would benefit emergency service providers, buses, and goods movement vehicles, by reducing overall travel times. This would be a beneficial effect.

#### Effects of the No-Project Alternative

As shown in Tables 2.1-8 and 2.1-11, under the No-Project Alternative traffic operations in the project area would continue to worsen and operate at unacceptable LOS.

### **2.1.7 Visual/Aesthetics**

The information below is summarized from the VIA prepared for the proposed project (CirclePoint 2008b). This section describes the existing visual and aesthetic conditions in the study area, including a discussion of applicable *Solano County General Plan* goals and policies that relate to visual and aesthetic conditions in the project area.

#### Regulatory Setting

NEPA, as amended, establishes that the federal government should use all practicable means to ensure all Americans safe, healthful, productive, and *aesthetically* [emphasis added] and culturally pleasing surroundings (42 USC 4331[b][2]). To further emphasize this point, the FHWA in its implementation of NEPA (23 USC 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 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 Californians “with ... enjoyment of *aesthetic*, natural, scenic and historic environmental qualities” [emphasis added] (PRC Section 21001[b]).

### ***Affected Environment***

The project is located in Solano County. The project footprint, as shown in Figure 2.1-2, is defined as the area proposed for any ground-disturbing activities, such as construction activities, construction staging areas, and construction access. The project corridor spans approximately 2 miles along eastbound I-80 and SR 12. Portions of the project area not currently part of the highway are used primarily for agriculture.

### ***Background on Visual Analysis***

The visual impacts of project alternatives are determined by assessing the visual resource change resulting from the project and predicting viewer response to that change. Visual resource change is the sum of the change in visual character and change in visual quality. The first step in determining visual resource change is to assess the compatibility of the proposed project with the visual character of the existing landscape. The FHWA's method of visual resource analysis is used to determine visual character and visual quality. As part of this process, vividness, intactness, and unity of the viewpoint each were rated on a scale from 1 to 7. These scores were averaged to determine an overall visual quality score.

The second step is to compare the visual quality of the existing resources with projected visual quality after the project is constructed. For this analysis, a simulation of the project was prepared. The visual impact is determined by subtracting the visual quality score of the existing view from the visual quality score of the same view after project construction. Changes in visual character are also discussed.

### ***Landscape Unit***

To provide a framework for understanding visual effects of a proposed highway project, the regional landscape can be divided into distinct landscape units. A landscape unit is a portion of the regional landscape and can be thought of as an outdoor room that exhibits a distinct visual character. A landscape unit will often correspond to a place or district that is commonly known among local viewers.

One landscape unit has been identified in the project area. As shown in Figure 2.1-4, the landscape unit consists mainly of flat agricultural fields in Suisun Valley on the south side of I-80 between the hill just west of Suisun Creek and the I-80/SR 12E interchange. This landscape unit includes the existing I-80/SR 12E interchange and the existing truck scales (Figure 2.1-5).

### ***Existing Visual Character***

I-80 creates a line of manmade development through flat farmland on the valley floor. Several rural homes and farm buildings are scattered throughout the landscape unit on the agricultural land. The presence of agriculture creates a texture and a brown/green color. Because of its scale relative to other elements in this landscape unit, one building, a Budweiser brewery, dominates the eastern end of the landscape unit. The existing truck scales dominate the western end of the landscape unit. The rural character of this landscape unit is continuous with the exception of the Budweiser brewery and the existing truck scales.

### ***Existing Visual Quality***

The rural nature of this landscape unit creates a moderately high level of vividness. Although the majority of this landscape unit appears intact and unified in its agricultural character,

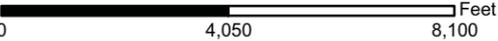
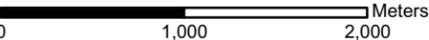


**Legend**

 Landscape Unit



1 inch equals 3,250 feet



Source: Nolte 2007, ESRI 2005, CirclePoint 2007, NAIP 2006.



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Sources: CirclePoint 2008.

**Figure 2.1-4  
Landscape Unit**





**Legend**

 Viewshed

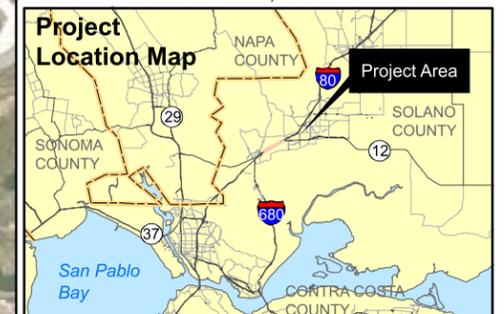


1 inch equals 3,250 feet

0 1,000 2,000 Meters

0 4,050 8,100 Feet

Source: Nolte 2007, ESRI 2005, CirclePoint 2007, NAIP 2006.



Sources: CirclePoint 2008.

**Figure 2.1-5  
Project Viewshed**



encroachment of industrial uses (e.g., the brewery) in the eastern portion of this landscape unit and the existing truck scales to the west, detract from the overall intactness and unity.

### *Project Viewshed*

A viewshed is composed of broad-range views from a specific viewing location. Viewsheds are generally quite large. The limits of a viewshed are defined as the visual limits of the views located from the proposed project. The viewshed also includes the locations of viewers likely to be affected by visual changes brought about by project features.

The viewshed for this analysis was determined by the height of the landforms and the absence of buildings along I-80. Because the project is on the valley floor, the viewshed stretches far to the south to Suisun Marsh (Figure 2.1-5). Views to the west currently are obstructed by the existing truck scales, although after project implementation the existing truck scales will be removed, and views to the west will be interrupted only by hills. Views to the east end at the I-80/SR 12 interchange and the Budweiser brewery.

### *Sensitive Viewers*

According to the FHWA's *Visual Impact Assessment for Highway Projects* (Federal Highway Administration 1980), viewer response is composed of two elements: viewer sensitivity and viewer exposure. These elements combine to form a method of predicting how the public might react to visual changes brought about by a highway project.

Local and regionally designated roads may reflect viewer sensitivity. The portion of I-80 within the project area is listed as a scenic roadway in *Scenic Roadways Element: A Part of the Solano County General Plan* (Sedway/Cooke 1977). No roadways in the project area are listed as state or city scenic highways, roads, or vistas.

Motorists would be the primary viewer group affected by the project. Motorists include both drivers and passengers traveling on I-80 in the project area. Motorists in approximately 160,000 vehicles drive through the project area during each weekday. These viewers would have moving views of the project from I-80.

Motorist sensitivity to visual change would vary based on whether viewers were passengers or drivers and based on the level of traffic congestion. Drivers traveling at normal speeds usually need to focus their attention on long-range, non-peripheral views.<sup>5</sup> However, passengers would likely have more of a heightened awareness of a wide range of views because they are not concentrating on the task of driving. Motorists traveling at normal speeds would have a much shorter duration of views than motorists driving slowly because of congested traffic (which is common in the project area during peak periods).

### *Visual Impact Analysis*

Because it is not feasible to analyze all of the views in which the proposed project would be seen, it is necessary to select one or more viewpoints that would most clearly represent the visual effects that the project would have. Due to the fact that the project site is confined to one location along the side of the highway, a single viewpoint was selected in this case. The viewpoint was

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<sup>5</sup> *Visual Impact Assessment for Highway Projects*, Federal Highway Administration (FHWA), March 1981

selected in consultation with the Department’s Landscape Architecture office to represent the most predominant view of the proposed truck scales (that of motorists traveling in the eastbound direction on I-80). The location of this viewpoint is shown in Figure 2.1-6.

As shown in Figure 2.1-7, this view from I-80 eastbound is characterized by the flat brown/green open agricultural fields of Suisun Valley. Agricultural fields make up the majority of the view south of I-80, and some trees and shrubs are seen adjacent to the highway. The foreground of this view also includes the wide, straight, flat, paved surface of I-80 and corresponding highway signs. In the distance, manmade elements, including a large tan building (the Budweiser brewery) and a tall, metal utility tower, are visible encroaching on this natural setting. These encroaching elements detract from the intactness and unity of the view, creating a moderately high intactness and unity. Views of the large expanse of agricultural fields are considered to have a moderately high vividness.

Environmental Consequences

The new truck scales, the size and shape of which are shown in Figure 2.1-7, are visible from the selected viewpoint. Also visible are the new paved surfaces alongside I-80, including the off-ramp to the truck scales, as well as the truck bays, parking, and inspection areas.

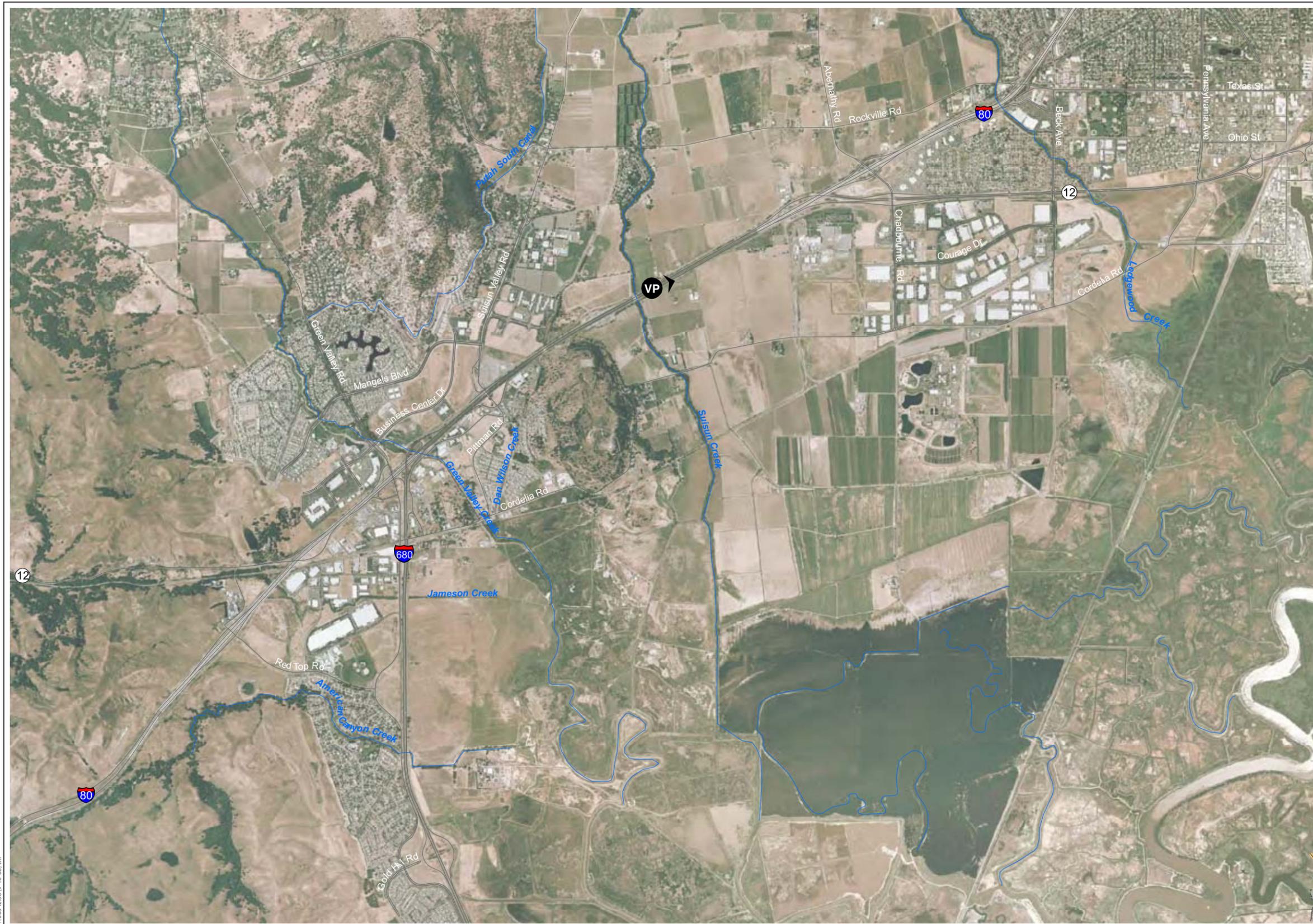
The addition of truck scales, a highway-related use, to the side of the highway would not substantially alter the existing character, especially because the existing truck scales would be removed. The project would change the visual quality, however, as shown in the chosen viewpoint.

The new paved surfaces and building will eliminate views of agricultural fields, reducing vividness from moderately high to moderately low. The majority of the new view would be of new project elements. The truck scale elements correspond with the existing highway elements, keeping the unity of the scene moderately high. Although the visual simulation from the selected viewpoint shows a relatively intact scene, the new truck scales would interrupt views of open agricultural fields as seen by motorists along I-80, reducing the intactness from moderately high to moderate.

A comparison of visual quality before and after the project is shown in Table 2.1-14. As shown in Table 2.1-14, development of the truck scales (without mitigation) would change the visual quality in this viewpoint from 5, moderately high, to 4, moderate.

**Table 2.1-14. Visual Quality Change in the Selected Viewpoint**

Visual Quality Criteria	Vividness	Intactness	Unity	Visual Quality (Average Scores for Vividness, Intactness, and Unity)
Existing conditions	Moderately high (Score: 5)			
Future conditions (with and without mitigation)	Moderately low (Score: 3)	Moderate (Score: 4)	Moderately high (Score: 5)	Moderate (Score: 4)

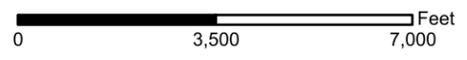
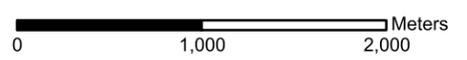


**Legend**

-  Project Viewpoint
-  Direction of Viewpoint



1 inch equals 3,250 feet



Source: Nolte 2007, ESRI 2005, CirclePoint 2007, NAIP 2006.



Graphics...00342.08 (9-10-08) tm

Source: CirclePoint 2008, Geographica Consulting 2008.

**Figure 2.1-6  
Viewpoint Location**





Existing view from I-80 eastbound looking east.



Visual simulation of proposed truck scales.

Source: CirclePoint 2008.

**Figure 2.1-7**  
**Visual Simulation**



### *Viewer Response*

The viewpoint represents motorists' views along eastbound I-80. Because this change would occur on I-80, potentially more than 100,000 of people per day would be exposed to the change. Daily commuters would have a higher cumulative duration of this view because they would see it on a daily basis. The general view duration of motorists and passengers would vary based on the amount of traffic. Motorists are anticipated to have a moderate level of sensitivity to visual change.

The analysis of visual and aesthetic impacts is based on a qualitative assessment of the change in views at the key viewpoints identified above. The project would have a negative visual impact if it would:

- adversely affect a scenic vista,
- damage or remove scenic resources,
- degrade the existing visual character or visual quality, or
- create a new source of substantial light or glare.

The project footprint is open farmland. There are no rock outcroppings on the site. The two residential structures on the site that would be displaced by the project are not considered historic or scenic resources.<sup>6</sup> The project footprint does contain several trees, but these are not unique in terms of size, shape, or character. These trees are not considered scenic resources. There are no scenic resources on the project footprint.

### **Impact VIS-1: Degradation of Visual Quality with Adverse Affects to a Scenic Vista**

The project would affect a scenic vista by decreasing the visual quality of views of open farmland from I-80. As previously discussed, completion of the project would decrease the existing visual quality, as seen by motorists along I-80, by one point. The project would result in a slightly adverse change to the existing visual quality, with moderate viewer response. This adverse change would be offset, to some degree, by the demolition of the existing scales (see Impact VIS-2). Additionally, architectural and landscaping minimization measures, described below, will increase the visual quality of the proposed truck scales.

### **Impact VIS-2: Beneficial Effect from Demolition of Existing Facility**

In addition to the visual change represented in Figure 2.1-7, the project also would include the demolition of the existing eastbound truck scales. Demolition of the existing facility could create a beneficial visual impact by opening up views of the vegetated hill behind the existing truck scales, thereby increasing the vividness and intactness of views from I-80. However, since the future use of this site has not been determined, the extent of change in visual quality is unknown. For example, were this area to be used for maintenance or storage facilities, these uses would introduce elements that would decrease the vividness and intactness of the landscape. Future uses

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<sup>6</sup> For a structure to be considered a scenic resource due to its historic nature, it does not need to qualify as a historic property under CEQA. Older buildings with historic significance to the local community can qualify as scenic resources.

of this site are likely to have a lower intensity of development than the current truck scales and therefore would result in somewhat of a beneficial impact. Since demolition of the existing scales would be likely to increase visual quality in this area, it would offset some degree of the visual impacts from the new truck scale facility.

### **Impact VIS-3: Alteration of the Existing Visual Character from Project Sound Walls**

Sound walls associated with the project's highway on-ramps would not greatly change the existing visual character or substantially alter existing views. Current views from the highway to the south in this location are obstructed by an orchard. With project implementation, views would remain obstructed by the new on-ramp structures and sound walls. Views of the highway from residences in this area would also experience slight changes. These views would change from views of the highway to views of the new ramps and associated sound walls. Since existing views would not substantially change, visual impacts from project sound walls are not considered an adverse effect.

Furthermore, sound wall aesthetics are part of a corridor aesthetics plan that is under development, as discussed under the Avoidance, Minimization, and/or Mitigation Measures section below. Such planned sound wall aesthetics will help increase the visual quality of the I-80 corridor.

### **Impact VIS-4: Temporary Decrease of Visual Quality during Construction**

During construction, the small trees and shrubs adjacent to the freeway would be removed. Crops also would be removed during grading, exposing the soils underneath. Construction equipment would be visible along the highway. Disturbed earth and construction equipment would disrupt and introduce an encroaching element into an otherwise agricultural setting. Although the immediate area is undeveloped, the surrounding area is developed, and construction from the Fairfield Corporate Commons project and the Interstate 80 High-Occupancy Vehicle Lane Project is visible in the immediate vicinity. However, the construction site would be out of character with the farmland surrounding it. The construction process would decrease visual quality by interrupting and decreasing the vividness of views and creating encroaching elements that would reduce the intactness and unity of the view. In addition, the construction site may include lighting, which would create a new source of light and glare.

Although adverse visual impacts would occur during construction, these effects would be temporary and would not contrast with the existing visual character of the area. After construction of the truck scales is completed, the view would be permanently altered as described above for Impacts VIS-1.

### **Avoidance, Minimization, and/or Mitigation Measures**

The Department and the FHWA mandate that a qualitative/aesthetic approach should be taken to address visual quality loss in the project area. This approach fulfills the letter and the spirit of FHWA requirements because it addresses the actual cumulative loss of visual quality that would occur in the project viewshed when the project is implemented. It also constitutes mitigation that can more readily generate public acceptance of the project.

Measures to minimize the visual change resulting from the project will consist of adhering to the following design requirements. The requirements are arranged by project feature and include design options in order of effectiveness. All measures will be designed and implemented with the concurrence of the Department's district landscape architect.

The project sponsors will implement the following measures to improve visual quality at the site of the proposed truck scales.

- As directed by the Department, landscaping shall be used around the perimeter of the site to screen the truck bays, building, and associated facilities from the view of sensitive land uses to the south. Landscape planting shall be used in front of the office portion of the building to provide privacy for building occupants and soften the appearance of the building. The landscaping shall not interfere with the line of sight or other operational aspects of the truck scales facility.
- The architectural design depicted in Figure 2.1-7 incorporates several key elements intended to reduce the visual scale of the proposed building, provide visual interest while not creating a visual distraction for motorists and an overall aesthetic which is compatible with the surrounding visual environment. These elements include:
  - The roof line of the truck bay building incorporates element (e.g. clearstory windows) which reduce the perceived scale and height of the structure.
  - To break up the large wall expanse of the truck bay building, architecture facade treatments such as curved metal canopies should be used as depicted in the simulation.
  - The color palette should be predominately neutral warm tones with colors used in key elements of the building architecture to create visual interest.
  - CHP signage on the building should be sized and placed on the building to both be visible from the freeway and not overly obtrusive in the view. The signage should be coordinated with the architecture of the building.
- The Department and STA are currently (as of October 2008) preparing a corridor aesthetics plan for the I-80 corridor in Solano County. The plan will provide recommendations as to signage, sound wall, retaining wall, structure and landscape aesthetics. These recommendations should be incorporated into the roadway, structures, sound wall and landscape designs for the truck scales project to the extent feasible.

### Effects of the No-Project Alternative

Under the No-Project Alternative, the proposed new truck scales would not be constructed. Therefore, no new visual or aesthetic effects would occur.

## **2.1.8 Cultural Resources**

### Regulatory Setting

*Cultural resources* in this document refer to all historical and archaeological resources, regardless of significance. Laws and regulations dealing with cultural resources include those described below.

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 (NRHP). Section 106 of the NHPA requires federal agencies to take into account the impacts of their undertakings on such properties and to allow the Advisory Council on Historic Preservation (ACHP) the opportunity to comment on those undertakings, following regulations issued by the ACHP (36 CFR 800). On January 1, 2004, a Section 106 programmatic agreement between the ACHP, FHWA, State Historic Preservation Officer, and the Department went into effect for the Department's projects, both state and local, with FHWA involvement. The *Programmatic Agreement Among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act as It Pertains to the Administration of the Federal-Aid Highway Program in California* (Programmatic Agreement) implements the ACHP's regulations, 36 CFR 800, streamlining the Section 106 process and delegating certain responsibilities to the Department. The FHWA's responsibilities under the Programmatic Agreement have been assigned to the Department as part of the Surface Transportation Project Delivery Pilot Program (23 CFR 773) (July 1, 2007).

Historic properties also may be covered under Section 4(f) of the U.S. Department of Transportation Act, which regulates the "use" of land from historic properties.

Historical resources are considered under the CEQA, as well as *PRC 5024.1*, which established the California Register of Historical Resources (CRHR). *PRC 5024* requires state agencies to identify and protect state-owned resources that meet NRHP listing criteria. It further specifically requires the Department to inventory state-owned structures in its rights-of-way.

### Affected Environment

Cultural resources studies completed in support of this document included a historic properties survey report (ICF Jones & Stokes 2008a), a historic resources evaluation report (ICF Jones & Stokes 2008b), an archaeological survey report (ICF Jones & Stokes 2008c), and an Extended Phase I report (XPI) (ICF Jones & Stokes 2008d).

The area of potential effect (APE) for archaeology includes the project footprint and a 20-foot radius around it. The APE for architectural resources includes the project footprint, any parcels of which there is a partial take, and any parcels where there are indirect effects.

The archaeological study consisted of a pedestrian survey of the entire project area, as well as a literature search at the Northwest Information Center (NWIC) of the California Historical Resources Information System (CHRIS) and consultation with the Native American Heritage Commission (NAHC) and six individuals listed by the NAHC as individuals with knowledge of or interest in the area.

The records search indicated that two archaeological sites are located within a 0.5-mile radius of the APE, and an additional six are located within a 1-mile radius. Although no previously recorded archaeological sites were located within the APE, and no resources were located within the APE as a result of the 2004 pedestrian survey, an XPI was conducted. Mechanical excavations were conducted and documented in the XPI because the project area was considered

sensitive based on the presence of buried archaeological resources in similar deposits, the proximity of Suisun Creek, and the undeveloped nature of the project area.

The XPI was conducted over seven days in July 2008. A total of 20 trenches were mechanically excavated to between 10 and 15 feet in depth in areas of proposed ground disturbance. A buried “A” Horizon (or prehistoric ground surface) was noted, indicating the potential for buried sites, but no cultural materials were located.

An architectural inventory of the APE was conducted on November 1, 2007; April 23, 2008; and June 4, 2008. The project area includes seven properties containing built-environment resources in addition to an irrigation feature constructed before 1964 that have been formally evaluated for this project (Appendix A in ICF Jones & Stokes 2008b). None of the pre-1964 buildings, structures, or linear resources in the APE appears to meet the criteria for listing in the NRHP, either individually or as a group. Similarly, none of these resources is a historical resource for the purposes of CEQA. The remaining properties within the APE met the criteria presented in the Programmatic Agreement, Attachment 4 (Properties Exempt From Evaluation), and did not require evaluation. These properties include a substation located on APN 0027-252-080 and a complex located on APN 0027-272-050. Overall, there does not appear to be potential for a historic district or a historic landscape in the project area, which might include any of these properties as contributing elements.

There are no historic properties located within the direct or indirect APE. Therefore, there is a finding of “No Historic Properties Affected.”

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

If human remains are discovered, further disturbances and activities will cease in any area or nearby area suspected to overlie remains, and the County coroner will be contacted, according to State Health and Safety Code Section 7050.5. Pursuant to *PRC 5097.98*, if the remains are thought to be Native American, the coroner will notify the NAHC, which then will notify the most likely descendent (MLD). At this time, the person who discovered the remains will contact the District Environmental Branch so that the branch may work with the MLD on the respectful treatment and disposition of the remains. Further provisions of *PRC 5097.98* are to be followed as applicable.

### Environmental Consequences

Because there are no historic properties in the project area, no historic properties would be affected by the project. However, there is always the possibility that unrecorded or buried archaeological resources or prehistoric- or historic-period human remains may be located within the project area. Construction activities associated with project construction, such as grading and excavation, may disturb these resources. If these resources were to meet the criteria for listing in the NRHP, the disturbance or destruction of the resources would be considered an adverse impact.

**Avoidance, Minimization, and/or Mitigation Measures**

No avoidance, minimization, or mitigation measures are necessary. Stipulation XV.B of the Section 106 Programmatic Agreement addresses “Discoveries without Prior Planning.” In the case of the discovery of a previously unidentified property or an unanticipated effect on a known property, it requires Caltrans to stop construction activity in the vicinity; evaluate the find; implement reasonable measures to avoid, minimize, and mitigate further harm to the property; notify appropriate agencies and Native American groups; and carry out appropriate actions.

**Effects of the No-Project Alternative**

Under the No-Project Alternative, the proposed new truck scales would not be constructed. Therefore, no effect on cultural resources would occur.