Draft Environmental Impact Statement/Report & 4 (f) Evaluation

Lincoln Bypass Placer County, State Route 65

KP R19.6/R38.3
PM R12.2/R23.8

Report Number: FHWA-CA-EIS xx-xx-xx

SCH Number 199090020626
03-PLA 65, KP R19.6/R38.3
PM R12.2/R23.8
03-173-333800

Construct Four lanes on new right of way
In Placer county,
from .03 km south of Industrial to Riosa Rd.

Draft Environmental Impact Statement
Draft Environmental Impact Report
and Section 4(f) Evaluation

Submitted Pursuant to:

California Environmental Quality Act, Div. 13, Public Resources Code
And the National Environmental Policy Act, 42 U.S.C. 4332(2)(c) and 40 USC 303
By the
U.S. Department of Transportation, Federal Highway Administration
and
the State of California, Department of Transportation

Cooperating Agencies:
National Marine Fisheries Service
U.S. Army Corps of Engineers
U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service

Date	Kome Ajise Acting North Region Environmental Services District 3 Division Planning Chief California Department of Transportation	Date	Michael E. Ritchie Division Administrator Federal Highway Administration

The comment period for this document will close on January 15, 2002. The following persons may be contacted for additional information concerning this document.

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ABSTRACT: The FHWA and Caltrans propose to construct a four lane freeway around the city of Lincoln, in Placer County, from south of Industrial Blvd to north of Riosa Rd. The purpose of the project is to alleviate congestion within the city of Lincoln and provide for inter-regional movement of goods and services. Seven alternatives are being evaluated, including the "No Build" alternative. The estimated cost of this project is between $151-194,000,000.

The proposed project could affect vernal pool fairy shrimp and tadpole shrimp, Swainson's hawk, Ahart's dwarf rush, Legenere, Bogg's Lake hedge hyssop, several bat species, valley elderberry longhorn beetle and numerous large oak trees, vernal pool habitat and agricultural land. The project will affect from 10 to 91 residences and between 123 to 214 acres of farmland. From 4.9 to 9.4 hectares of wetlands or waters of the U.S. could be affected.

Comments on this document are due by January 15, 2002. Please send comments to Ken Van Velsor, at the above address.

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3 AFFECTED ENVIRONMENT

This chapter describes the environment likely to be affected by the project. The purpose of this chapter is to give the reader background with which to evaluate the impacts of the project which are described in Chapter 4, Environmental Consequences.

3.1 SOCIAL, ECONOMIC AND LAND USE

A Community Impact Assessment Report (CIAR) was completed for this project. This report describes the socioeconomic environment and evaluates the socioeconomic impact of this project. Copies of this report are available for review at the Department of Transportation, District 3 Sacramento office, 2800 Gateway Oaks Dr., Sacramento, CA.

3.1.1 Study Area

The Study Area for the Community Impact Assessment includes the City of Lincoln and the Sheridan Community planning area in addition to the South Placer and Auburn-Foothills regions of Placer County. The City of Lincoln consists of an area of approximately 7891 ha (19,500 ac). The Sheridan Community planning area embodies an estimated 777 ha (1,920 ac) in Placer County's northwestern region. General information about the South Placer and Auburn-Foothills regions of Placer County is included to provide a greater understanding of the relative significance of the Lincoln Bypass to the West Placer County community. For purposes of this document, the South Placer and Auburn-Foothills regions of Placer County will be referred to as West Placer County.

3.1.2 Major Land Uses

The Placer County General Plan (1994) provides an overall framework of the County's land use plan (Figure 3-1), whereas, the City of Lincoln General Plan (1988) and Sheridan General Plan (1976) supplement and elaborate upon the Study Area. Figure 3-2 illustrates the major land uses for the City of Lincoln as adopted under the 1988 General Plan. Sheridan's land use designations adopted under the 1976 General Plan are depicted on Figure 3-3. Major land uses identified within the Study Area are: agriculture, residential, industrial, commercial and resource protection, greenbelt, open space, and recreation.

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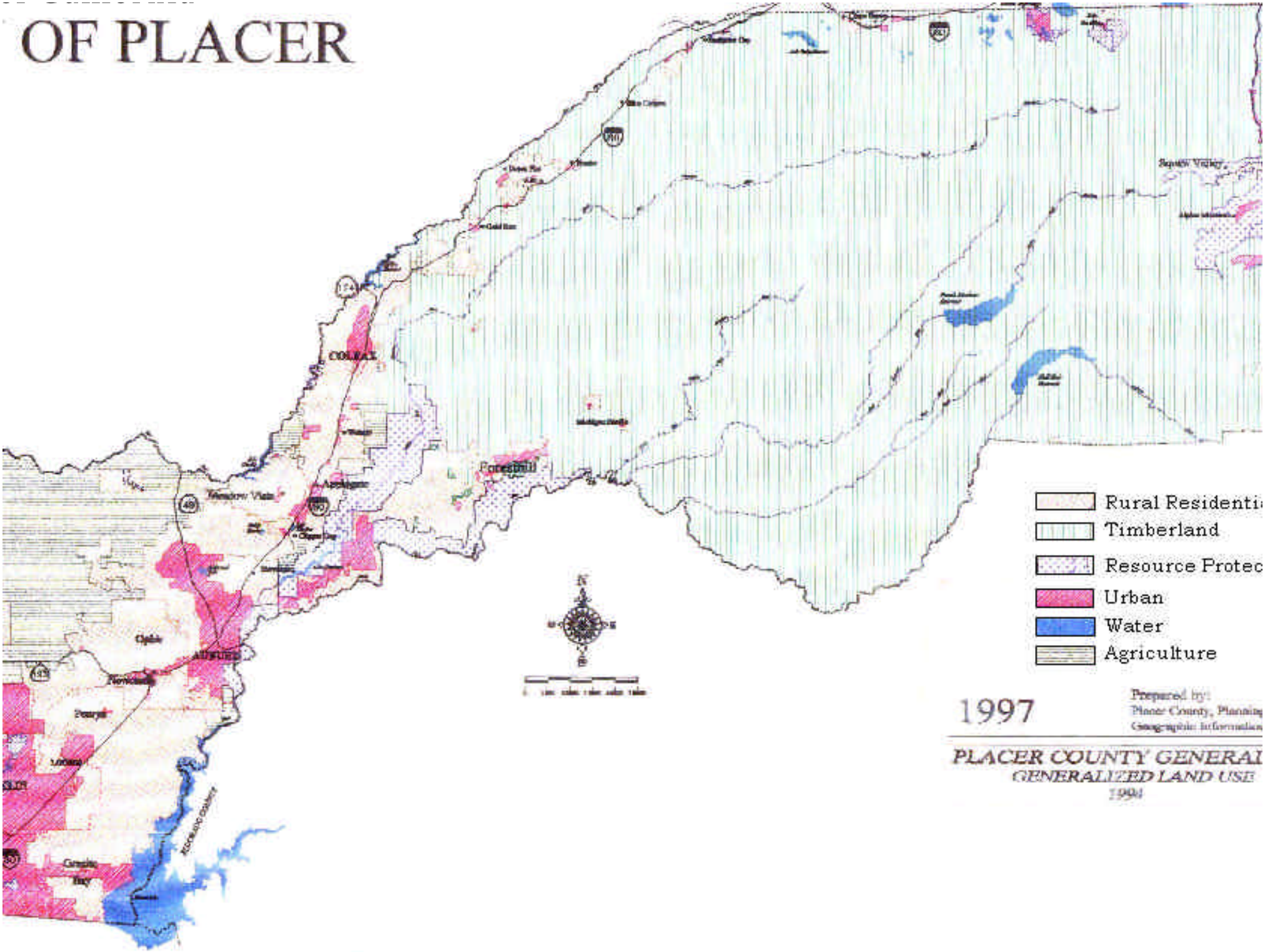
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Timberland
Resource Protec
Urban
Water
Agriculture
1997
Prepared by:
Placer County, Planning
Geographic Information
PLACER COUNTY GENERAL
GENERALIZED LAND USE
1996

Figure 3-2 Lincoln General Land Use Map

Figure 3-3 Sheridan Land Use Plan

Agriculture

Compared to other California counties, Placer County ranks in the lower 20% in terms of total farmland acreage; nevertheless, agriculture is an important component in Placer County's economy as substantiated by the $47.9 million value of production in 1996. Most of the agricultural use in the project area is within Placer County's jurisdiction and outside Lincoln's city limits.

An estimated 30% of Lincoln's planning area continues to be used for agriculture although zoned as urban reserve. Approximately 1813 ha (4,480 ac) lie in the southwestern region while an estimated 518 ha (1,280 ac) are located in the northwestern perimeter. With the exception of a turkey farm, the majority of the agricultural lands are used for cattle grazing; however, both irrigated and dry land farming do exist with rice being the dominant crop.

Unlike the City of Lincoln, the Sheridan planning area maintains approximately 84% of its land for agricultural uses, totaling an estimated 653 ha (1,613 ac). Agriculture within the Sheridan area has been highly dependent on the availability of water and the economy which has limited much of the area to dry grazing and irrigated pastures with moderate amounts of rice production.

Agricultural Preserves (Williamson Act Agreements)

As of January 1997, Placer County has 17 351 ha (42,876 ac) of farmland that are considered agricultural preserves, 6031 ha (14,903 ac) prime farmlands and 11 189 ha (27,973 ac) non-prime farmlands. A total of 9017 ha (22,275 ac) are currently slated for non-renewal of their contract; 4069 ha (10,173 ac) of prime farmlands and 4841 ha (12,102 ac) non-prime farmlands (Doleman, M., 1998).

Figure 3-4 shows the distribution of agricultural land. All of the alternatives will impact prime, unique, statewide, and locally important farmlands. Completion of the Farmland Impact Rating (See Chapter 7, Comments and Coordination and Appendix D) showed that alternatives, A5C1 and AAC2 had point values of 158, and 157, that fell below the 160-point threshold for the determination of significant impacts. The D1 and D13 point values were 162 and 161, respectively, necessitating the consideration of other alternatives or mitigation measures to reduce project impacts on farmland. The D13 South and North Modification values were both 147.

Figure 3-4 Williamson Act Lands

Residential

Rural residential areas in West Placer County have generally been limited to the agricultural areas while low, medium, and high density residential is essentially aggregated around the cities. Overall, the 1997 Placer County housing stock totaled 95,374 of which 75,955 were single family dwelling units, 14,167 were multiple family dwelling units and 5,252 were mobile homes/trailers.

Residential land uses in Lincoln occur primarily around the downtown area and project outward, generally concentrated south of Nicolaus Road and north of the Auburn Ravine. The housing stock of Lincoln is composed of approximately 2,874 single family residences, 849 multiple family units and 69 mobile homes.

Figure 3-5 Typical residential neighborhood in Lincoln (left) and Sheridan (right).

Sheridan's urban housing occurs within and on the immediate perimeters of the township. The core area is zoned for medium density residential housing while high and low density residential housing lies northwest of the core area on the east and west side of Camp Far West Road, respectively. Single family dwelling units primarily make up the housing stock, however one mobile home estate has been established within the township.

Industrial

There are approximately 1100 ha (2,750 ac) zoned for industrial, light industrial, and industrial planned development within Lincoln. Currently, an estimated 55% of the land zoned for industrial use is developed, primarily located along Lincoln's northern boundary. Undeveloped industrial land continues to be used for agricultural uses until development is necessary. The most prominent industrial companies include the Gladding-McBean clay manufacturing plant, Sierra Pacific Industries wood products, the American Poly-Therm aerospace plant, Weco aircraft gauges and D&D Cabinets. Sheridan's Sunset Industrial Park lies adjacent to the township, straddling SR 65.

Currently, 10 ha (26 ac) are zoned for industrial use in Sheridan and is not expected to expand in the near future.

Figure 3-6 Gladding McBean clay manufacturing plant and Sierra Pacific Lumber

Commercial

Lincoln's downtown business district is composed of mixed commercial, retail, professional offices, and service outlets. There is approximately 1.2 ha (3 ac) zoned for commercial use located in a corridor along SR 65 between "H" and "E" Streets. Some of the older buildings in the business district have been restored while new construction has primarily been comprised of fast food restaurants. Nevertheless, the downtown area has generally been maintained.

Figure 3-7 Typical downtown Lincoln and Sheridan businesses

Sheridan has set aside approximately 4 ha (10 ac) to be zoned for commercial uses. Resembling other rural communities, some businesses provide dual services such as the grocery/hardware store and the small market/bait store. Commercial zones are located along SR 65 and Camp Far West Road; however, many of the existing buildings are currently vacant.

Resource Protection, Greenbelt, Open Space, and Recreation

Placer County, the City of Lincoln and Sheridan have all identified agriculture as a major resource to be protected. Protection of agricultural land uses is generally in the form of buffer zones. These buffer zones can be greenbelts, open space and recreational facilities. Riparian vegetation along the Markham and Auburn Ravines as well as urban reserve in Lincoln's southeast region currently provide natural buffer zones. Buffer zones are not employed within the Sheridan planning area; however, Sheridan's land use designations have provided a "gradation" between the farmlands and urban development.

Placer Legacy Project

Recently, Placer County has implemented the Placer Legacy Project. The Placer Legacy Project is intended to develop specific, economically viable implementation programs that focus on the preservation of open spaces in order to maintain the abundance of the existing diverse natural habitats while supporting the economic viability of the County and enhancing property values. The Citizens Advisory Committee, the Interagency Working Group and the Scientific Working Group work under the umbrella of the Placer Legacy to develop programs where no programs currently exist and strengthen existing programs.

Placer Legacy proposes that Placer County put up to 75,000 acres of land into a preserve anticipated costing up to $183 million. How much land the Placer Legacy program can acquire will be based on the resources available to the county, including tax revenues, State or Federal grants and donations.

3.1.3 Developable Land

Generally, development in Placer County has been concentrated around the major cities, consistent with the land use zoning specified in the General Plan. Conversely, the City of Lincoln has zoned much of the agricultural land and open space as urban reserve.

Sheridan, being under the jurisdiction of Placer County with a strong agricultural influence, has not set aside additional areas as urban reserve. Moreover, empty lots are still available for development scattered within the already developed areas.

Development Trends

Within the Study Area, Lincoln is generally the only area that is experiencing growth or expects growth in the near future. Lincoln has steadily been growing from the existing city limits outward into its sphere of influence. As of May 2001, the City of Lincoln has approved eleven new subdivisions of which six are under construction throughout the city. Table 3-1 identifies current development in Lincoln. As development progresses outward, Lincoln has adopted the use of planned developments

as a means to prevent urban sprawl. Table lists the current projects for the City of Lincoln.

Table 3-1 Current Projects for the City of Lincoln

Residential Projects		
Brookview IV	209 Single Family Residential	23.4 ha (58 ac)
Lakeside Dr. Estates	98 Single Family Residential	Not available
Teal Hollow Subdivision	341 Single Family Residential	36.8 ha (91 ac) ±
Glenmoor	207 Single Family Residential	Not available
Terra Cotta Village	7 Single Family Residential	Not available
Aspen Meadows	87 Single Family Residential SFRS	Not available
Twelve Bridges Area A	4,331 Unit Planned Development	1209.6 ha (2,989 ac)
Twelve Bridges Sun City Lincoln Hills	6,800 Unit Planned Development	1191.8 ha (2,945 ac)
Twelve Bridges Area C	100 Unit Planned Development	20.23 ha (50 ac)
Lincoln Crossing	2,985 Unit Planned Development	433.0 ha (1,070 ac)
Three D	322 Unit Planned Development	42.1 ha (104 ac)
Industrial/Commercial Projects		
Lincoln Hills Town Center Shell Station	Gas Station and Car Wash	Not available
Sterling Pointe	Commercial/Industrial property	31.1 ha (76.83 ac)
Lincoln Center Chevron Facility	Gas Station, Convenience Store, Fast food Restaurant, Car Wash, Card Lock	0.91 ha (2.25 ac)
Joiner Parkway Self Storage Facility	28499 m^2 of storage (93,500 ft^2)	1.86 ha (4.6 ac)
Joiner Parkway Plaza	Commercial, food mart, gas station, car wash	0.88 ha (2.18 ac)
Eskaton	230 unit Senior Housing	Not available
Crosswinds Hangars	5 Hangars	1.73 ha (4.28 ac)
AB Tools Facility	7681 m^2 (25,200 ft^2) Industrial Facility	0.97 ha (2.4 ac)

Figure 3-8 Development Within the Lincoln City Limits

Current Planned Development Projects

Please see Figure 3-8 for locations of these projects. The **Lincoln Crossing** planned development is located in the southwest region of Lincoln's planning area. In addition to the residential neighborhoods, at build-out, the Lincoln Crossing will consist of a 80 ha (201 ac) of natural preserve area, a 65 ha (162 ac) golf course, 18 ha (44 ac) for business/professional and commercial uses, nine neighborhood parks totaling 17 ha (42 ac), two elementary schools, one junior high school and other public facilities.

The **Three D** planned development is located in the southwest region of Lincoln's planning area and west of the Lincoln Crossing planned development. The project includes 322 single family residences and floodplain and wetland preserves.

Twelve Bridges Areas A, B (aka Sun City Lincoln Hills) and C are located in the southeast region of Lincoln. The project includes 11,231 homes, commercial buildings, open space and recreational uses and public facilities. The unique feature of the Twelve Bridges development is the designation of 5,300 homes as age-restricted for an "active-adult community."

Sterling Pointe is a commercial/industrial park, which includes office warehouses and retail commercial and nature preserve areas on 31 ha (76.83 ac).

3.1.4 Federal, State, County and City Adopted Goals and Policies

Agriculture

Federal Policies

In accordance with the National Environmental Policy Act (NEPA) and the provisions of the Farmland Protection Policy Act (7 USC 4201-4209; and its regulations, 7 CFR Part 658), Federal actions that would result in a conversion of prime, unique, statewide, or local important farmland to non-farm use must examine the effects of the action using the criteria set forth in the Act, and, if there are adverse effects, must consider alternatives to lessen them. Early consultation with the Natural Resource Conservation Service (NRCS) and completion of a Farmland Conversion Impact Rating (Form AD 1006) was conducted on June 22,1999.

State Policies

The State of California has a voluntary program by which owners of farmland or open space can define their land as an Agricultural Preserve through the use of California Land Conservation (Williamson) Act contracts. Landowners are offered a preferential tax rate based on a property's agricultural value, rather than its full market value. In return, the landowner is required to sign a contract with the appropriate local jurisdiction

stipulating that the owner will not develop the land for a minimum of a ten-year period. Each year the contract is automatically renewed for a new ten-year period, unless the landowner notifies the local government of the desire not to renew. In that case, the land use restrictions remain in effect until the remaining nine years of the contract have passed. There are also provisions for canceling the contract if cancellation is consistent with the purposes of the Williamson Act or otherwise found to be in the public interest.

The Department of Conservation Farmland Mapping and Monitoring Program has tracked protected farmland under the California Land Conservation (Williamson) Act Figure 3-4 depicts the farmland in Placer County and farmland under the Williamson Act.

Table 3-2 distinguishes the number of affected farmlands that are under Williamson Act contracts, farmlands that have opted to not renew the Williamson Act contracts but are still subject to land use restriction for the remainder of the contract, irrigated farmland that is under normal ownership and vacant or dry farmland under normal ownership.

Table 3-2 Affected Farmland Parcels by Alternative

Alternative	CLCA Restriction (Williamson Act)		Farms Under Normal Ownership		Total Affected Farmland
	Under Contract[1]	Non-Renewal[2]	Irrigated Farm[3]	Vacant, Dry Farm[4]	
A5C1	8	7	1	6	22
AAC2	9	7	1	5	22
D1	14	13	3	7	37
D13	17	13	3	8	41
D13 South Modification	15	7	1	5	28
D13 North Modification	16	8	1	4	28

Source: Dept. of Conservation, Division of Land Resource Protection, Farmland Mapping and Monitoring Program, Placer County 1996 Land Conservation Act Enrollment.

[1] Under Contract means that these farmlands are under an automatically renewable contract provided by the California Land Conservation Act (Williamson Act) for a ten-year period.

[2] Non-Renewal means that the landowners had previously signed a ten-year contract provided by the California Land Conservation Act (Williamson Act) but have opted not to renew. Therefore, the farmland is subject to land use restrictions for the remaining nine years of the contract.

[3] Irrigated Farm means that the land is considered irrigated farmland under normal ownership. Therefore, the farmland is under no land use restrictions.

[4] Vacant, Dry Farm means that the land is either vacant but previously farmed or is dry farmed and is under normal ownership. Therefore, the farmland is under no land use restrictions.

Placer County Policies

Recognizing the importance of agriculture, the Placer County Board of Supervisors adopted the Placer County Agricultural Element (1989) to supplement the Countywide General Plan in order to "establish policies that will improve the viability of agricultural operations and promote the conservation of agricultural land."

City of Lincoln Policies

Although agriculture does not occupy a large amount of the area within the City of Lincoln, there are policies outlined in the General Plan to retain rural agricultural areas until the need for development emerges. These agricultural policies are meant to ensure that agriculture will continue to be a significant land use by implementing planned development based on economic and population needs. Additionally, Lincoln has adopted the policy to require that agricultural land uses be buffered from urban land uses through the use of greenbelts, open space setbacks, soundwalls, fencing and berming.

Sheridan Community Policies

Sheridan's economy is strongly influenced by the agricultural presence; consequently, the General Plan emphasizes the preservation of agricultural land uses. Sheridan's goal for agriculture as an environmental resource specifies that "more productive agricultural soils be put to agricultural uses rather than being converted to non-agricultural activities." Additionally, Sheridan's community development goal also encourages the "continued and increased agricultural activity on lands conducive to agricultural uses."

Residential

Placer County Policies

According to the Placer County General Plan the goal for residential land use is "to provide adequate land in a range of residential densities to accommodate the housing needs of all income groups expected to reside in Placer County." This is accomplished by promoting new residential development in higher-density residential areas located along major transportation corridors and transit routes.

City of Lincoln Policies

The goal for residential land use outlined in the Lincoln General Plan is "to designate, protect and provide land to ensure sufficient residential development to meet community needs." The city seeks to accomplish this by providing a variety of land use designations that will meet the future needs of the city and promote flexibility and innovation in residential land use through the use of planned unit developments, developer agreements, specific plans, mixed use projects and other innovative development and planning techniques.

Sheridan Community Policies

The Sheridan Community General Plan has adopted a residential land use goal to provide sound and adequate housing and positive living experience for all residents in the

plan area. However, there have not been any policies implemented to support Sheridan's land use goal.

Industrial

Placer County Policies

The Placer County adopted goal for industrial land use states that it will "designate adequate land for and promote development of industrial uses to meet the present and future needs of Placer County residents for jobs and maintaining economic vitality."

Additionally, the County shall designate specific areas suitable for industrial development and reserve such lands in a range of parcel sizes to accommodate a variety of industrial uses.

City of Lincoln Policies

The industrial land use goal for the City of Lincoln is "to designate sufficient land for existing and new industrial uses that is compatible with the existing community." Policies supporting industrial land uses in the City of Lincoln include designating land sufficient to meet future needs by promoting planned mixed use developments.

Sheridan Community Policies

Sheridan's industrial land use goal and policies encourage the development of industry where suitable lands and public services are available. Additionally, the Sheridan General Plan emphasizes that industrial land uses should not conflict with adjacent uses.

Commercial

Placer County Policies

Similar to Placer County's industrial land use goal, the adopted commercial land use goal is "to designate adequate commercial land for, and promote development of, commercial uses to meet the present and future needs of Placer County residents and visitors and maintain economic vitality."

The diversion of "through" traffic from the downtown business district will likely promote pedestrian circulation from nearby residential areas. The mixed-use planned development projects will also encourage pedestrian circulation since they include both residential and commercial land uses. Furthermore, it is likely that a majority of the commercial land uses will be located near the chosen alignment to avoid noise impacts on residential areas.

City of Lincoln Policies

The City of Lincoln has adopted a commercial land use goal "to retain and renew existing commercial land uses and designate sufficient new commercial areas to meet future city needs." To support Lincoln's land use goal, policies address issues of land use incompatibilities by implementing planned mixed use development projects.

Sheridan's Policies

Sheridan's goal for commercial land use is to "provide convenient and sufficient commercial facilities for the daily needs of residents and travelers through the area." The Sheridan General Plan implements a commercial land use policy of expanding commercial areas on routes of major traffic; however, the County would be responsible for new commercial development and the remodeling of existing commercial structures.

Resource Protection, Greenbelt, Open Space, and Recreation

Placer County Policies

Placer County's goal for resource protection, greenbelts, open space and recreation is to establish and maintain interconnected greenbelts and open spaces for the protection of native vegetation and wildlife and for the community's enjoyment. This goal is accomplished by identifying significant natural, open space and cultural resources in advance of development to allow incorporation into the project design. In addition, the County requires that development avoid areas rich in wildlife or of a fragile ecological nature.

The Placer Legacy Citizens Advisory Committee (Placer Legacy) has been formed to help develop a long-range comprehensive open space protection plan. Along with the formation of the Placer Legacy, an open space trust fund has been established to ensure the protection and maintenance of open space lands in Placer County.

City of Lincoln Policies

The City of Lincoln's goal is to designate, protect, and conserve natural resources, open space and recreation lands in the City; and provide opportunities for recreational activities to meet citizen needs.

Sheridan Policies

Sheridan's goal for resource protection, greenbelts, open space and recreation is to plan for adequate recreational facilities. However, there have not been any policies adopted to support this goal.

3.1.5 Demographic Profile and Trends

The 2000 data was not used for the preparation of the document. The document was in progress as the 2000 data was made public and not all the data was made public at the same time. In order to have comparable data, the 1990 census was used exclusively.

The Study Area is composed of census tracts 213.01, 213.02, and 214 (Figure 3-9). Information regarding the Study Area's demographic profile and trends were compiled from the 1990 United States Census (U.S. Census). The 2000 Census data was not available. Census tracts 213.01 and 213.02 include the Sheridan community as well as the outlying rural agricultural areas. Projections and estimates regarding the more urban area of Lincoln has been provided whenever available to establish trends of the Study Area.

Population

The population totals for census tracts 213.01, 213.02, and 214 were 1,724, 4,675, and 7,410, respectively, totaling 13,809 people. Current estimates show that the City of Lincoln's population increased to 8,250 people in 1999. Projections show that Lincoln is expected to experience an 81.5% increase in population between 1997 and 2005, from 8,100 to almost 15,000.

Age Distribution

The median age range for tracts 213.01 and 213.02 in 1990 was 35-39 while tract 214 median age range was 25-29. The median age range may increase for tract 214 once the Twelve Bridges development is constructed due to the 5,300 age-restricted dwelling units.

Ethnic Mix

Table 3-3 shows that White residents dominated the 1990 population (74.2%) in the Study Area with 10,251 persons. Data for the Placer County ethnic make-up show analogous trends and are projected to maintain a similar ethnic mix. Based on Community Impact Assessment, tract 214 block group 2 does have a high concentration of minorities. Census tract 214 block groups 4 and 5 are above the mean but are within the standard deviation. These areas straddle the existing alignment and are not expected to incur direct impacts from any of the proposed alignments. A potential indirect impact could include a decrease in accessible public transportation. Although minor changes to the current bus route are inevitable due to access changes, local transit authorities anticipate that the areas serviced will increase as the needs change due to development.

Figure 3-9 Census Tracts

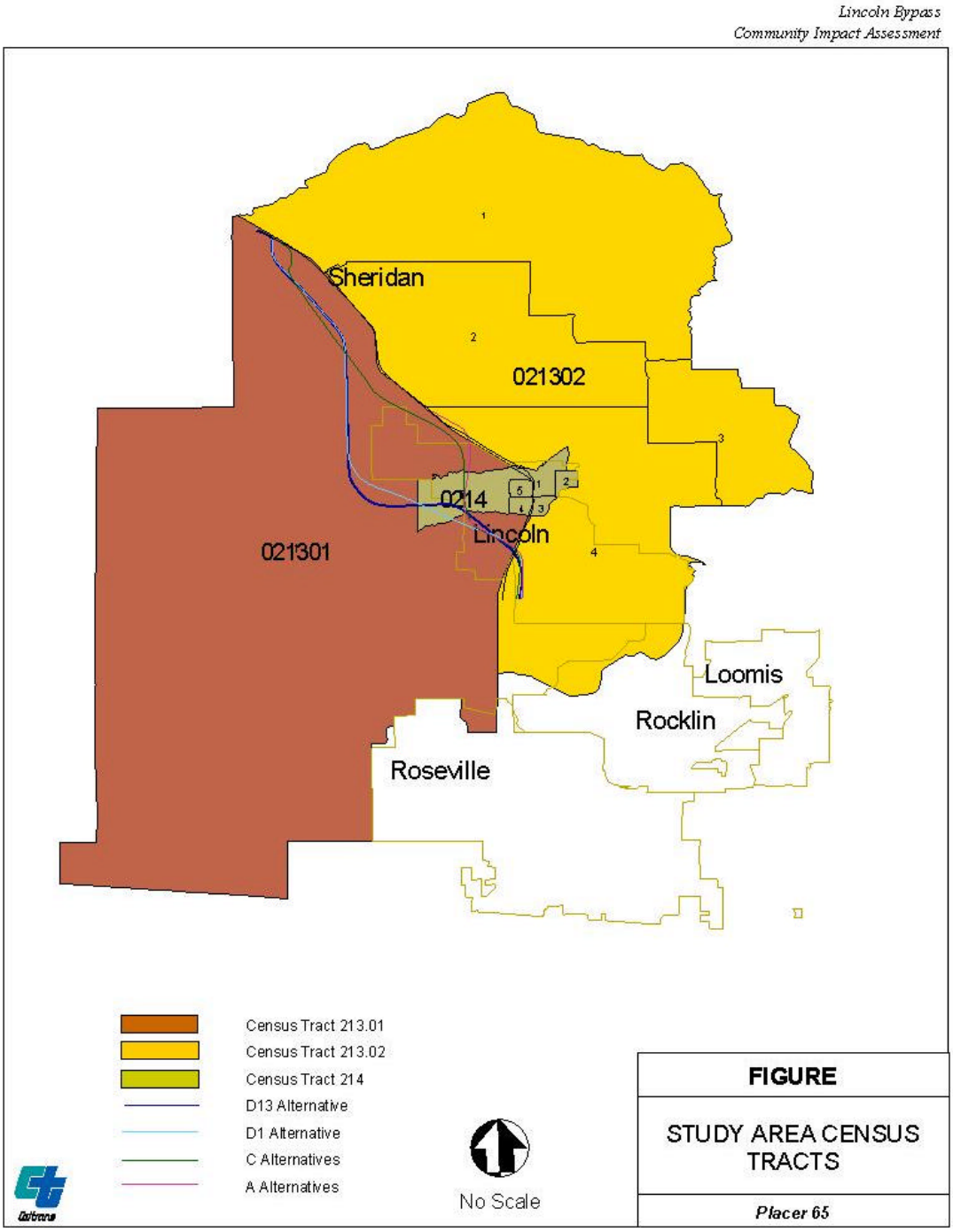


Table 3-3 Ethnic Composition of the Study Area Population for 1990

Ethnicity	Tract 213.01 (% of tract total)	Tract 213.02 (% of tract total)	Tract 214 (% of tract total)	Study Area Total	Percentage of Study Area
White	1445 (83.8%)	4,066 (87.0%)	4,740 (64.0%)	10,251	74.2%
Black	16 (0.9%)	13 (0.3%)	12 (0.2%)	41	0.3%
American Indian, Eskimo, Aleutian, Asian, Pacific Islanders, and other	118 (6.9%)	254 (5.4%)	842 (11.3%)	1,214	8.8%
Hispanic	145 (8.4%)	342 (7.3%)	1,816 (24.5%)	2,303	16.7%
Total	1,724	4,675	7,410	13,809	100%

3.1.6 Household Size and Composition

Table 3-4 shows the number of households, number of families, and the persons per family found in the Study Area in 1990. Tract 213.02 had the highest percentage of families (83.3%) living together, followed by tract 213.01 (81.2%), and tract 214 (76.4%). For the Study Area, 79.3% of the households were home to families. The family size ranged from 3.17 to 3.25 persons per family in the area. Similar to the age distribution of the Study Area, the average family size may decrease due to an influx of older persons projected to move into the age-restricted homes currently planned.

Table 3-4 Household Population in Study Area (1990)

	Tract 213.01	Tract 213.02	Tract 214	Total
Households	590	1,548	2,565	4,703
Families	479	1,290	1,960	3,729
Persons/Family	3.17	3.23	3.25	-

3.1.7 Personal Income

Table 3-5 outlines income levels for the Study Area. The mean percentage of persons living below the poverty rate in 1989 was 7.1% with a standard deviation of 3.1. Therefore, areas that displayed percentages greater than 10.2% may be considered high concentration areas of low-income people. Census tract 214 block group 6 has 11.2% of its population living below the poverty rate. However, since 1989, this area has experienced a large concentration of new homes that would potentially attract people with higher incomes and would change the income profile of the block group. Furthermore, the region has benefited from a surge of hi-tech industries that has contributed to lowering the unemployment rate and potentially decreasing the amount of people living below the poverty rate. Nevertheless, impacts to census tract 214 block group 6 should be closely analyzed to determine if low-income people are being disproportionately impacted by the proposed alternatives.

Table 3-5 Income and Poverty Data for Study Area (1989)

Census Tract	213.01			213.02			214		
Block Group	**1**	**2**	**4**	**1**	**2**	**3**	**4**	**5**	**6**
Median Household Income	40,862	27,083	44,769	31,691	27,656	33,889	34,706	29,866	28,194
Median Family Income	41,336	31,667	46,339	35,417	29,688	35,625	41,711	35,417	30,294
Per Capita Income	17,130	10,071	18,502	12,727	9,569	11,132	13,734	12,842	11,072
Persons Below Poverty Status*	98	63	25	53	67	34	16	81	379
Percentage of Persons Below Poverty Status	5.7%	8.7%	2.3%	4.8%	8.8%	8.4%	3.5%	10.2%	11.2%

**Poverty guidelines for 1989 are $12,100 for a family of four.*

Housing Characteristics

Housing Stock

In 1996, Lincoln had a total of 2,998 housing units composed of 78% single family residents, 19% multiple unit complexes, and 3% mobile homes (Table 3-6). The housing vacancy rate was 3.40% which was the second lowest in Placer County. Neighboring cities such as Rocklin and Roseville experienced higher vacancy rates of 6.57% and 6.65% respectively. The high 16.77% vacancy rate for Placer County is likely due to the popularity of vacation homes in the resort areas of the county.

Table 3-6 Placer County Housing Estimates (1996)

Area	Total Housing	Single Family	Multiple Unit	Mobile Home	Occupied	Percent Vacant	Persons/ Household
Placer County	92,649	73,392	14,027	5230	77,114	16.77	2.645
Auburn	5,480	3,651	1,822	7	5,258	4.05	2.142
Colfax	684	426	221	37	602	11.99	2.412
Lincoln	2,998	2,334	582	82	2,896	3.40	2.704
Loomis	2,188	1,954	120	114	2,116	3.29	2.820
Rocklin	10,463	8,179	1,827	457	9,776	6.57	2.758
Roseville	23,877	17,549	5,849	479	22,289	6.65	2.652
Unincorporated	46,959	39,299	3,606	4,054	34,177	27.22	2.673

Source: California Department of Finance, Demographic Research Unit

The Draft Relocation Impact Report (DRIR) indicates that the available single family residences, multiple family units, and mobile homes for rent and for sale was estimated at 3.4% for each category. Although the numbers of multiple-family dwellings are increasing to meet the increased demand for rental units, the overall ratio of multi-family to single family units remains low.

3.1.8 Economic Conditions

Employment

Table 3-7 shows that in 1996 the leading employment sectors in Placer County were services, trade, government, manufacturing and construction. Although the services and trade sectors expect to see a slight decline by 2000, they will still remain the leading employment industries. Manufacturing and government are projected to experience the largest increase of jobs between 1996 and 2000 in addition to being two of the leading employers. Construction expects to decline, however, transportation/public utilities and finance/insurance/real estate are projected to see an increase of jobs available.

Table 3-7 Placer County Employment & Projected Percent Change (in $1000's)

Industry	1996	2000 (Projected)	Percent Change
Mining	0.1	0.2	100.0
Construction	6.0	5.5	-8.3
Manufacturing	9.6	13.3	38.5
Transportation and Public Utilities	3.4	4.2	23.5
Trade	21.9	21.2	-3.2
Finance, Insurance, and Real Estate	4.0	4.5	12.5
Services	22.2	22.0	-0.9
Government	13.4	15.6	16.4
Total Industries	80.8	86.4	6.9

Source: California Employment Development Department, Labor Market Information Division, December 1997.

Employers

Table 3-8 shows that, in 1997, the largest employers in Placer County were located in Roseville, including Hewlett-Packard, PRIDE Industries and NEC Electronics, Inc. As the county seat, Auburn has a high concentration of government workers while Rocklin's prominent employer is Sierra Joint Community College. Lincoln's leading employer, Sierra Pacific Industries, ranks in the lower spectrum of major employers in Placer County.

Table 3-8 Largest Employers in Placer County (1997)

Rank by Number of Employees		Name of Company	Number of Employees
Auburn	2	Placer County	2,195
	8	Sutter Auburn Faith Hospital	740
	12	Coherent Auburn Group	480
	18	Pacific Gas and Electric Company	215
Lincoln	15	Sierra Pacific Industries	300
	17	Gladding McBean	224
	20	American Poly-Therm	140

Rank by Number of Employees		Name of Company	Number of Employees
Rocklin	5	Sierra Joint Community College	1,377
	13	Formica Corporation	429
	16	Herman Miller Corporation	248
	19	Reynolds Metal Company	170
Roseville	1	Hewlett-Packard	4,900
	3	PRIDE Industries	2,100
	4	NEC Electronics, Incorporated	2,000
	6	Sutter Roseville Hospital	1,375
	7	City of Roseville	751
	9	Kaiser Permanente Medical Center	709
	10	Roseville Telephone Company	545
	11	Roseville City School District (Elem.)	534
	14	Roseville Joint High School District	302
Roseville/Rocklin	21	Doorcraft (Jeld-Wen)	100

Source: Sacramento Region Major Manufacturers and Processors Guide, SACTO, July 1997.

Labor Force

As shown in Table 3-9, the 1998 civilian labor force in Placer County was 110,600 with a 3.8% unemployment rate. Unemployment in Placer County has been steadily dropping since its peak of 8.0% in 1992. Of the communities in the vicinity of the Study Area, Lincoln's unemployment rate was the highest at 4.5% followed by Roseville at 4.0%.

Table 3-9 Placer County Civilian Labor Force and Employment Rates (8/98)

Area Name	Labor Force	Employment	Unemployment	Unemployment Rate
Placer County	110,600	106,400	4,200	3.8%
Auburn	6,370	6,160	210	3.3%
Lincoln	4,200	4,010	190	4.5%
Loomis	3,540	3,410	130	3.7%
Rocklin	12,880	12,420	460	3.6%
Roseville	29,090	27,920	1,170	4.0%

Source: California Employment Development Department, Labor Market Information Division

Personal Income

Table 3-10 outlines income levels for tracts 213.01, 213.02, and 214. In 1989, 6.6% of the population in the Study Area lived below the poverty level. Poverty guidelines for 1989 are $12,100 for a family of four. Tract 214 had the highest percentage (8.5%) of people living under the poverty guidelines followed by tract 213.01 that had 5.7% people while tract 213.02 had 3.9%.

Table 3-10 Income and Poverty Data for 1989

	Tract 213.01	Tract 213.02	Tract 214	Total
Median Household Income	$40,862	$42,620	$29,648	-
Median Family Income	$41,336	$45,477	$33,892	-
Per Capita Income	$17,130	$14,705	$11,716	-
Persons Below Poverty Status*	98	179	630	907
Households with Public Assistance Income	51	101	219	371

*Poverty guidelines for 1989 are $12,100 for a family of four.

Fiscal Conditions

Placer County collected $24.0 million in property taxes for the 1998-99 fiscal year in comparison to the $35.1 million collected in the 1995-96 fiscal year. Property taxes in the City of Lincoln increased between 1980 ($218,353) and 1990 ($503,320); however, since 1992 Lincoln property taxes have experienced a slow increase. Because of the rise in new residential units in the Study Area, property taxes are expected to continue to increase.

Based on the Study Area's sales tax figures, business activity has decreased over the past few years. Many of the companies now located in Lincoln are of a manufacturing and service nature. There has been a steady decline in sales tax revenue due to the fact that many shopping centers have emerged in Rocklin and Roseville. Sales oriented business in Lincoln are expected to rise by 15% to 20% over the next five to ten years which would potentially increase the sales tax revenue.

3.1.9 Jobs/Housing Balance

Regional Jobs/Housing Conditions

Although employment in the Study Area is expected to increase by 10% by 2015 from 1995 figures, the population between 1995 and 2015 is expected to increase by 12%. The expected increase in population is likely due to the 16,929 dwelling units proposed for the Study Area that are primarily concentrated in and around the City of Lincoln. However, the largest planned residential development, Twelve Bridges, will consist of 5,300 age-restricted dwelling units that will potentially increase the percentage of the retired population. However this is not likely impact regional jobs or commuting traffic. Although the planned developments have included approximately 86.4 ha (213.4 ac) of commercial land use and there is still an abundance of vacant industrial land available, it is likely that a large portion of the population will continue to commute to the outlying areas.

3.1.10 Existing Travel Patterns

Currently, SR 65 is the main street serving the community of Lincoln. Most of the businesses in Lincoln are located either on or just off SR 65. City Hall is one block down from SR 65 and the Library and the Pavilions; a community hall, are both generally accessed via SR 65 or SR 193. Outside the business core of the city of Lincoln are residential areas. Figure 1-4, in Chapter 1, shows the circulation system as found in the Lincoln General Plan.

SR 193 provides a link with the community of east Rocklin and Sierra College, a community college.

Bicycles & Pedestrians

Bicycle routes are discussed in Chapter 1, Section 3.6. SR 65 is not included in the adopted bicycle plan for Lincoln; however, the portion of SR 65 from Roseville to SR 193 is included in the Placer County Master Bikeways Plan. This would remain the same after the Bypass was constructed.

SR 65 is a busy road, and pedestrians generally only use this road when their car breaks down. Through the town, however, pedestrian traffic is common.

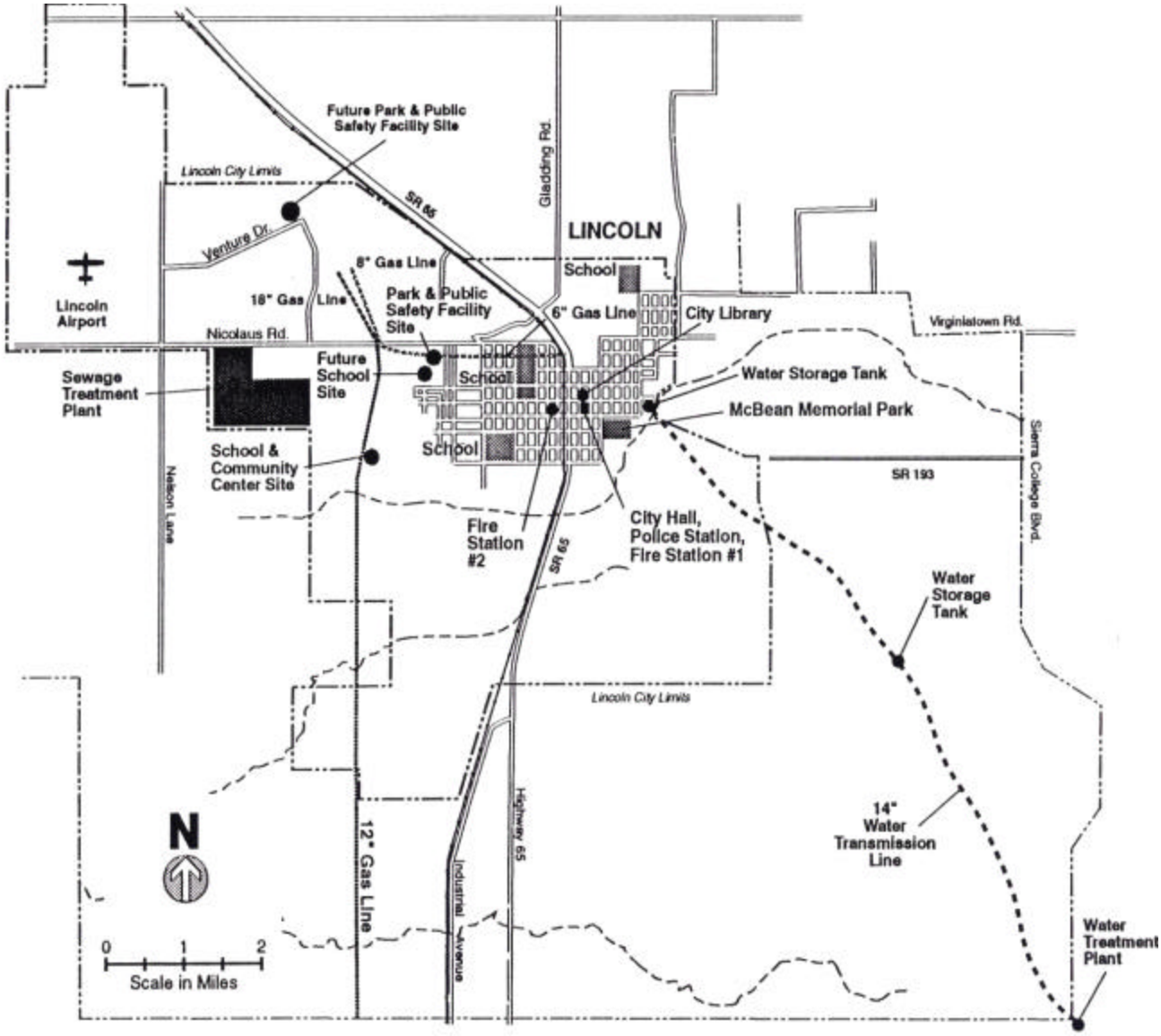
3.1.11 Community Facilities and Services

Figure 3-10 shows the community facilities such as schools, libraries and fire departments. The town of Sheridan has no facilities such as a Fire Department or library, instead relying on Lincoln's facilities and services.

Schools

Carlin C. Coppin Elementary, Valley View Elementary, Creekside Oaks Charter Elementary and Heritage Elementary Schools are located in Lincoln and Sheridan Elementary School is located in Sheridan. The Glen Edwards Middle School in located in Lincoln as well as three high schools, Lincoln High School, Lincoln High North, and Phoenix High School. The Horizon Instruction Systems independent correspondence study program serves K-12 students that generally do not live in Placer County although it is located in Lincoln.

Figure 3-10 Community Services & Public Facilities



Police and Fire Protection

The area under Placer County's jurisdiction is patrolled by the Placer County Sheriff's Department. The Sheriff's Department is responsible for general law enforcement activities throughout the County. Similarly, the City of Lincoln Police Department has jurisdiction within the City limits and provides general law enforcement.

The South Placer Fire Protection District provides services to areas under the County's jurisdiction. The City of Lincoln's volunteer Fire Department is housed with the City of Lincoln Police Department.

3.2 GEOGRAPHY AND TOPOGRAPHY

3.2.1 Topography

The SR 65 project is located near the eastern edge of the lower Sacramento Valley. The Sacramento Valley is a broad lowland, approximately 80 km (50 mi) wide in the project area. The Coast Range on the west and the Sierra Nevada Range to the east border the valley. The project area is characterized by gently rolling hills, ranging in elevation from 24 to 46 m (80-150 ft) above sea level, sloping to the north and west toward the Bear and Feather Rivers. Prominent topographic features within the project area include the Auburn Ravine, Markham Ravine and Ingram Slough.

3.2.2 Climate

The climate in Lincoln is characterized by hot, dry summers and cool, wet winters, which is typical of the California Central Valley. Average temperatures range from about 27° C (80° F) in summer to 7° C (45° F) in winter, with temperature extremes of 47° C (110° F) in summer and -7° C (20° F) in winter. Annual rainfall averages about .56 m (22 in) per year, with most of it falling between October and March (Lincoln General Plan, 1988).

3.2.3 Soils

The soils within the Study Area are predominately of the Fiddyment-Trigo-Rocklin association. The soils in this association occur on gently sloping terraces and strongly sloping sideslopes.

To the east they adjoin the bedrock areas of the lower foothills. These soils are mostly well drained and developed in granitic alluvium and outwash from the Sierra Nevada Mountains. They are mostly shallow, meeting with claypans or hardpans and have medium runoff and moderate erosion hazard (SACOG 1988b). Soils in this area include Cometa-Fiddyment Complex, Cometa-Ramona Sandy Loams, Kilaga Loam, San

Joaquin Sandy Loam, and Xerofluvents (EIP Associates 1992b). The erosion hazard of the soils varies from slight erosion hazard in the floodway fringes to high erosion hazard in the recent alluvium deposits adjacent to stream channels (Caltrans 1999).

The Placer County Natural Resources Conservation District completed a survey of productive soils for Placer County, and identified areas within the Lincoln planning area having prime soils. Major prime soil areas exist adjacent to the Auburn Ravine, north of the Gladding McBean plant, and in the southwestern portion of the planning area. All alternatives will pass through some of the prime soils with Alternatives D1 and D13 passing through a greater amount of the prime soils (Caltrans 1999).

3.2.4 Geology

The project site is located in the Sacramento Valley portion of the Great Valley Geomorphic Province on California. This portion of the valley is underlain by unconsolidated older alluvium of Pleistocene and Holocene age. Pliocene to Pleistocene deposits of continentally derived sand, silt, clays and poorly sorted gravel underlie older alluvial deposits. Marine sedimentary rocks yielding saline waters may underlie continental derived sedimentary rocks at depth. The geologic basement of the region is composed of meta-sedimentary and meta-volcanic rocks. Structurally, the consolidated sediments have been folded into a west-dipping homocline formed by the westward tilting of the Sierra Nevada structural block (Ross and Gannaway, 1999).

3.2.5 Seismic

Faults in the general region with a moderate to high potential for surface rupture include the San Andreas Fault, approximately 162 km (100 mi) to the west, the Dunnigan Hills Fault located approximately 57 km (35 mi) to the northwest and the Foothills Fault Zone located approximately 16 km (10 mi) to the east. The relevant seismic data is presented in Table 3-11.

Table 3-11 Faults in Area

Fault	Estimated distance from project	Maximum credible earthquake magnitude on Richter Scale
Foothills Fault Zone	16 km East (10 mi)	6.5
San Andreas Fault	162 km West (100 mi)	8.0
Dunnigan Hills Fault	57 km Northwest (35 mi)	6.5

There is no evidence to indicate that the proposed project is located on identified active faults. Therefore, the potential risk of damage due to fault rupture is considered to be low.

Liquefaction

Soil liquefaction is a process by which water-saturated sediment temporarily loses strength and acts as a fluid, like when you wiggle your toes in the wet sand near the water at the beach. This effect can be caused by earthquake. Soils most susceptible to liquefaction are loose, clean and uniformly graded, fine grained sands. Silty sands also liquefy during strong shaking. As noted earlier, the underlying soil is a clay material. Therefore, the potential for liquefaction is considered to be low.

3.3 AIR QUALITY

Weather and topography both influence air quality. This region is subject to temperature inversions, trapping pollutants at ground level. Surface inversions 0-152 m (0-500 ft) are most frequent during the winter, while subsidence inversions 305-610 m (1,000-2,000 ft) are more frequent during the summer. Generally, the lower the inversion base height and the greater the rate of temperature increase from the base to the top, the more pronounced will be the effect of the inversion on inhibiting dispersion of pollutants.

This project is located in the Sacramento Valley Air Basin, which is under the jurisdiction of the Placer County Air Pollution Control District (PCAPCD) at the local level and the California Air Resources Board (CARB) at the State level. The U.S. Environmental Protection Agency (EPA) is responsible at the Federal level for the implementation of the Federal Clean Air Act of 1970 and amendments in 1977 and 1990. This act requires the EPA to establish National Ambient Air Quality Standards (NAAQS) in order to protect the public health. These standards as well as State standards are shown in Table 3-12. The Placer County portion of the Sacramento Air Basin is classified as follows: ozone is listed as serious non-attainment for Federal and State level, sulfur dioxide, and nitrogen dioxide are in attainment with both the Federal and State standards; and PM_{10} is listed as in attainment for the Federal standard and non-attainment for the State standards.

Ozone

Ozone is made up of reactive organic gases (ROG) and oxides of nitrogen (NOx) which react in the atmosphere when exposed to sunlight to form ozone. Because photochemical reaction rates depend on the intensity of ultraviolet light and air temperature, ozone is primarily a summer air pollution problem. Ozone is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections and can cause substantial damage to vegetation and other materials. New air quality standards were announced by the EPA in July 1997. The new ozone standard reduces allowable

concentrations from 0.12 parts per million (PPM) averaged over one hour to a standard of 0.08 PPM averaged over an eight hour period.

Table 3-12 Federal and State Ambient Air Quality Standards

Ambient Air Quality Standards						
Pollutant	Averaging Time	California Standards [1]		Federal Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
Ozone (O_3)	1 Hour	0.09 ppm (180 µg/m³)	Ultraviolet Photometry	0.12 ppm (235 µg/m³)[8]	Same as Primary Standard	Ethylene Chemiluminescence
	8 Hour	—		0.08 ppm (157 µg/m³)		
Respirable Particulate Matter (PM_{10})	Annual Geometric Mean	30 µg/m³	Size Selective Inlet Sampler ARB Method P (8/22/85)	—	Same as Primary Standard	Inertial Separation and Gravimetic Analysis
	24 Hour	50 µg/m³		150 µg/m³		
	Annual Arithmetic Mean	—		50 µg/m³		
Fine Particulate Matter ($PM_{2.5}$)	24 Hour	No Separate State Standard		65 µg/m³	Same as Primary Standard	Inertial Separation and Gravimetic Analysis
	Annual Arithmetric Mean			15 µg/m³		
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10 mg/m³)	Non-dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m³)	None	Non-dispersive Infrared Photometry (NDIR)
	1 Hour	20 ppm (23 mg/m³)		35 ppm (40 mg/m³)		
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m³)		—		
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	—	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m³)	Same as Primary Standard	Gas Phase Chemiluminescence
	1 Hour	0.25 ppm (470 µg/m³)		—		
Lead	30 days average	1.5 µg/m³	AIHL Method 54 (12/74) Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m³	Same as Primary Standard	
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	—	Fluorescence	0.030 ppm (80 µg/m³)	—	Pararosoaniline
	24 Hour	0.04 ppm (105 µg/m³)		0.14 ppm (365 µg/m³)	—	
	3 Hour	—		—	0.5 ppm (1300 µg/m³)	
	1 Hour	0.25 ppm (655 µg/m³)		—	—	
Visibility Reducing Particles	8 Hour (10 am to 6 pm, PST)	In sufficient amount to produce an extinction coefficient of 0.23 per kilometer—visibility of ten miles or more (0.07—30 miles or more for Lake Tahoe) due to particles when the relative humidity is less than 70 percent. Method: ARB Method V (8/18/89).		No Federal Standards		
Sulfates	24 Hour	25 µg/m³	Turbidimetric Barium Sulfate-AIHL Method 61 (2/76)			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m³)	Cadmium Hydroxide STRactan			

See footnotes on next page... California Air Resources Board (1/25/99)

1. California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, suspended particulate matter—PM_{10}, and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

   In addition, Section 70200.5 lists vinyl chloride (chloroethene) under "Ambient Air Quality Standards for Hazardous Substances." In 1978, the California Air Resources Board (ARB) adopted the vinyl chloride standard of 0.010 ppm (26 $\mu g/m^3$) averaged over a 24-hour period and measured by gas chromatography. The standard notes that vinyl chloride is a "known human and animal carcinogen" and that "low-level effects are undefined, but are potentially serious. Level is not a threshold level and does not necessarily protect against harm. Level specified is lowest level at which violation can be reliably detected by the method specified. Ambient concentrations at or above the standard constitute an endangerment to the health of the public."

   In 1990, the ARB identified vinyl chloride as a Toxic Air Contaminant and determined that there was not sufficient available scientific evidence to support the identification of a threshold exposure level. This action allows the implementation of health-protective control measures at levels below the 0.010 ppm ambient concentration specified in the 1978 standard.

2. National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest eight hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when 99 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. For $PM_{2.5}$, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact U.S. EPA for further clarification and current federal policies.

3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 mm of mercury. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 mm of mercury (1,013.2 millibar); ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4. Any equivalent procedure which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.

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

6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

7. Reference method as described by the EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the EPA.

8. New federal 8-hour ozone and fine particulate matter standards were promulgated by U.S. EPA on July 18, 1997. The federal 1-hour ozone standard continues to apply in areas that violated the standard. Contact U.S. EPA for further clarification and current federal policies.

California Air Resources Board (1/25/99)

Carbon Monoxide

Carbon monoxide (CO) is a public health concern because it combines readily with hemoglobin thus reducing the amount of oxygen transported in the blood stream. Motor vehicles are the dominant source of CO emissions and produce localized pollution problems. The Sacramento region is currently in attainment for CO.

Particulate Matter

Particulate matter of 10 and 25 microns or less (PM_{10} and $PM_{2.5}$ also known as PM fine) is a health concern because few particles larger than 10 microns actually reach the lungs when inhaled. Those smaller particles reflect a mix of rural and urban sources, including agricultural activities, industrial emissions and dust suspended by automobiles and trucks.

The EPA has set a new standard for $PM_{2.5}$, the first time the Federal government has set a standard for PM fine, considered to be more damaging to human health than PM_{10}. Table 3-12 reflects the new standards; however, areas have not been designated as non-attainment at this time.

3.4 NOISE

3.4.1 Federal and State Regulations, Standards, & Policies

Federal and state regulations, standards and policies relating to traffic noise are discussed in detail in the Department's Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects (Protocol). Transportation projects affected by the Protocol are referred to as Type I projects. A Type I project is defined in 23 CFR 772 as highway construction on a new location, or the physical alteration of an existing highway that significantly changes either the horizontal or vertical alignment or increases the number of through traffic lanes and is either fully or partially federally funded. FHWA has clarified its interpretation of Type I projects by stating that such a project is one that has the potential to increase noise levels at adjacent receivers. The Department's extends this definition to include state-funded highway projects. The proposed project evaluated in this report is considered to be a Type I project because it involves the construction of a highway on a new location.

National Environmental Policy Act

NEPA is a federal law that establishes environmental policy for the nation, provides an interdisciplinary framework for federal agencies to prevent environmental damage and contains "action-forcing" procedures to ensure that federal agency decision-makers take

environmental factors into account. Under NEPA, impacts and measures to mitigate adverse impacts must be identified; this includes the identification of impacts for which no mitigation or only partial mitigation is available. The FHWA regulations discussed below constitute the federal noise standard. Projects complying with this standard are also in compliance with the requirements stemming from NEPA.

Federal Highway Administration Regulations

Title 23, Part 772 of the Code of Federal Regulations (23 CFR 772) provides procedures for conducting highway-project noise studies and implementing noise abatement measures to help protect the public health and welfare, supply noise abatement criteria, and establish requirements for information to be given to local officials for use in planning and designing highways. Under this regulation, noise abatement must be considered for a Type I project if the project is predicted to result in a traffic noise impact. A traffic noise impact is considered to occur when the project results in a *substantial noise increase* or when the predicted noise levels *approach* or *exceed* the noise abatement criteria (NAC) specified in the regulation. 23 CFR 772 does not specifically define what constitutes a "substantial increase" or the term "approach" and leaves interpretation of these terms to the individual states.

Noise abatement measures that are *reasonable* and *feasible* and that are likely to be incorporated into the project, as well as noise impacts for which no apparent solution is available, must be identified and incorporated into the project's plans and specifications. Table 3-13 summarizes the FHWA noise abatement criteria.

Table 3-13 FHWA Noise Abatement Criteria (NAC)

Activity Category	NAC, Hourly A-weighted Noise Level, dBA Leq(h)	Description of Activities
A	57 Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 Exterior	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 Exterior	Developed lands, properties, or activities not included in Categories A or B above
D	--	Undeveloped lands.
E	72 Interior	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

California Environmental Quality Act

CEQA is the foundation of environmental law and policy in California. CEQA's main objectives are to disclose to decision makers and the public the significant

environmental effects of proposed activities and the ways to avoid or reduce those effects by requiring implementation of feasible alternatives or mitigation measures. Under CEQA, a substantial noise increase may result in a significant adverse environmental effect and, if so, must be mitigated or identified as a noise impact for which it is likely that only partial abatement measures (or none) are available. Specific economic, social, environmental, legal and technological conditions may make additional noise attenuation measures infeasible.

California Streets and Highways Code, Section 216

Section 216 of the California Streets and Highways code relates to the noise level produced by the traffic on, or by the construction of, a state freeway measured in the classrooms, libraries, multipurpose rooms and spaces used for a public or private elementary or secondary school. The code states that if the interior noise level produced in any of these locations by freeway traffic, or the construction of a freeway, exceeds 52 dBA Leq, the department shall undertake a noise abatement program to reduce the freeway traffic noise level to 52 dBA Leq or less by measures such as installing acoustical materials, eliminating windows, installing air conditioning and constructing sound baffle structures.

Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects

The Protocol (California Department of Transportation 1998a) specifies the policies, procedures, and practices for use by agencies that sponsor new construction or reconstruction projects. Noise abatement criteria specified in this document are the same as those specified in 23 CFR 772. The document defines a noise increase as substantial when the predicted noise levels with project implementation exceed existing noise levels by 12 dBA Leq(h). The protocol also states that a sound level is considered to approach an NAC level when the sound level is within 1 dB of the NAC identified in 23 CFR 772. For example, a sound level of 66 dBA is considered to approach the NAC of 67 dBA, whereas 65 dBA is not.

3.4.2 FIELD MEASUREMENTS

Ambient noise measurements were conducted to provide an understanding of the existing noise levels at the sensitive receptor locations. These noise levels will be used as a reference noise level to assess the noise impact to the residential area adjacent to the project site. Thirty-one sites were selected for monitoring to represent existing sensitive receptor locations. The measurement sites were selected when one or many residences were either within or close to the project boundaries. Figure 3-11 illustrates the 31

measurement locations and Table 3-15 summarizes the receptors. Ambient noise levels are listed in Table 3-14.

Table 3-14 Noise Level Measurements[1] on October 5th and 6th 1999

Noise Level Location	***Existing Noise (Monitored) Leq dBA***	***A5C1***	***AAC2***	***D1***	***D13***
NR-1	49.1	60.6	60.5	56.8	56.8
NR-2	45.6	*60.6*	*62.6*	57.3	57.3
NR-3	54	55.2	55.2	52.9	55.0
NR-4	45.6	53.4	55.5	*60.5*	*60.5*
NR-5	51.3	57.8	*64.6*	63.1	63.1
NR-6	49.6	50.3	50.7	56.6	56.6
NR-7	38.1	*58.2*	*51.2*	*55.2*	*57.6*
NR-8	48.1	62.0	59.1	N/A	N/A
NR-9	36.4	*53.0*	*52.4*	N/A	N/A
NR-10a	54.4	64.3	63.6	N/A	N/A
NR-10b	52.7	63.8	63.2	N/A	N/A
NR-11	36.6	N/A	N/A	*54.7*	*51.6*
NR-12	46	N/A	N/A	*60.5*	56.2
NR-13	43.3	N/A	N/A	***68.2***	*57.9*
NR-14	43.4	N/A	53.0	***68.6***	*60.1*
NR-15	45.6	*62.4*	*60.5*	N/A	53.1
NR-16a	47.7	***65.9***	*60.7*	N/A	N/A
NR-16b	47.9	***66.2***	*60.1*	N/A	N/A
NR-17[5] (8)	48.1	59.6	*61.3*	58.6	58.1
NR-18[5] (10a)	54.4	***70.4***	***70.0***	***65.7***	***69.5***
NR-19[5] (10a)	54.4	***66.6***	***65.9***	***73.7***	***68.0***
NR-20[5] (14)	43.4	***70.4***	***70.3***	*59.1*	*63.2*
NR-21[5] (15)	45.6	***73.9***	***69.6***	57.0	55.6
NR-22[5] (16b)	47.9	***72.5***	***66.4***	N/A	N/A
NR-23[5] (10b)	52.7	***72.2***	*65.2*	N/A	N/A
NR-24[5] (8)	48.1	*65.0*	*63.0*	N/A	N/A
NR-25[5] (6)	49.6	*63.4*	*62.2*	N/A	N/A
NR-26[5] (14)	43.4	N/A	N/A	N/A	N/A
NR-27[5] (14)	43.4	N/A	N/A	*60.2*	***73.6***
NR-28[5] (14)	43.4	N/A	N/A	*59.7*	***65.9***
NR-29[5] (14)	43.4	***71.0***	***69.6***	***67.9***	***65.8***
NR-30[5] (14)	43.4	***70.7***	***68.7***	***69.1***	***67.8***
NR-31[5] (15)	45.6	***68.6***	***64.6***	N/A	N/A

[1] The L_{eq} represents the equivalent continuous sound level and is the numeric value of a constant level that, over the given period of time, transmits the same amount of acoustic energy as the actual time varying sound level. The L_{min} and L_{max} represent the minimum and maximum noise levels obtained over a period of one second.

The ambient noise was partly due to either remote or sparse traffic on the existing SR 65, Dowd Road, Riosa Road, Wise Road, Nicolaus Road, Moore Road and Lakeside Drive. Other sources of noise were birds, barking dogs, hens, water flow, wind in branches, remote aircraft and minor carpentry work. Noise levels remain below the allowable noise exposure required by Placer County.

The measured L_{eq} shown in Table 3-14 is documented as existing ambient noise level. The modeled noise is the noise contribution of the new Lincoln bypass traffic to each receptor location. The modeled future traffic noise was then compared to the measured existing ambient noise. Noise impacts are addressed in Chapter 4, Environmental Consequences.

Table 3-15 Summary of Receptors

Noise Level Location	Location Description	Type of Development	No. of Residences	Status of Development
NR-1	6355 North Route 65	Residential	1	Existing
NR-2	100m north of Riosa Road	Residential	9	Existing
NR-3	100 feet from Existing Route 65	Residential	1	Existing
NR-4	4710 North Dowd Road	Residential	1	Existing
NR-5	4221 North Dowd Road	Residential	2	Existing
NR-6	700 feet from Existing Route 65	Residential	1	Existing
NR-7	2780 Dowd Road	Residential	1	Existing
NR-8	2000 feet from Existing SR 65, 1000 feet from C1 and C2 Alignments	Residential	4	Existing
NR-9	200m south of Wise Road	Residential	1	Existing
NR-10a	Along Wise Road	Residential	2	Existing
NR-10b	Along Wise Road	Residential	4	Existing
NR-11	Along Airport Road	Residential	6	Existing
NR-12	Along Nicolaus Road	Residential	1	Existing
NR-13	On Rockwell Lane	Residential	28	Existing
NR-14	Along Moore Road	Residential	1	Existing
NR-15	400 feet east of C1 and C2 Alignments	Residential	1	Existing
NR-16a	North end of El Camino Verde Dr.	Residential	17	Existing
NR-16b	1245 Cobblestone Dr	Residential	12	Existing
NR-17	2000 feet from Route 65	Residential	1	Existing
NR-18	Lincoln Crossing	Residential	60	Planned, Programmed, Approved
NR-19	Lincoln Crossing	Residential, Park	54	Planned, Programmed, Approved
NR-20	Lincoln Crossing	Residential, School, Park	20	Planned, Programmed, Approved
NR-21	50 feet from Existing SR 65	Residential	54	Existing
NR-22	50 feet from Existing SR 65, south of Nicolaus Rd.	Residential	6	Under Construction
NR-23	50 feet south of Nicolaus Road	Residential	28	Under Construction
NR-24	50 feet from C1 Alignment	Residential	1	Existing
NR-25	50 feet from Existing Route 65	Residential	1	Existing

Noise Level Location	Location Description	Type of Development	No. of Residences	Status of Development
NR-26	NW corner of Route 65/Westwood Blvd	Commercial	0	Planned, Programmed, Approved
NR-27	100 feet North of D13 Alignment	Residential	1	Existing
NR-28	100 feet North of D13 Alignment	Residential	1	Existing
NR-29	3-D Development	Residential	23	Planned, Progrm, Approved (Fall 2001)
NR-30	3-D Development	Residential	40	Planned, Progrm, Approved (Fall 2001)
NR-31	Lincoln West Development	Residential	25	Planned, Programmed, Approved

Figure 3-11
Noise and Air Receptors

3.5 WATER QUALITY

The Water Quality Assessment examines the receiving waters associated with each of the alternatives for the project and the potential impacts linked to the construction and maintenance of each alternative. The location of these waters is shown in Figure 3-12. Following is a summary of the Water Quality Assessment. The entire document may be reviewed at the Department's District 3 office, 2800 Gateway Oaks Dr., Sacramento, CA.

The City of Lincoln is located between Auburn Ravine and Markham Ravine, both tributaries to the Sacramento River watershed. The receiving waters within the proposed project area include: Auburn Ravine, Markham Ravine, Coon Creek, an unnamed tributary to Orchard Creek (all tributaries to the Sacramento River), Ingram Slough (a tributary to Orchard Creek), Yankee Sough (a tributary to the Bear River, which flows into the Sacramento River), and an aqueduct that supplies water for agricultural use. Alternatives AAC2 and A5C1 will cross over Orchard Creek, Ingram Slough, Auburn Ravine and Markham Ravine. Alternatives D1 and D13 also cross an aqueduct operated by the South Sutter Water District. The aqueduct supplies water for agricultural use.

3.5.1 Surface Water Resources

Vernal Pools

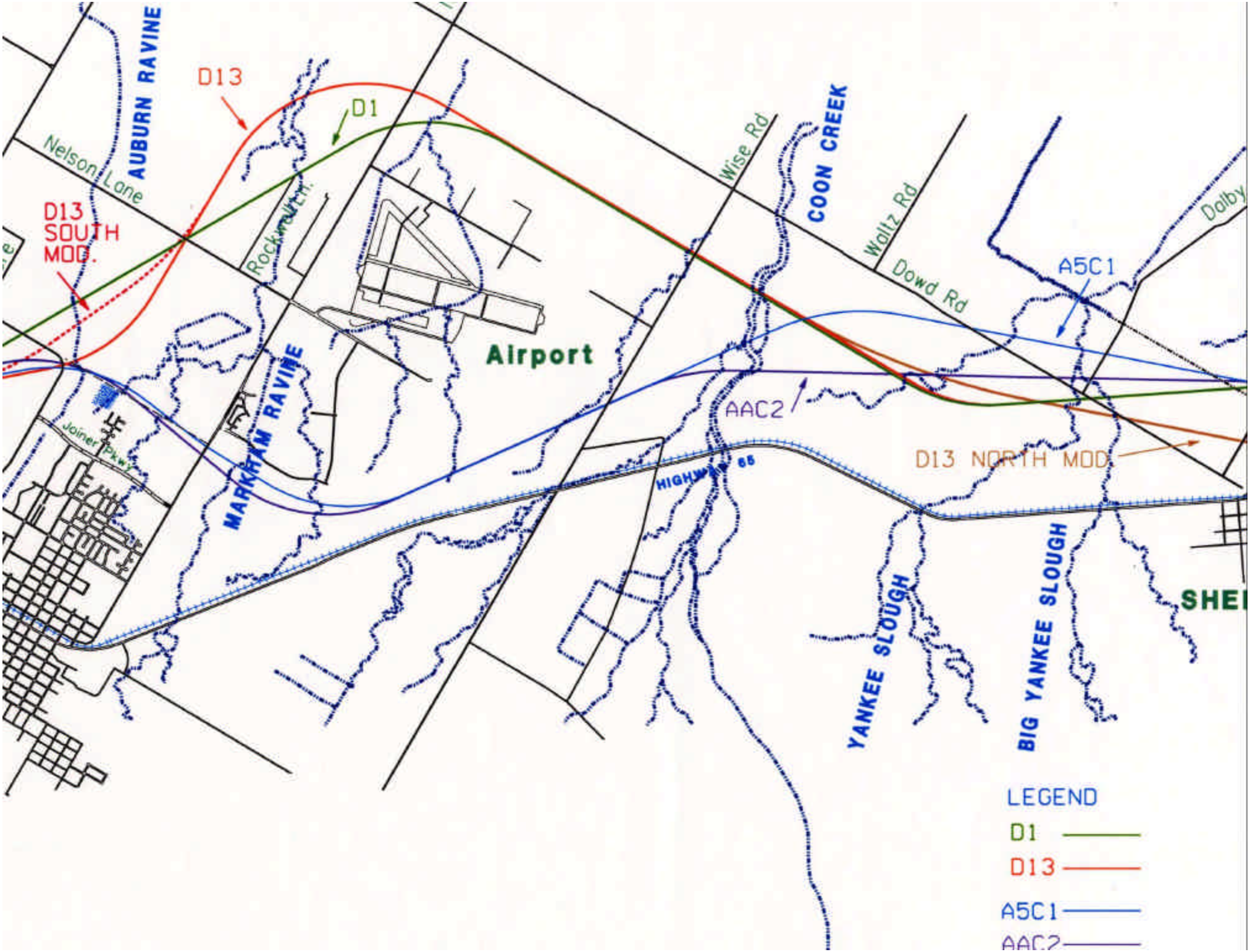
Several areas within the project are relatively flat and water collects in vernal pools during the wet part of the year. The pools dry during the spring and summer months unless agricultural watering is sufficient to keep the pools wet. During very wet periods the pools may overflow and drain into the surrounding waterways. All alternatives will effect vernal pools as discussed in the Natural Resources section under "Wetlands."

Streams, Creeks and Sloughs

Orchard Creek originates just east of the project area, flows westerly across the project area and into Auburn Ravine. Caperton Canal brings some irrigation water to Orchard Creek keeping the flows during a portion of the year higher than the natural flow of the creek.

Ingram Slough, which is channeled in the project area, is one of the tributaries to Orchard Creek. The proposed Lincoln Crossing development will divide Ingram Slough into two waterways at the west side of SR 65 to a point west of the proposed bypass. A retention pond is also planned along the northern portion of the slough just west of the proposed bypass (EIP Associates 1992a).

Auburn Ravine originates in the foothills east of the project area and flows westerly across the project area. It drains into the Cross Canal and then into the


AUBURN RAVINE
D13
D1
Nelson Lane
D13
SOUTH
MOD.
Rockwell
Wise Rd
COON CREEK
Waltz Rd
Dowd Rd
Dalby
A5C1
Airport
MARKHAM RAVINE
AAC2
Joiner Pkwy
HIGHWAY 65
D13 NORTH MOD
YANKEE SLOUGH
BIG YANKEE SLOUGH
SHE
LEGEND
D1
D13
A5C1
AAC2

Sacramento River. It meanders through the project area and has a high density of trees lining it.

Currently, Auburn Ravine receives water from the Wise Powerhouse, the City of Auburn Wastewater Treatment Plant and from stormwater runoff. Nevada Irrigation District (NID), Placer County Water Agency and the South Sutter Water District all use Auburn Ravine for transmitting water to agricultural users. During the spring and summer months, April through September, agricultural water is added into the flow of Auburn Ravine. Flows in Auburn Ravine will increase when the City of Auburn expands their wastewater treatment plant capacity from 1.67 million gallons per day (MGD) to 2.5 MGD (Jones & Stokes, 1996).

Stream flow is the lowest in Auburn Ravine between October and December when irrigation is not needed and demands for hydropower are low. This varies from a natural flow that would be lowest during the summer months: June, July, August and September. Flow data has been recorded by the NID where SR 65 crosses Auburn Ravine.

Markham Ravine originates in the in the rolling hills to the east of the project area. Markham Ravine is a fairly narrow watercourse that meanders through the project area. Some eroding hillsides along the creek suggest greatly increased flows during the winter months. Markham Ravine also carries irrigation water, making flows higher than normal at some times of the year.

Coon Creek originates in the Sierra foothills, flowing westerly across the project area, draining into the Cross Canal and then into the Sacramento River. The creek is heavily wooded in some areas and only sporadic trees line the creek in other areas. Water is supplied to Coon Creek by canals and water is taken from Coon Creek by other canals. It is difficult to know how closely the current flows resemble natural flows.

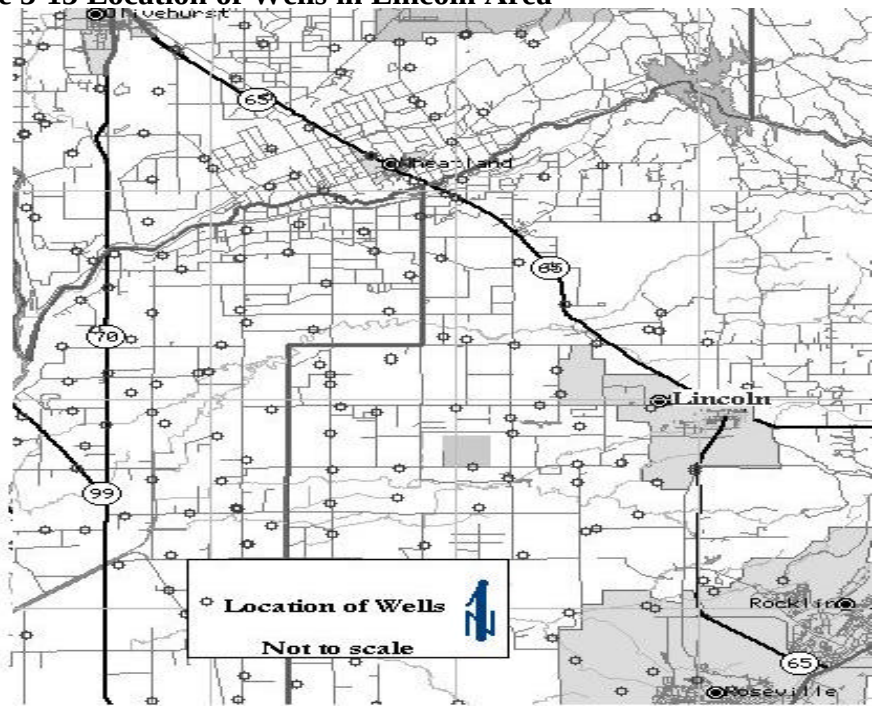
Yankee Slough roughly parallels the Bear River, originating in the rolling hills east of the project. Yankee Slough flows into the Bear River and then to the Sacramento River. The slough does not have trees along its banks. Some of the water flowing in Yankee Slough comes for the Camp Far West canal, affecting seasonal flows.

Orchard Creek, Auburn Ravine, Markham Ravine, Coon Creek and Yankee Slough all receive water from an irrigation canal and/or provide water for irrigation. Consequently, flows no longer conform to natural flows. The watersheds for each of these creeks are relatively small, Coon Creek being the largest. Due to the seasonal nature of precipitation, flow fluctuates significantly from the high flow periods (October through May) to the dry summer months.

3.5.2 Groundwater Hydrology

Available information indicates that groundwater elevation within the City of Lincoln is declining. A study conducted for the Coon Creek/Auburn Ravine watershed show that the average depth to groundwater has increased dramatically from only 7 m (22.9 ft) in 1929, to more that 18 m (59 ft) in 1967, due to overdrafting for agricultural irrigation purposes. Present data indicates that groundwater levels have continued to drop at a rate of approximately 0.3 m (one foot) per year since 1967, or about 9 m (29.5ft) (SACOG 1988b). Some agricultural wells may be affected by the proposed project. A map of wells in the area is shown in Figure 3-13.

Figure 3-13 Location of Wells in Lincoln Area



3.5.3 Municipal Water Supply

Municipal water for the City of Lincoln is supplied through a long-term contract with the Placer County Water Agency (PCWA). Lincoln purchases treated water wholesale from PCWA and distributes the water through its own system. PCWA receives the water from Lake Spaulding and treats the water at PCWA's Sunset Treatment Plant. The plant has a capacity of 5.0 million gallons per day, and supplies water to both the City of Lincoln and the Sunset Industrial Park south of the city. In addition the city has developed two wells east of the Lincoln Municipal Airport and expects to develop more wells as the demand increases (SACOG 1998a).

3.5.4 Beneficial Uses of the Water Resources

Beneficial uses are critical to water quality management in California. State law defines beneficial uses of California's waters that may be protected against quality degradation to include (but not limited to) "…domestic, municipal, agricultural and industrial supply, power generation, recreation, aesthetic enjoyment, navigation and preservation and enhancement of fish, wildlife and other aquatic resources or preserves" (Water Code Section 13050(f)). Protection and enhancement of existing and potential beneficial uses are primary goals of water quality planning (Regional Water Quality Control Board Central Valley Region 1998).

The beneficial uses, and abbreviations, listed below are the standard Basin Plan designations (RWQCBCVR 1998).

Municipal and Domestic Supply (MUN) - Includes uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.

Agricultural Supply (AGR) - Includes uses of water for farming, horticulture, or ranching including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.

Industrial Service Supply (IND) - Includes uses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well re-pressurization.

Industrial Process Supply (PRO) - Uses of water for industrial activities that depends primarily on water quality.

Groundwater Recharge (GWR) - Includes uses of water for natural or artificial recharge of groundwater for purposes of future extraction, maintenance of water quality, or halting of saltwater intrusion into freshwater aquifers.

Freshwater Replenishment (FRSH) - Includes uses of water for natural or artificial maintenance of surface water quantity or quality (e.g., salinity).

Navigation (NAV) - Uses of water for shipping, travel, or other transportation by private, military, or commercial vessels.

Hydropower Generation (POW) - Uses of water for hydropower generation.

Water Contact Recreation (REC-l) - Includes uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing,

skin and SCUBA diving, surfing, white water activities, fishing, or use of natural hot springs.

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

Commercial and Sport Fishing (COMM) - Uses of water for commercial or recreational collection of fish, shellfish, or other organisms including, but not limited to, uses involving organisms intended for human consumption or bait purposes.

Aquaculture (AQUA) - Includes the uses of water for aquaculture or mariculture operations including, but not limited to, propagation, cultivation, maintenance, or harvesting of aquatic plants and animals for human consumption or bait purposes.

Warm Freshwater Habitat (WARM) - Includes uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish or wildlife, including invertebrates.

Cold Freshwater Habitat (COLD) - Includes uses of water that support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish or wildlife, including invertebrates.

Estuarine Habitat (EST) - Uses of water that support estuarine ecosystems including, but not limited to, preservation or enhancement of estuarine habitats, vegetation, fish, shellfish, or wildlife (e.g., estuarine mammals, waterfowl, shorebirds).

Wildlife Habitat (WILD) - Includes uses of water that support terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.

Preservation of Biological Habitats of Special Significance (BIOL) - Uses of water that support designated areas or habitats, such as established refuges, parks, sanctuaries, ecological reserves, or Areas of Special Biological Significance (ASBS), where the preservation or enhancement of natural resources requires special protection.

Rare, Threatened, or Endangered Species (RARE) - Includes uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under State or Federal law as rare, threatened or endangered.

Migration of Aquatic Organisms (MIGR) - Uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under State or Federal law as rare, threatened or endangered.

Spawning, Reproduction, and/or Early Development (SPWN) – Uses of water that support high quality aquatic habitats suitable for reproduction and early development of fish.

Shellfish Harvesting (SHELL) – Uses of water that support habitats suitable for the collection of filterfeeding shellfish (e.g. clam, oysters, and mussels) for human consumption, commercial or sports purposes.

The beneficial uses of the Sacramento and Bear Rivers are listed in Table 3-16.

Table 3-16 Beneficial Uses

Surface Water Bodies	MUN	AGRI	AGRS	POW	REC-1	REC-2	WARM	COLD	MIGR(W)	MIGR(C)	SPWN(W)	SPWN(C)	WILD
Sacramento River Colusa Basin to I Street Bridge	E	E	~	E	E	E	E	E	E	E	E	E	E
Bear River	E	E	E	E	E	E	E	E	P	P	P	P	E

MUN = Municipal
AGR I = Agricultural Irrigation
AGR S = Ag. Stock Watering
POW = Industry Power
REC-1 = Recreation Contact
REC-2 = Other Non-Contact
WARM = Freshwater Habitat Warm
COLD = Freshwater Habitat Cold
MIGR(W) = Migration Warm
MIGR(C) = Migration Cold
SPWN(W) = Spawning Warm
SPWN(C) = Spawning Cold
WILD = Wildlife Habitat
E = Existing Beneficial Uses
P = Potential Beneficial Uses
Source: RWQCBCVR, 1999

3.5.5 Beneficial Uses for Groundwater

Unless otherwise designated by the Regional Water Board, all ground waters in the Region are considered as suitable or potentially suitable, at a minimum, for municipal and domestic water supply (MUN), agricultural supply (AGR), industrial service supply (IND) and industrial process supply (PRO) (RWQCBCVR, 1998).

3.5.6 Water Quality Objectives

The Basin Plan lists water quality objectives for a number of constituents. General water quality objectives for surface waters are presented in Table 3-17. Objectives for inorganic and organic chemicals are listed Table 3-18.

Table 3-17 General Water Quality Objectives for Surface Waters

Constituent	Description
Bacterio-logical	In no case shall coliform concentrations in waters of the Sacramento River Basin or the Bear River exceed the following: In waters designated for contact recreation (REC-1), the median fecal coliform concentration based on a minimum of not less than five samples for any 30 day period shall not exceed 200/100ml, not shall more than ten percent of total samples during any 30 day period exceed 400/1000ml.
Chemical Constituents	Waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the limits specified in the California Code of Regulation, Title 22 and listed in the Basin Plan. Waters designated for use as agricultural supply (AGR) shall not contain concentrations of chemical constituents in amounts that adversely affect such beneficial use. Numerical water quality objectives for individual waters are listed in the Basin Plan.
Dissolved Oxygen	Dissolved oxygen concentrations shall conform to those limits listed in the Basin Plan. The monthly median of the mean daily dissolved oxygen (D) concentration shall not fall below 85 % of saturation in the main water mass, and 95 percentile concentration shall not fall below 75 % of saturation. For waters not listed and where dissolved oxygen objectives are not prescribed, the dissolved oxygen concentrations shall not be reduced below the following minimum levels at any time: Waters designated COLD 7.0 ml/L Waters designated SPWN 7.0 ml/L Waters designated WARM 5.0 ml/L
Floating Material	Water shall not contain floating material in amounts that cause nuisance or adversely affect beneficial uses.
Oil and Grease	Waters shall not contain oils, waxes, or other materials in concentrations that cause nuisance, result in a visible film or coating on the surface of the water or on objects in the water or otherwise adversely affect beneficial uses.
Pesticides	No individual pesticide or combination of pesticides shall be present in concentrations that adversely affect beneficial uses. Discharges shall not result in pesticide concentrations in bottom sediments or aquatic life that adversely affect beneficial uses. Total identifiable persistent chlorinated hydrocarbon pesticides shall not be present in the water column at concentrations detectable within the accuracy of analytical methods approved by the Environmental Protection Agency or the Executive Officer. Pesticide concentrations shall not exceed those allowable by applicable anti-degradation policies (see State Water Resources Control Board Resolution NO. 68-16 AND 40 C.F.R. § 131.12. Pesticide concentrations shall not exceed the lowest levels technically and economically achievable. Waters designated for use as domestic or municipal supply (MUN) shall not contain concentration of pesticides in excess of the Maximum Contaminant Levels set forth in California Code of Regulations, Title 22, Division 4, Chapter 15.
pH	The pH shall not be depressed below 6.5 nor raised above 8.5
Radioactivity	Radionuclides shall not be present in concentrations that are harmful to human, plant, animal, or aquatic life nor result in the accumulation of radionuclides in the food web to the extent that presents a hazard to human, plant, animal, or aquatic life.
Sediment	The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.
Settleable Materials	Waters shall not contain substances in concentrations that result in the deposition of material that causes nuisance of adversely affects beneficial uses.

Constituent	Description
Suspended Solids	Waters shall not contain suspended material in concentration that cause nuisance or adversely affect beneficial uses.
Taste and Odor	Water shall not contain taste and odor producing substances in concentration that impart undesirable tastes or odors to domestic or municipal water supplies or to fish flesh or other edible products of aquatic origin, or that cause nuisance or otherwise adversely affect beneficial uses.
Temperature	The natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses.
Toxicity	All waters must be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal or aquatic life. This objective applies regardless of whether the toxicity is caused by a single substance of the interactive effect of multiple substances. Analysis of indicator organisms, species diversity, population density, growth anomalies and biotoxicity tests of appropriate duration or other methods as specified by the Regional Water Board will determine compliance with this objective.
Turbidity	Waters shall be free of changes in turbidity that cause nuisances or adversely affect beneficial uses. Increases in turbidity attributable to controllable water quality factors shall not exceed the following limits: Where natural turbidity is between 0 and 5 Nephelometric Turbidity Units (NTUs), increases shall not exceed 1 NTU. Where natural turbidity is between 5 and 50 NTUs, increases shall not exceed 20%. Where natural turbidity is between 50 and 100 NTUs, increases shall not exceed 10%. Where natural turbidity is greater than 100 NTUs, increases shall not exceed 10%. In determining compliance with the above limits, appropriate averaging periods may be applied that beneficial uses will be fully protected.

Source: Regional Water Quality Control Board, Central Valley Region Basin Plan, 1998

Table 3-18 Water Quality Objectives for Inorganic and Organic Chemicals for the Bear River Hydrologic Unit

Chemical	Maximum contamin-ation Level	Detail
1,1,1-Trichloroethane	0.2 mg/L	NA
1,1,2,2-Tetrachloroethane	0.001 mg/L	NA
1,1,2-Trichloro-1,2,2-Trifloroet	1.2 mg/L	NA
1,1,2-Trichloroethane	0.005 mg/L	NA
1,1-Dichloroethane	0.005 mg/L	NA
1,1-Dechloroethylene	0.006 mg/L	NA
1,2,4-Trichlorobenzene	0.07 mg/L	NA
1,2-Trichlorobenzene	0.6 mg/L	NA
1,2-Dichloroethane	0.0005 mg/L	NA
1,2-Dichloropropane	0.005 mg/L	NA
1,3-Dichloropropene	0.0005 mg/L	NA
1,4-Dichlorobenzene	0.005 mg/L	NA
2,3,7,8-TCDD (Dioxin)	0.0000003 mg/L	NA

Chemical	Maximum contamin-ation Level	Detail
2,4,5-TP (Silvex)	0.05 mg/L	NA
2,4-D	0.07 mg/L	NA
Alachlor	0.002 mg/L	NA
Aluminum	1 mg/L	NA
Antimony	0.006 mg/L	NA
Arsenic	0.005mg/L	NA
Asbestos	7 MFL	NA
Atrizine	0.003 mg/L	NA
Barium	1 mg/L	NA
Bentazon	0.018 mg/L	NA
Benzene	0.001 mg/L	NA
Benzo(a)pyrene	0.0002 mg/L	NA
Beryllium	0.004 mg/L	NA
Cadmium	0.0005 mg/L	NA

Chemical	Maximum contamin-ation Level	Detail
Carbofuran	0.018 mg/L	NA
Carbon Tetrachloride		NA
Chlordane	0.0001 mg/L	NA
Chromium	0.05 mg/L	NA
Cis-1,2-Dichloroethylene	0.006 mg/L	NA
Copper	1.3 mg/L	NA
Cyanide 0.2	0.2 mg/L	NA
Dalapon	0.2 mg/L	NA
Diphthalate (2-ethylhexyl)	0.004 mg/L	NA
Dibromochloropropane	0.0002 mg/L	NA
Dichloromethane	0.005 mg/L	NA
Dinoseb	0.007 mg/L	NA
Diquat	0.02 mg/L	NA
Endothall	0.1 mg/L	NA
Endrin	0.002 mg/L	NA
Ethylbenzene	0.7 mg/L	NA
Ethylene Dibromide	0.00005mg/L	NA
Fluoride	2.4 mg/L	<53.7F
Fluoride	2.2 mg/L	53.8F-58.3F
Fluoride	2 mg/L	58.4F-63.8F
Fluoride	1.8 mg/L	63-9F-70.6F
Fluoride	1.6 mg/L	70.7F-79.2F
Fluoride	1.4 mg/L	79.3F-90.5F
Glyphosate	0.7 mg/L	NA
Heptachlor	0.00001mg/L	NA
Heptachlor Epoxide	0.00001mg/L	NA
Hexachlorobenzene	0.001 mg/L	NA

Chemical	Maximum contamin-ation Level	Detail
Hexachlorocyclopentadiene	0.05 mg/L	NA
Lead	0.015 mg/L	NA
Lindane	0.0002 mg/L	NA
Mercury	0.002 mg/L	NA
Methoxychlor	0.04 mg/L	NA
Molinate	0.02 mg/L	NA
Monochlorobenzene	0.07 mg/L	NA
Nickel	0.1 mg/L	NA
Nitrate (as NO3)	45 mg/L	NA
Nitrate + Nitrate (sum as nitogen)	10 mg/L	NA
Nitrate (as nitrogen)	1 mg/L	NA
Oxamyl	0.2 mg/L	NA
PCBs	0.0005 mg/L	NA
Pentachlorophenol	0.001 mg/L	NA
Picloram	0.5 mg/L	NA
Selenium	0.05 mg/L	NA
Simazine	0.004 mg/L	NA
Styrene	0.1 mg/L	NA
Tetrachloroethylene	0.005 mg/L	NA
Thallium	0.002 mg/L	NA
Thiobencarb	0.07 mg/L	NA
Toluene	0.15 mg/L	NA
Toxaphene	0.003 mg/L	NA
trans-1,2-Dichloroethylene	0.01 mg/L	NA
Trichloroethylene	0.005mg/L	NA
Trichlorofluoro-methane	0.15 mg/L	NA
Vinyl Chloride	0.0005 mg/L	NA
Xylenes	1.75 mg/L	NA

Source: RWQCBCVR 1998
NA = Not Applicable

3.5.7 Existing Water Quality

The City of Auburn's Wastewater Treatment Plant (WWTP) has been operating under a cease-and-desist order since 1994 for discharging effluent that exceeded the WWTP's permit limitations into the Auburn Ravine. Recent water quality studies to assess the effects of the City of Auburn's WWTP discharge found that the effluent has little impact on ambient water quality in Auburn Ravine. Significant dilution and high capacity to assimilate organic matter are results of the high dissolved oxygen concentration maintained in the stream as it flows to Lincoln (Jones & Stokes, 1996).

Water quality studies have been conducted on Auburn Ravine in conjunction with the City of Lincoln Wastewater Treatment and Reclamation Facility Draft Environmental Impact Report. Data collected between December 1998 through February 1999 at the Joiner Parkway Bridge in Lincoln showed that stormwater runoff and higher flows influence water quality. Although there was low biological oxygen demand, neutral pH, low hardness and dissolved oxygen (DO) typically above 7.0 mg/L, there was moderate turbidity that varied with stream flow conditions and rainfall. Data collected during the summer and fall 1995, shown in Table 3-19, reflect the influences of urban runoff, agricultural activities, septic tanks and other factors (Jones & Stokes, 1999).

Table 3-19 Concentrations of Conventional Constituents of Concern in Auburn Ravine

	BOD (mg/L)	NO^3 (mg/L N)	NH^3 (mg/L N)	TKN (mg/L N)	TP (mg/L P)	TURB (NTU)	FC (#/100 ml)	pH	Temp (ºC)	DO (mg/L)
Samples Collected from Auburn Ravine 7/24/95										
Above town	<3	0.13	<0.05	<0.5	<0.5	3.9	50	6.8-6.9	14.7-16.9	10.0-10.4
mid reach	<3	0.12	<0.05	<0.5	0.6	6.6	--	6.7-7.6	15.9-17.3	9.6-9.8
Lower reach	<3	<0.11	0.052	0.6	0.9	4.6	500	6.0-7.4	20.4-22.7	8.0-8.3
Samples Collected from Auburn Ravine 9/14/95										
Above town	<3	0.71	0.064	<0.5	0.04	1.8	50	--	--	--
mid reach	<3	0.93	0.053	<0.5	0.05	2.0	--	--	--	--
Lower reach	<3	0.58	0.064	<0.5	0.05	3.4	500	--	--	--
Samples Collected from Auburn Ravine 10/20/95										
Above town	<3	--	<0.05	<0.5	0.05	0.72	30	6.9-7.2	15.5-15.7	7.2-9.3
mid reach	<3	--	<0.05	<0.5	0.08	1.8	--	6.8-7.4	15.5-17.0	7.6-8.5
Lower reach	<3	--	<0.05	<0.5	0.09	4.7	90	7.2	17.0-17.0	6.2-7.0

BOD = biological oxygen demand DO = dissolved oxygen NH^3 = ammonia (un-ionized)
NO^3 = nitrates FC = fecal coliform Temp. = Temperature
TKN = total Kjehldahl nitrogen TP = total Phosphorous Turb = Turbidity

The city has recently undertaken an intensive sampling effort to gain a better understanding of the variability of the trace metal priority pollutants in Auburn Ravine (at Joiner Parkway Bridge). Several trace metals (i.e., cadmium, copper, lead, nickel, and zinc) were present during the various sampling periods at levels that exceed proposed water quality criteria. The May 1998 and January-February 1999 samplings were

conducted immediately following storm events and the levels of pollutants in these samples may be characteristic of transient storm-related inputs of urban pollutants. More recent data using clean techniques show much lower values for dissolved metals, with none of the values exceeding proposed regulatory criteria (Jones & Stokes, 1999).

Sources of pollutants in the Auburn Ravine watershed include both point sources of pollutants (e.g., the City of Auburn's WWTP) and non-point sources of pollutants (e.g., agricultural and urban runoff). The City of Auburn's wastewater discharge constitutes the largest single known source of wastewater effluent entering directly into Auburn Ravine. The percentage contribution from Auburn's WWTP is lower in the dry season as a result of larger releases of water into the channel by PG&E and PCWA. In the dry season, Auburn's effluent has typically accounted for 6.8% of the flow in October and 1.8% in July (Jones & Stokes, 1999).

In the Sacramento Valley there is a natural weather pattern of a long dry period from May to October. During this seasonal dry period, pollutants contributed by vehicle exhaust, vehicle and tire wear, crankcase drippings, spills and atmospheric fallout accumulate within a watershed. Precipitation during the early portion of the wet season (November to April) displaces these pollutants into the storm water runoff, resulting in high pollution concentrations in the initial wet weather runoff. A study conducted by the RWQCB in Sacramento, California revealed that during the rainy season, the first flush of heavy metals and hydrocarbons occurred during the first five inches of seasonal rainfall. Trace metal and hydrocarbon concentrations then remained largely static in subsequent storm events. Some sources of dry weather runoff constituent pollutants included commercial and domestic irrigation, general washoff, groundwater infiltration and illegal discharges (EIP Associates 1992a).

The State of California, in accordance with Section 303(d) of the Clean Water Act, has submitted to the U.S. Environmental Protection Agency (EPA) a draft list of impaired waters. EPA is currently reviewing the list and may make further changes. The 1998 list includes survey information, but no specific information on the Upper Coon-Upper Auburn, Lower Bear and the Lower Sacramento watersheds.

For the section of the Sacramento watershed where the project is located, parameters of concern include unknown toxicity, mercury and Diazinon. The pollution sources were listed as agriculture and resource extraction.

3.6 FLOODPLAIN

During times of high flows, water backs up along man made barriers such as the existing railroad and highway bridges on Auburn Ravine. The low area along the

railroad tracks and SR 65 fills with water during wet winters. FEMA has mapped 100-year floodplains along all of the creeks in the project area (See Figure 4-12, in the Environmental Consequences Chapter for a map of floodplain encroachments.). The levee on the north side of Auburn Ravine, on the Scheiber Ranch, attests to the potential for flooding in the low sloping flat areas. In addition, the FEMA maps show SR 65 as a major impediment to the flow of water for a 100-year flood event for Markham Ravine. Flooding may occur downstream in Sutter County during wet events (SACOG 1988b, FEMA maps).

Natural and beneficial floodplain values exist at Auburn Ravine and Coon Creek due to their perennial flow. These values are relatively diverse. The primary values that exist in the vicinity of the proposed project alternate alignments are as follows:

- Natural habitat for fish, wildlife, and native riparian vegetation
- Open space
- Recreation
- Ground water recharge
- Scenic beauty

These values also exist at Markham Ravine and Yankee Slough, but to a lesser degree due to the absence of significant surface flow during the summer and fall of most years.

3.7 NATURAL RESOURCES

3.7.1 Introduction

The Lincoln Bypass Study Area has been substantially altered during a long history of agricultural and industrial land use. Figure 3-14 outlines the Study Area. About 9 % of the Study Area is developed and about 43 % has been converted to some form of agricultural production (row crops, rice, orchards, etc.) Many of the drainage through the area have been channelized or otherwise altered. Levees have been constructed to contain floodwaters or to retain water for rice farming. Many drainage appear to be conveying supplemental irrigation water. Cattle grazing have also taken a toll on the natural environment in the Study Area.

More recently, residential development has accelerated in the project area, especially in the vicinity of Joiner Parkway. New housing is also under construction south of Nicolaus Road at the intersection of Lakeside Drive and north of Nicolaus Road to the east of Nelson Lane. Many areas now being developed as residential subdivisions were likely in some form of agricultural use previously.

3.7.2 Agency Coordination

This section summarizes the responsibilities of key agencies involved in the review of the NESR and related project documents for this project. Coordination with the agencies is also discussed. Copies of correspondence with the agencies are included in the Comments and Coordination Chapter, Chapter 7.

Environmental Protection Agency (EPA)

EPA has primary responsibility for administration of the Clean Water Act and oversight authority on 404 permitting issues. EPA's 404(b)(1) guidelines are the substantive criteria used by the Corps in evaluating discharges of dredged or fill material into waters of the United States. EPA is also a signatory agency to the 1993 NEPA/404 Integration Memorandum of Understanding (MOU).

EPA has been involved in the development of the draft Alternatives Analysis for the Route 65 Lincoln Bypass, and has concurred with the proposed project purpose and range of alternatives. EPA will continue to be involved both in review of environmental documents and in the 404 permit process.

U.S. Army Corps of Engineers (ACOE)

Under Section 404 of the Clean Water Act, the ACOE regulate the discharge of dredged or fill material into waters of the U.S. A Section 404 permit from the ACOE will be required for the project to authorize the discharge of dredged or fill material into vernal pools and other wetlands and regulated waters associated with roadway construction. The ACOE is also a signatory agency to the NEPA/404 Integration MOU.

The extent to which the recent U.S. Supreme Court decision of SWANCC (Solid Waste Agency of North Cook County) v. United States Army Corps of Engineers (ACOE) (No. 99-1178 [January 9, 2001]) regarding the ACOE's jurisdiction of isolated, non-navigable, intrastate waters used as habitat for non-migratory birds may ultimately be interpreted as rendering non-navigable, isolated, intrastate waters beyond the scope of the Clean Water Act (CWA) has yet to be determined. The SWANCC decision only invalidates the Migratory Bird Treaty Rule. Hence, a determination of what, if any, isolated wetlands on the project site may no longer be subject to ACOE's jurisdiction (as defined by the SWANCC decision) will at the ACOE's discretion and will require consultation with the ACOE.

If the ACOE no longer takes jurisdiction over an isolated wetland that supports a federally threatened or endangered species, or a species proposed for listing federally as threatened or endangered (such as a listed fairy shrimp), required Section 7 consultation will be initiated by other federal agencies involved, such as FHWA.

Regardless of the SWANCC decision's affect on federal authority under the federal CWA, the State retains its independent authority over wetlands, under State laws and federal waivers to regulate vernal pools and other wetlands.

The ACOE verified the original wetland delineation for the study area in 1991, and has provided direction on updating the delineation and reverifying the findings. The ACOE has concurred with the proposed project purpose and range of alternatives evaluated for the project. The ACOE will need to verify the final wetland delineation for the selected project alternative.

Regional Water Quality Control Board (RWQCB)

A Section 401 Water Quality Certification or Waiver from the RWQCB is required in conjunction with the Section 404 permitting process. A 401 Certification or waiver will be required before the 404 permit is considered valid. Application to the RWQCB is generally made after the environmental document is complete.

U.S. Fish and Wildlife Service (FWS)

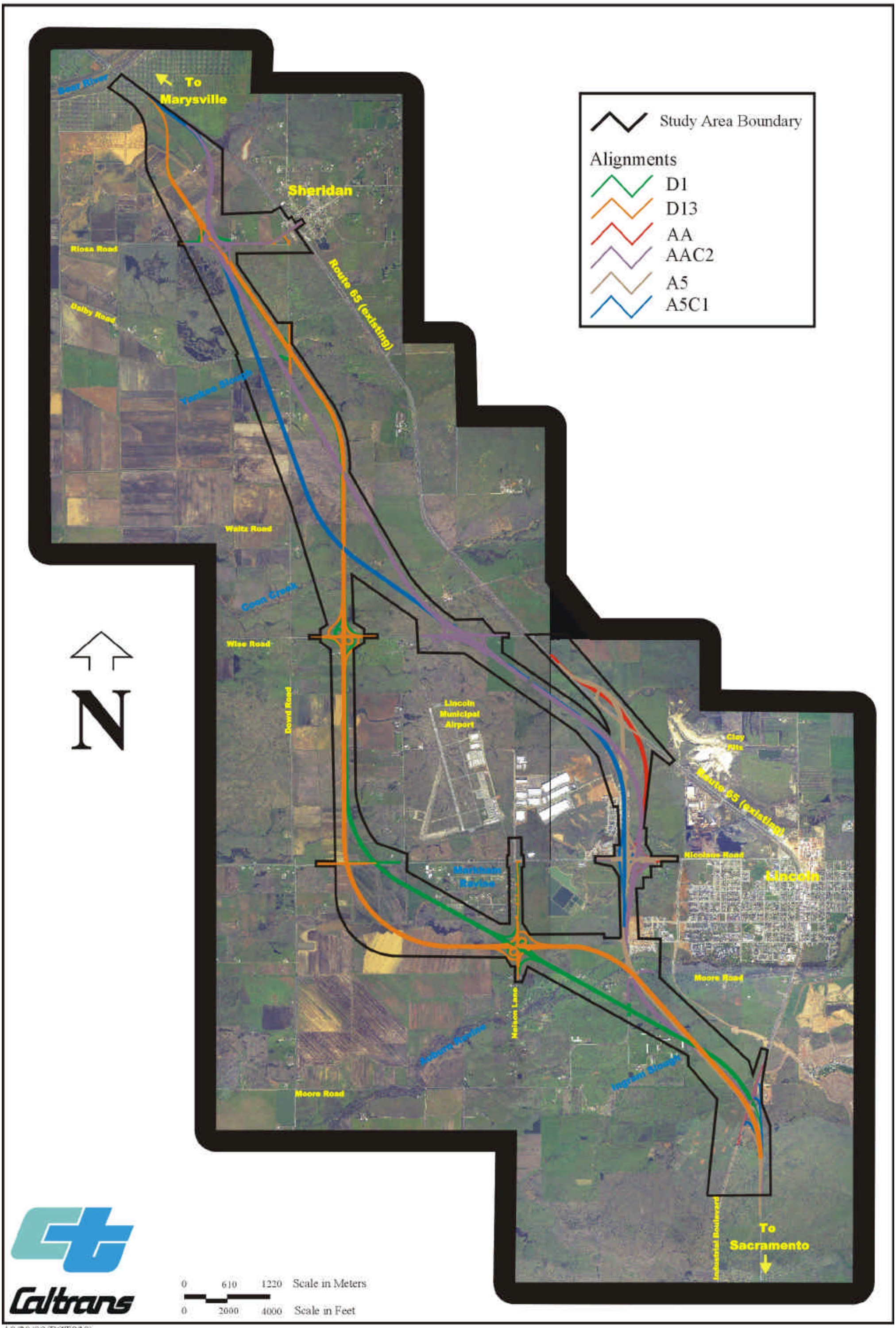
Under the Fish and Wildlife Coordination Act of 1958, Federal agencies are required to coordinate during project planning stages with FWS and with the State agency responsible for fish and wildlife resources on activities that modify any body of water. Under Section 7 of the Federal Endangered Species Act, Federal agencies are required to consult with FWS on any action that "may affect" a Federally listed threatened or endangered species or designated critical habitat. FWS is also a signatory agency to the NEPA/404 Integration MOU and has concurred with the proposed project purpose and range of alternatives evaluated for the project.

FWS will continue to be involved in the project through review of environmental documents, participation in the 404 permitting process and in Section 7 consultation for potential project effects on listed species.

California Department Of Fish and Game (CDFG)

CDFG, through provisions of Sections 1601-1603 of State of California Administrative Code, is empowered to issue agreements for any alteration of a river, stream or lake where fish or wildlife resources may adversely be affected. Streams (and rivers) are defined by the presence of a channel bed and banks, and at least an intermittent flow of water. CDFG regulates wetland areas only to the extent that those wetlands are part of a river, stream or lake as defined by CDFG.

Coordination with CDFG will be necessary under the Fish and Wildlife Coordination Act, as described above, and under the California Endangered Species Act for potential impacts to State listed species. In addition, a Section 1601 Agreement will



10/20/99(PCT830)

rce: Mapping/GIS - LSA Associates, Inc., 1999
Base Photo - Andregg, Inc., March 1999

Natural Resources Study Area
Figure 3-14

be required from CDFG to authorize work in streams and other waterbodies. CDFG will also be involved in the review of project environmental documents and in the 404 permitting process.

National Marine Fisheries Service (NMFS)

Under Section 7 of the Federal Endangered Species Act, Federal agencies are required to consult with NMFS on any action that "may affect" a Federally listed threatened or endangered species or designated critical habitat for which NMFS has responsibility. For the Route 65 Lincoln Bypass project, NMFS has responsibility for reviewing project effects to anadromous fish.

3.7.3 Fish and Wildlife

The plant communities in the Study Area provide habitat for a variety of fish and wildlife resources. The following sections describe the wildlife habitats and species expected to occur in these habitats. A complete list of fish and wildlife species observed in the project area can be found in Appendix F.

Aquatic Habitat

Aquatic habitats in the Study Area include open water associated with creeks, reservoirs and stock ponds, flooded rice fields, backwater sloughs, vernal pools/marshes and permanent/seasonal marsh and irrigation canals. The best developed aquatic habitat in the Study Area is associated with the large marsh complexes at the west end of Markham Ravine and Bull Marsh, and along the primary drainage's (Auburn Ravine, Markham Ravine, Coon Creek, Yankee Slough). The hydrology of most of the aquatic habitats in the Study Area is influenced to some degree by agricultural diversions, irrigation pumping and return flows and wastewater discharges.

Vertebrate species observed, or expected to occur, in aquatic habitats in the Study Area include beaver, river otter, muskrat, northern pond turtle, common garter snake, Pacific tree frog and bullfrog. Aquatic habitats in the Study Area also support a resident warm water fishery including both introduced and native species. Based on sampling conducted by Beak in 1990, Auburn Ravine and Coon Creek are dominated by native fish species including Sacramento squawfish and Sacramento sucker. Green sunfish, carp and Pacific lamprey were also recorded. Markham Ravine, Ingram Slough and Yankee Slough support a primarily introduced fishery including mosquito fish, green sunfish, carp and bigscale logperch.

Freshwater marsh is important for many wildlife species, particularly waterfowl and shorebirds. Freshwater marsh and flooded rice fields in and near the Study Area provide habitat for thousands of migrating waterfowl during the winter. Biologists

observed between 15,000 and 20,000 birds, primarily ducks, in these areas during the early March surveys. Marsh areas are also important in nutrient absorption functions that improve water quality.

Small numbers of chinook salmon were observed in Auburn Ravine, Coon Creek and Ingram Slough. Although believed to be stocked fish, it is possible that fall run chinook salmon and Central Valley steelhead migrate through the Study Area. The Study Area does not provide suitable spawning habitat (gravel beds) for these species.

Terrestrial Habitat

Terrestrial habitats in the Study Area include buildings and other structures, agricultural fields, rice fields, orchards, grasslands, oak woodlands, mixed riparian forest and marsh. Structures, buildings and landscaped areas provide low-quality wildlife habitat, primarily exploited by those species adapted to human disturbances. Barns and other outbuildings may provide habitat for bats (big brown bat, Mexican free-tailed bat) and barn owls, while a variety of structures provide nesting sites for swallows.

Agricultural land provides habitat for small mammals and birds, including many of the species listed above. Once harvested, agricultural fields provide foraging opportunities for raptors, such as northern harrier, white-tailed kite and Swainson's Hawk. Rice fields, which are extensive both within and west of the project area, pond large areas of water and provide good quality waterfowl and wading bird habitat. Orchards may provide cover and foraging habitat for many bird species also commonly found in woodlands and other habitats in the Study Area, however, mowing, plowing, spraying, and harvesting are activities which will deter normal cover and foraging by bird species.

Wildlife use of non-native grasslands is similar to agricultural lands, providing habitat for a wide variety of small mammals, songbirds, raptors and reptiles. Mixed oak woodland provides high-value wildlife habitat for a variety of bird species and some mammals.

Mixed riparian forest, especially where well developed, is one of the most important habitats for wildlife in the project area. The structural complexity of the habitat provides a variety of foraging, resting and nesting opportunities for many species, including a number of special status species. Many of the species found in oak woodlands also occur in the riparian forest.

The riparian communities along Auburn Ravine and Coon Creek provide relatively unobstructed wildlife corridors through the Study Area. These corridors are likely used by a number of wildlife species for crossing through the developed areas around Lincoln. Existing SR 65, the UPTC tracks and a number of secondary roads and farm roads cross

these corridors. Existing SR 65 is immediately adjacent to the UPTC tracks through most of the Study Area. The main drainage: Auburn Ravine, Markham Ravine and Coon Creek, run under the highway and railroad via culverts.

3.7.4 Plants

Table 3-20 provides a breakdown of the plant communities and other land uses occurring in the overall Study Area. The percentage of each community relative to the total acreage within the Study Area is also given. A list of all plant species observed in the Study Area in included in the Appendix. Figure 3-15 provides an aerial overview of the plant communities in the Study Area.

Table 3-20 Plant Communities Occurring in the Study Area

Comm-unity	Area in Hectares *(acres)*	% of Study Area	Description
Developed Disturbed	175.0 ha *432 ac*	8.7 %	Included in this category are developed areas such as roadways, buildings and other structures, adjacent lots as well as undeveloped areas that have been severely disturbed by grading or other earth-disturbing activity. Vegetation is typically limited to ruderal species.
Agricultural Lands	855.0 ha *2,111 ac*	42.7 %	Agricultural land, a dominant community type in the Study Area, includes all row crops, rice fields and orchards. Also included in this category are irrigation canals, ditches, small reservoirs and ponds and similar areas directly associated with production of rice or other crops. Fallow fields are included in this community provided they are obviously part of an ongoing agricultural operation. Agricultural land occurs throughout the project area with the largest contiguous expanses located west of the Lincoln Airport and north of Wise Road.
Nonnative Grassland	257.3 ha *635 ac*	12.8 %	Nonnative grassland is common in the Study Area. Vegetation in nonnative grassland is dominated by annual grasses and forbs including wild oats, soft chess, ripgut brome, medusa grass, filaree and yellow star-thistle. Included in this community type are fallow agricultural fields that have been fallow for so long as to be indistinguishable from nonnative grassland. Annual grassland that contain vernal pools and vernal pool complexes are not included in this category.
Mixed Oak Woodland	49.5 ha *122 ac*	2.5 %	Valley oak and blue oak are the dominant trees, with interior live oak also common. Mixed oak woodland in the project area is generally open and contains an understory of nonnative grassland. These woodlands are often found on high terraces near drainage features, but also occur independent of any significant water source. The largest contiguous oak woodland in the Study Area occurs just west of Joiner Parkway, both north and south of Nicolaus Road. Oak woodland also occurs further west along Nicolaus Road and south of Auburn Ravine near Moore Road.

Comm-unity	Area in Hectares *(acres)*	% of Study Area	Description
Mixed Riparian Forest	22.6 ha *60 ac*	1.1 %	The major drainage in the project area (Auburn Ravine and Coon Creek) support a mixed riparian forest typically dominated by valley oak but also including several other tree species, often as codominants. Dominant overstory species include valley oak, California black walnut and Goodding's willow. Other tree species include English walnut, Fremont cottonwood, black cottonwood, white alder, interior live oak, sandbar, arroyo and red willow. Understory species in the mixed riparian forest include Himalayan blackberry, mugwort, creeping wildrye, California wild grape, Baltic rush, buttonwillow, California rose and others. The vegetative complexity of the riparian community depends on the structural complexity of the floodplain, which often varies along the drainage's. Where stream banks are deeply incised (typical in many reaches); oaks, walnuts and other trees typically occur in a narrow band along upper banks with nominal understory; the streambed supports little vegetation in these areas. In reaches with well-developed terraces, sandbar and other willows typically occupy the lower terraces with a variety of riparian species on the middle terraces and oaks along the upper banks. These areas generally support a well-developed understory. Riparian corridors in the project area are heavily used by cattle, and the plant community reflects this use. In the more intensively grazed areas, the understory is significantly reduced and few seedling trees occur. Deeply incised banks may also be a result of cattle grazing. None of the riparian corridors are free of impacts; Auburn Ravine appears to be the most highly degraded.
Valley Freshwater Marsh	56.0 ha *138 ac*	2.8 %	Perennial or nearly perennial slow-moving or standing water is the common element of all freshwater marsh habitat. In deeper water areas, this community is dominated by cattail and bulrush, often associated with floating mats of water primrose. In shallower water, and on saturated banks, several species of rush, spikerush and sedge are common along with nutsedge, smartweed, dallis grass and Bermuda grass. Thickets of willow occur occasionally within marsh areas and are considered part of the marsh habitat. Valley freshwater marsh intergrades with open water in deeper waterbodies and with vernal marsh in shallower water areas. Valley freshwater marsh habitat in the project area occurs naturally in slow-moving creeks and sloughs (e.g., Yankee Slough), ponds, irrigation and roadside ditches and backwater areas of the larger drainages. The most extensive areas of valley freshwater marsh occur in Markham Ravine south of Nicolaus Road and at Bull Marsh in the northwest portion of the project area. Due to the long history of grazing and water diversions in the project area, much of the valley freshwater marsh habitat is degraded and thoroughly invaded by nonnative plant species. Portions of the Study Area support vegetation characteristic of valley freshwater marsh but are truly agricultural lands or disturbed areas that support this vegetation due to artificial water sources. Areas fitting this description were mapped as agricultural land or disturbed areas since they are not true valley freshwater marsh communities.
Great Valley Willow Scrub	1.1 ha *2.8 ac*	0.06 %	Great Valley willow scrub only occurs in a few locations within the project area. Vegetation in this community generally consists of thickets of willow and Fremont cottonwood with little to moderate understory. Understory vegetation can include annual grasses and forbs, as well as shrub cover such as California rose and California blackberry. This community is always associated with a water source and often occurs adjacent to valley freshwater marsh.

Comm-unity	Area in Hectares *(acres)*	% of Study Area	Description
Grassland/ Northern Hardpan Vernal Pool Complex	561.4 ha *1,386 ac*	28.0 %	Vernal pools are seasonal wetlands that pond water for short periods during the winter and early spring due to an impermeable, subsurface layer that retards percolation. Vernal pools generally occur in nonnative grassland as part of a complex that includes the pools and contributing watershed interconnected through a series of vernal swales. They support plant and wildlife species specially adapted to the seasonal fluctuations such as the Federally threatened vernal pool fairy shrimp (*Branchinecta lynchi*) and Federally endangered vernal pool tadpole shrimp (*Lepidurus packardi*). Two types of vernal pools occur in the project area, northern hardpan vernal pools and volcanic mudflow vernal pools. The impermeable layer in northern hardpan vernal pools consists of an iron-silicate cemented hardpan. This type of vernal pool is by far the most common in the project area. Northern hardpan pools are generally associated with iron oxidized soils such as San Joaquin series. Dominant vegetation in northern hardpan vernal pools includes annual hairgrass, coyote thistle, downingia and popcorn flower. The largest concentrations of northern hardpan vernal pools in the project area are located in the extreme southern end between SR 65 and Industrial Boulevard and in the eastern portion of the project area between Nicolaus Road and Wise Road.
Grassland/ Northern Volcanic Mudflow Vernal Pool Complex	4.7 ha *11.7 ac*	0.2 %	Northern volcanic mudflow vernal pools are created by cemented volcanic mudflows forming an impermeable layer. They are much less common than northern hardpan vernal pools and are limited to the Exchequer soil series within the project area. Volcanic mudflow pools are typically smaller and shallower than hardpan pools. As a result, they dry up sooner than hardpan pools and the flowering times are usually several weeks earlier. Typical plant species in northern volcanic mudflow vernal pools include yellow carpet, Fremont goldfields, coyote thistle and wooly marbles. Northern volcanic mudflow vernal pools only occur in two locations within the project area. One complex is located northeast of existing SR 65 between Nicolaus Road and Wise Road. A second, smaller complex is located in the southern portion of the project area, between SR 65 and Industrial Boulevard.
Vernal Marsh	10.0 ha *24.7 ac*	0.5 %	Vernal marsh is a community type transitional between vernal pools and valley freshwater marsh. Vernal marsh areas are generally deeper, and stay wet longer, than vernal pools. Consequently, many typical vernal pool plant species do not occur in vernal marshes. Vernal marsh areas typically dry out in the summer; thus, many of the typical freshwater marsh species described previously are precluded. Common species found in vernal marshes include rushes and spike rushes in the deeper areas and vernal buttercup and popcorn flower in the shallows.
Open Water	11.4 ha *28.2 ac*	0.6 %	Open waters are unvegetated areas of ponds, channels or other aquatic areas that are not included in another natural community. Open water is typically associated with valley freshwater marsh communities in the deeper water where marsh species cannot grow. The largest expanse of open water is located in Markham Ravine south of Nicolaus Road where the drainage has been partially dammed.
Total	**2,004.0 hectares (4,948.3 acres)**		

Source: Mapping/GIS - LSA Associates, Inc., 1999
Base Photo - Andregg, Inc,. March 1999

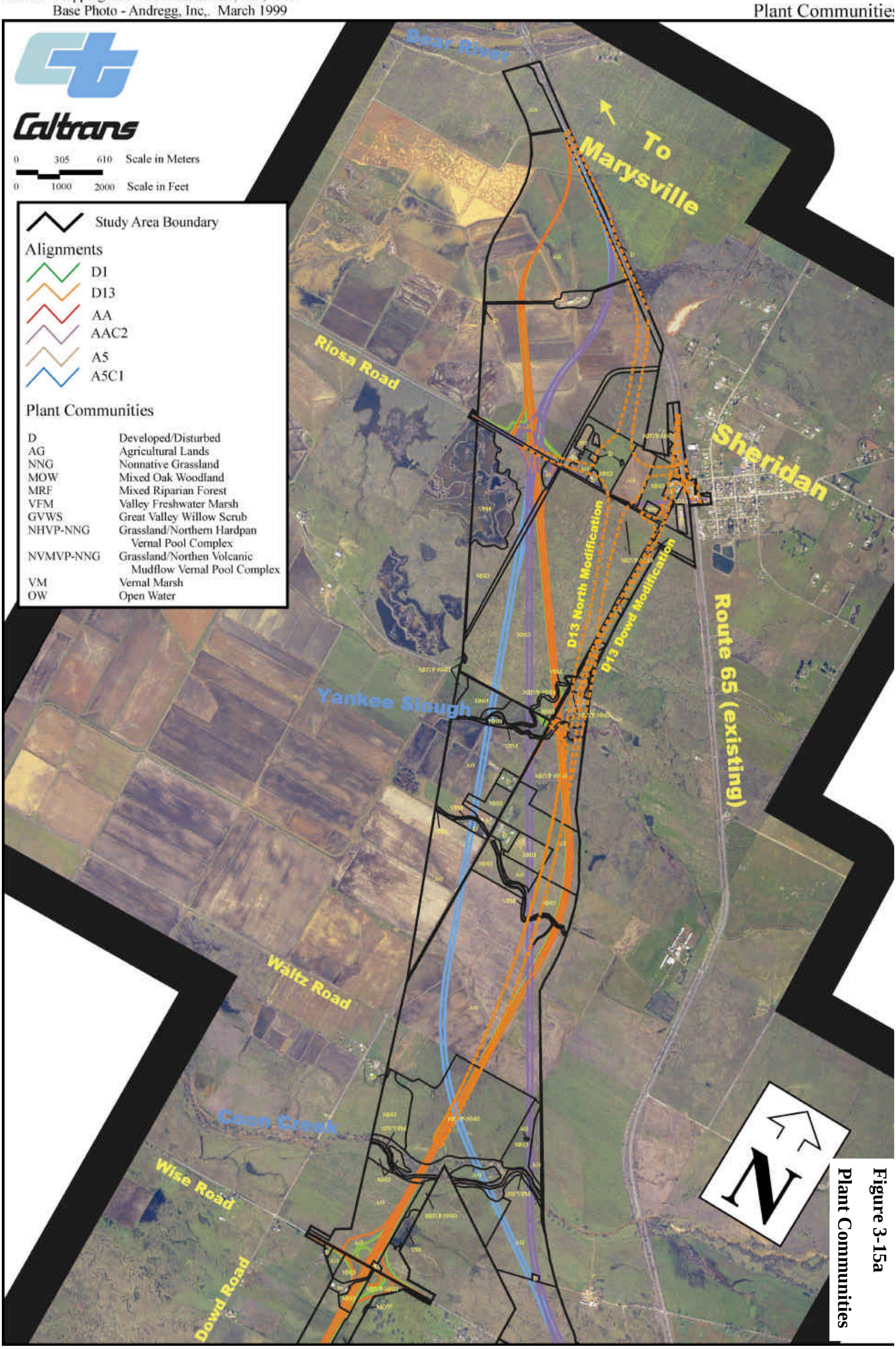


Figure 3-15a
Plant Communities

3.7.5 Special Status Species

An annotated list of special status species potentially occurring in the project area was generated based on California Natural Diversity Data Base (CNDDB), California Native Plant Society (CNPS) and FWS lists, coordination with agency biologists, review of previous project documents and input from biologists. The annotated list is included in Table 3-21. Below are definitions of the terms used in Table 3-20;

- *Endangered (state and federal)*: A species that is in danger of extinction throughout all or a significant portion of its range.
- *Threatened (state and federal)*: A species that that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.
- *Proposed Threatened or Endangered (federal)*: Any species that is proposed in the Federal Register to be listed under Section 4 of the Endangered Species Act.
- *Candidate (federal)*: Species for which the USFWS has on file sufficient information on biological vulnerability and threat(s) to support issuance of a proposal for listing, but issuance of a proposed rule is currently precluded by higher priority listing actions.
- *Species of Concern (federal)*: A species that was a former federal Category 2 Candidate for listing, which is a species for that the USFWS has concerns about, but has insufficient information on file on vulnerability and threats to support issuance of a proposal for listing.
- *Species of Concern (state)*: California species of special concern are those that the California Department of Fish and Game is concerned about because of declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction.
- *Migratory Nongame Birds of Management Concern*: Species of migratory nongame birds that are considered to be of concern in the United States because of: 1) documented or apparent population declines; 2) small or restricted populations, or; 3) dependence on restricted or vulnerable habitats.
- *CNPS List 1B*: Plants that the California Native Plant Society (CNPS) considers to be rare, threatened or endangered in California and elsewhere.
- *CNPS List 2*: Plants that the CNPS considers to be rare, threatened or endangered in California, but are more common elsewhere.

Figure 3-16 shows locations where special status species have been recorded in the Study Area. Letters documenting coordination with the U.S. Fish and Wildlife Service are located in Chapter 7.

This section provides an overview of the special status species that are known to occur, or may potentially occur, within the Study Area. Additional detailed information on State and Federal listed species potentially affected by this project is included in the Natural Environment Study, available by request.

The streams present within the project site will likely be considered Critical Habitat for the Central Valley steelhead. Because the fall/late fall-run chinook salmon is a candidate for listing as threatened or endangered, Critical Habitat, and Essential Fish Habitat, could be designated for this ESU if it is listed prior to implementation of the project.

Table 3-21 Special Status Species Potentially Occurring in the Project Area

Common Name ***Latin Name***	**Status**[1]	**Potential in Project Area / Results of Previous Studies**	**Notes**
Mammals			
River otter *Lutra canadensis*	Protected furbearer	River otters have been observed in Markham Ravine, and it is expected that this species periodically occurs in the Study Area.	This uncommon species occurs along streams and lake borders throughout the Central Valley. Although primarily aquatic, otters will travel several kilometers over land to reach another stream or lake.
Spotted bat *Euderma maculatum*	FSC CSC	Suitable roosting habitat does not occur in the project area. This species is not expected to occur.	The spotted bat occupies a wide range of habitats, from arid deserts and grasslands to coniferous forest. Spotted bats need cliff crevices or caves for roosting.
Greater western mastiff bat *Eumops perotis californicus*	FSC CSC	This species was not observed during previous surveys, but could potentially occur in the project area since suitable roost trees are most likely present.	This species occurs in a variety of arid to semi-arid habitats including grassland, chaparral and deciduous woodlands, and is known to utilize trees as roost sites.

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FPT - Proposed Threatened
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CNPS 2 - Rare or Endangered in California, more common elsewhere

Common Name ***Latin Name***	**Status**[1]	**Potential in Project Area / Results of Previous Studies**	**Notes**
Small-footed myotis bat *Myotis ciliolabrum*	FSC	Could potentially occur. Buildings in project area may provide roost sites. Not observed during previous surveys.	This species utilizes buildings as roost sites and could potentially occur in the project area.
Long-eared myotis bat *Myotis evotis*	FSC	Although not observed during previous surveys, the long-eared myotis bat may utilize buildings for nursery or roost sites and may occur in the project area.	This species occurs in a wide variety of habitats to 2,743 m (9,000 ft) elevation, but prefers coniferous woodlands and forests.
Fringed myotis bat *Myotis thysanodes*	FSC	Although not observed during previous surveys, the fringed myotis bat may occur in the project area.	This species occurs in a wide variety of habitats and may utilize buildings as nursery or roost sites.
Long-legged myotis bat *Myotis volans*	FSC	This species was not observed during previous surveys. Suitable roost trees are most likely present in the project area; as a result, this species could potentially occur.	It is most common in woodland and forest habitats above 1,219 m (4,000 ft).
Yuma myotis bat *Myotis yumanensis*	FSC CSC	Could potentially occur. Buildings in project area may provide roost sites. Not observed during previous surveys.	This species occurs in open forests and woodlands, and its distribution is strongly tied to water sources. Although not observed during previous surveys, buildings in the project area may provide roost or nursery sites and this species could potentially occur.
Pale Townsend's big-eared bat *Plecotus townsendii pallescens*	FSC CSC	Although not observed during previous surveys, the pale big-eared bat could potentially occur in the project area, as existing buildings could be utilized as roost sites.	This species occurs in a variety of habitats.
Pacific western big-eared bat *Plecotus townsendii townsendii*	FSC CSC	Although not observed during previous surveys, Townsend's western big-eared bat may utilize buildings in the project area as roost sites, and consequently could potentially occur.	This species occurs in a variety of habitats

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Common Name ***Latin Name***	**Status**[1]	**Potential in Project Area / Results of Previous Studies**	**Notes**
San Joaquin pocket mouse *Perognathus inornatus*	FSC	Although not observed during previous surveys, the San Joaquin pocket mouse could potentially occur in the project area.	This species occurs in grassland and blue oak savanna.
Birds			
Cooper's hawk *Accipiter cooperii*	CSC	Cooper's hawks have been observed foraging in the project area. No nests were identified during previous surveys; however, nesting habitat does occur on the project site.	This species occurs in woodlands and generally nests in riparian communities.
Sharp-shinned hawk *Accipiter striatus*	CSC	Sharp-shinned hawks have been observed foraging in the project area. Nesting habitat is present in the project area, but no nests have been identified.	This species breeds in coniferous and riparian deciduous forests, and prefers riparian areas.
Swainson's Hawk *Buteo swainsoni*	ST	At least eight Swainson's Hawks were observed in and around the project area during a two-day survey in May 1999. At least three of the eight hawks were observed within the Study Area. The other observations were outside of the project area, but within an approximate 16.1 km (10 mi) radius of the project area.	This species requires fields or grasslands for foraging and breeds in stands with few trees in juniper-sage flats, riparian areas and oak savanna. Swainson's Hawk nesting habitat in, and in the vicinity of, the project area consists of the taller trees in the Coon Creek, Auburn Ravine and Pleasant Grove Creek riparian corridors. The grasslands and fallow agricultural lands that are not planted in rice or orchards provide suitable foraging habitat.
American peregrine falcon *Falco peregrinus anatum*	SE; State Fully Protected, MNBMC	Although some potential foraging habitat occurs in the project area, no nesting habitat is present. This species is not expected to occur in the project area.	This species nests on high cliffs or human-made structures and generally forages near water.
Prairie falcon *Falco mexicanus*	CSC	Prairie falcons have been observed in the project area. No nesting habitat present.	This species forages in dry, open country and nests on cliffs. Foraging habitat for prairie falcon occurs in the project area but no nesting habitat is present.

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Common Name ***Latin Name***	**Status**[1]	**Potential in Project Area / Results of Previous Studies**	**Notes**
Bald eagle *Haliaeetus leucocephalus*	FT SE State Fully Protected	Some potential foraging habitat is present but no bald eagle nesting habitat occurs in the project area, and this species is not expected to occur.	This species occurs near ocean shorelines, lake margins and rivers where it forages. Bald eagles nest in tall trees or on cliffs near large bodies of water.
Tricolored blackbird *Agelaius tricolor*	FSC CSC MNBMC	Suitable nesting habitat (i.e., freshwater marsh) occurs in the project area. Tricolored blackbirds have been observed in the project area but no nesting colonies have been identified.	This species nests colonially, usually in cattail and tule marshes, but is also known to nest in thistle and blackberry patches and other dense vegetation.
Golden eagle *Aquila chrysaetos*	Federally Protected; CSC, State Fully Protected	Although no nesting habitat is present, golden eagles have been observed foraging in the project area.	This species forages in open country and nests in trees or on cliffs.
Northern harrier *Circus cyaneus*	CSC	Northern harriers have been observed foraging in the project area, and one nest was identified.	Suitable habitat for this species includes coastal salt marsh, fresh-water marsh and open grassland, where it both forages and nests.
White-tailed kite *Elanus caeruleus*	State Fully Protected, MNBMC	White-tailed kites have been observed foraging in the project area, and one nest was identified.	This species occurs in open groves, river valleys, marshes and grasslands.
Double-crested cormorant *Phalacrocorax auritus*	CSC	This species was observed in the project area near Markham Ravine. Nesting habitat occurs in the project area, but no nesting colony has been identified.	This species nests colonially on coastal cliffs and offshore islands, and along lake margins in the interior of the state.
Aleutian Canada goose *Branta canadensis leucopareia*	FT	Wintering (foraging) habitat is present in the project area for Aleutian Canada goose, and this species could occur	This species breeds in the Aleutian Islands and winters in lower latitudes including areas of the U.S. This species generally winters on or near lakes or other bodies of fresh water, often foraging in pastures or fields.

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Common Name *Latin Name*	Status[1]	Potential in Project Area / Results of Previous Studies	Notes
Mountain plover *Charadrius montanus*	FTP CSC MNBMC	This species could potentially forage in the project area during the winter.	The mountain plover breeds in short-grass prairie in the mid-western U.S. and winters in semi-arid and arid grasslands and agricultural areas in the southwestern U.S. and Mexico.
Western burrowing owl *Athene cunicularia hypugea*	FSC CSC MNBMC	Although not observed in the Study Area, suitable habitat for the burrowing owl is present, and this species could potentially occur.	The burrowing owl inhabits open, dry grasslands, deserts and scrublands with low-growing vegetation and is commonly observed in agricultural areas. The burrowing owl nests below ground, utilizing abandoned burrows of other species, especially ground squirrels.
Ferruginous hawk *Buteo regalis*	FSC CSC MNBMC	Ferruginous hawks could potentially forage in the project area during the winter.	This species breeds in the Great Plains region from the mid-western U.S. to southern Canada. Ferruginous hawks winter in open grasslands, sagebrush flats, desert scrub and other open country in the southwestern portion of their breeding range and extending into the southwestern U.S. and Mexico.
White-faced ibis *Plegadis chihi*	FSC CSC MNBMC	Although not observed during surveys, the white-faced ibis could utilize marsh habitat within the project area for breeding and/or foraging.	This species occurs in freshwater marsh habitats.
California horned lark *Eremophila alpestris actia*	CSC	Observed on the project site during previous surveys. Suitable nesting habitat present; no nesting observed.	This species nests in grassland.
Grasshopper sparrow *Ammodramus savannarum*	FSC MNBMC	Grasshopper sparrows have been observed in the project area but no nests were identified.	They occur in dense grasslands, lowland plains, and in valleys and on hillsides on lower mountain slopes. The project area could support breeding populations of this species.

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Common Name *Latin Name*	Status[1]	Potential in Project Area / Results of Previous Studies	Notes
Lark sparrow *Chondestes grammacus*	FSC	Although not observed during surveys, suitable habitat for the lark sparrow is present in the project area and this species could occur.	The lark sparrow occurs in pastures, farmlands and roadsides.
American bittern *Botaurus lentiginosus*	FSC, MNBMC	This species has been observed in the project area but no nesting was observed.	They occur in freshwater and slightly brackish marsh habitat, as well as coastal saltwater marsh. Suitable nesting habitat for the American bittern occurs in the project area.
Amphibians			
Foothill yellow-legged frog *Rana boylii*	FSC CSC State Protected	The foothill yellow-legged frog is thought to be extinct in the Sacramento Valley and is not expected to occur in the project area.	This species occurs in shallow, partly-shaded streams and riffles with rocky substrates. This frog prefers substrates that are at least cobble-sized and requires open areas where it can bask on rocks.
Mountain yellow-legged frog *Rana muscosa*	FSC CSC State Protected	No suitable habitat is present in the project area, and this species is not expected to occur.	This species occurs in montane habitats, often in riparian areas.
California red-legged frog *Rana aurora draytonii*	FT CSC State Protected	This species has not been observed in the Study Area and there are no records for the project vicinity. Although suitable habitat for the California red-legged frog is present in the project area, due to the presence of large numbers of non-native predators (i.e., bullfrog, crayfish, largemouth bass, etc.), this species is not expected to occur.	The red-legged frog inhabits lowlands and foothills in or near permanent sources of deep water. The frog prefers ponds or creeks with extensive shoreline vegetation but will disperse 1.6 km (1 mi) or more during and after rain events.
Western spadefoot toad *Scaphiopus hammondii*	FSC CSC State Protected	Suitable habitat for the western spadefoot occurs in the project area, and this species could potentially occur.	Spadefoots occupy a variety of lowland habitats including washes, alluvial fans and river floodplains. Areas of sandy soil and open vegetation are preferred.

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Common Name ***Latin Name***	**Status**[1]	**Potential in Project Area / Results of Previous Studies**	**Notes**
California tiger salamander *Ambystoma californiense*	FC CSC State Protected	Suitable habitat for California Tiger Salamander is present in the project area, but the project area is well north of its known range. Consequently, this species is not expected to occur.	This species occurs near water sources in grasslands and open woodland habitats.
Reptiles			
Northwestern pond turtle *Clemmys marmorata marmorata*	FSC CSC State Protected (full species)	Northwestern pond turtles have been observed in the project area.	This species occurs in permanent or nearly permanent bodies of water in a variety of habitats.
California horned lizard *Phrynosoma coronatum frontale*	FSC CSC State Protected	Although not observed during previous surveys, this species occurs in a wide variety of habitats and could potentially occur in the project area.	A variety of habitats.
Giant garter snake *Thamnophis gigas*	FT ST State Protected	Suitable giant garter snake habitat is present in the project area, but the project is well east of its known distribution. The giant garter snake is not expected to occur in the project area.	It occurs in freshwater marsh and low gradient streams and has adapted to similar habitat provided by drainage canals and irrigation ditches.
Fish			
Chinook salmon *Oncorhynchus tshawytscha*	The chinook salmon (*Oncorhynchus tshawytscha*) is an anadromous species that spends part of its life in freshwater and part in salt water. These species spawn in small, freshwater streams where the young remain for a time before migrating to the ocean. Adults return to their natal streams to spawn and complete their life cycle. Chinook salmon require clean gravel beds in which to spawn. The reaches of the drainage's that flow through the project area do not contain suitable spawning habitat for chinook salmon. However, upstream reaches of Auburn Ravine and Coon Creek do contain potential spawning habitat. In addition, drainage's and tributaries within the project area could provide non-natal rearing habitat for salmon fry in early stages of development.		

Federal
FE - Endangered
FT - Threatened
FPE - Proposed Endangered
FPT - Proposed Threatened
FC - Candidate
FSC - Species of Concern
MNBMC - Migratory Nongame Birds of Management Concern

State
SE – Endangered
ST – Threatened
CSC - Species of Concern
California Native Plant Society
CNPS 1B – Rare or Endangered in California and elsewhere
CNPS 2 - Rare or Endangered in California, more common elsewhere

Common Name ***Latin Name***	**Status**[1]	**Potential in Project Area / Results of Previous Studies**	**Notes**
Winter-run chinook salmon	FE SE	Winter-run salmon have not been observed in the project area, and are not expected to occur.	
Central Valley spring-run chinook salmon	FT	Spring run salmon have not been observed in the project area, and are not expected to occur.	
Central Valley fall-run chinook salmon	FC	Fall-run chinook salmon have been observed in low numbers in Auburn Ravine, Coon Creek and Ingram Slough.	
Delta smelt *Hypomesus transpacificus*	FT ST	No suitable habitat for this species occurs in the project area and it is not expected to occur.	It occurs in sloughs and backwater areas of the Sacramento-San Joaquin Delta.
Central Valley steelhead *Oncorhynchus mykiss*	FT	The Central Valley steelhead could potentially spawn in upstream reaches of Auburn Ravine or Coon Creek, and consequently could occur in the project area.	Like the chinook salmon, this species is anadromous and migrates from the ocean to its spawning grounds. Its spawning habitat requirements are similar to those of salmon.
Sacramento splittail *Pogonichthys macrolepidotus*	FT CSC	Sacramento splittail has not been observed in the Study Area and is not expected to occur due to absence of suitable habitat.	This species occurs in slow-moving sections of large river systems.
Green sturgeon *Acipenser medirostris*	FSC CSC	It has not been observed in the Study Area and is not expected to occur.	This species is only known to spawn in the Sacramento and Klamath Rivers.
Longfin smelt *Spirinchus thaleichthys*	FSC CSC	This species has not been observed in the Study Area and is not expected to occur.	Longfin smelt occur in sloughs and backwater areas of the Sacramento-San Joaquin Delta.
River lamprey *Lampetra ayresi*	FSC CSC	The river lamprey has not been observed in the Study Area but could potentially occur.	This species occurs in the lower Sacramento River, San Joaquin River, and Russian River, and in coastal streams north of the San Francisco Bay.
Pacific lamprey *Lampetra tridentata*	FSC	This species has been identified in the Study Area.	The Pacific lamprey in known from most coastal streams from Alaska south to southern California.

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Common Name *Latin Name*	Status[1]	Potential in Project Area / Results of Previous Studies	Notes
Invertebrates			
Vernal pool fairy shrimp *Branchinecta lynchi*	FT	Vernal pool fairy shrimp have been identified in vernal pools throughout the project area.	This species inhabits vernal pools in grasslands in the Central Valley and central and southern coast mountains.
Vernal pool tadpole shrimp *Lepidurus packard*	FE	Although not previously recorded in the Study Area, vernal pool tadpole shrimp are known to occur at the west edge of the project and could potentially occur in the project area.	This species inhabits vernal pools and swales in the Sacramento Valley.
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	FT	Elderberry plants occur in the Study Area, and Valley elderberry longhorn beetle could potentially be present.	This species occurs only in the Central Valley in close association with blue elderberry (*Sambucus mexicana*). The larvae of the beetle feed and mature within the stems of elderberry plants with a diameter of one inch or greater.
Plants			
Slender Orcutt grass *Orcuttia tenuis*	FT SE CNPS 1B	Slender Orcutt grass was not recorded during previous focused surveys or during 1999 sampling. There are no known records from the project vicinity.	This species occurs in vernal pools from Sacramento County in the south to Siskiyou County.
Sacramento Orcutt grass *Orcuttia viscida*	FE SE CNPS 1B	Could potentially occur. Associated with Bogg's Lake hedge-hyssop, which was identified on the project site. Not identified during previous surveys.	This species is only known from vernal pools in Sacramento County.
Ahart's dwarf rush *Juncus leiospermus var. ahartii*	FSC CNPS 1B	This species was observed in ungrazed pools in the "A" alignments northwest of Lincoln during previous surveys. Ahart's dwarf rush could potentially occur elsewhere in the Study Area.	Ahart's dwarf rush occurs in vernal pools.

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Common Name ***Latin Name***	**Status**[1]	**Potential in Project Area / Results of Previous Studies**	**Notes**
Hispid bird's-beak *Cordylanthus mollis ssp. hispidus*	FSC CNPS 1B	The closest known occurrence of this species is approximately 6.4 km (4 mi) southeast of the project area. Hispid bird's beak was not observed in the project area during previous surveys, but could potentially occur.	This species occurs in damp, alkaline soils in meadows, playas, and valley and foothill grasslands.
Red Bluff dwarf rush *Juncus leiospermus var. leiospermus*	CNPS 1B	This species was not recorded in the Study Area during previous focused surveys.	This species occurs in margins of vernal pools and in wet places in chaparral and woodland communities.
Bogg's Lake hedge-hyssop *Gratiola heterosepala*	SE CNPS 1B	Bogg's Lake hedge-hyssop was observed in one vernal pool east of the "A" alignments and could occur elsewhere within the Study Area.	This species occurs in vernal pools and freshwater marshes and swamps.
Dwarf downingia *Downingia pusilla*	CNPS 2	Dwarf downingia was observed in the deeper vernal pools throughout the Study Area.	This species occurs in vernal pools and roadside ditches in valley and foothill grasslands.
Big-scale balsam root *Balsamorhiza macrolepis var. macrolepis*	CNPS 1B	Could potentially occur. Not identified during previous surveys.	This species occurs in valley and foothill grassland habitat.
Legenere *Legenere limosa*	FSC CNPS 1B	Legenere was not recorded in the Study Area during previous focused surveys but has been recorded in the general vicinity.	This species occurs in wet areas and vernal pools.
Valley oak *Quercus lobata*	Protected by Senate Concurrent Resolution No. 17		Riparian areas and isolated stands.

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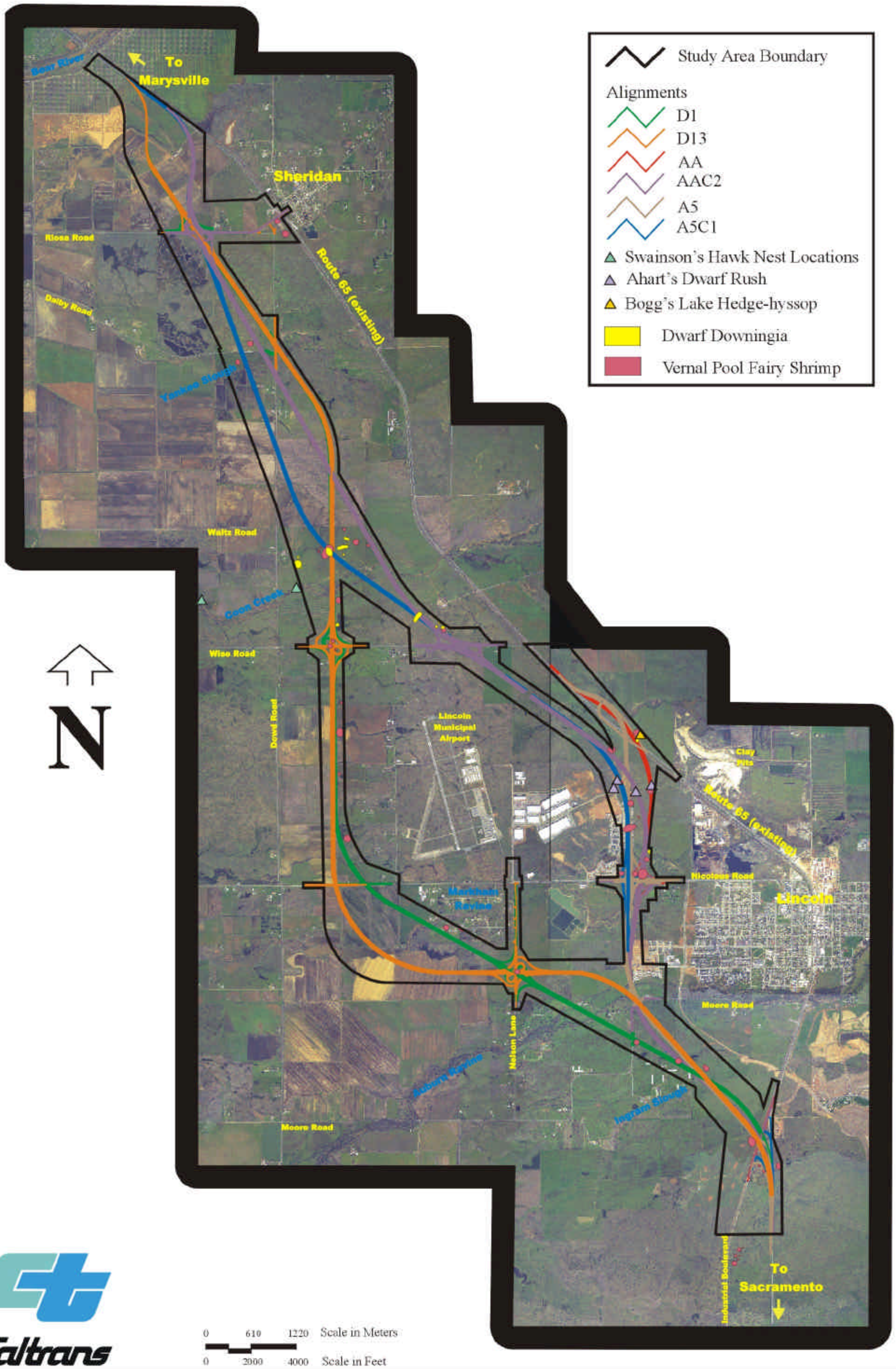

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Mapping/GIS - LSA Associates, Inc., 1999

Figure 3-16

Special Status Species Locations

3.7.6 Wetlands/Jurisdictional Waters Assessment

Wetlands and non-wetland waters (streams and lakes) that are subject to California Department of Fish and Game and/or U.S. Army Corps of Engineers jurisdiction present in the project study area are summarized in Table 3-21.

California Department of Fish and Game (CDFG)

CDFG, through provisions of Sections 1601-1603 of the California Administrative Code, is empowered to issue agreements for any alteration of a river, stream or lake where fish or wildlife resources may be adversely affected. The presence of a channel bed and banks, and at least an intermittent flow of water define streams (and rivers). The agreement generally includes, within the jurisdictional limits of streams and lakes, any riparian habitat present. In most situations, wetlands associated with a stream or lake would fall within the limits of riparian habitat.

For purposes of this evaluation, CDFG waters include mixed riparian forest habitat associated with Auburn Ravine and Coon Creek, willow scrub and marsh habitat (most of which is associated with drainage's or ponds) and other waters (primarily ponds). Vernal pools and swales are not included, as these features are not regulated by CDFG.

The project will result in the alteration of lakes and streambeds subject to CDFG regulation. Consequently, a Section 1601 Streambed Alteration Agreement will be required. Notification to CDFG is generally made after the environmental process is complete and final plans are being prepared.

Table 3-22 Jurisdictional Waters Occurring in the Study Area

Jurisdictional Waters	Area *(acres in italics)*	Percentage of total wetlands
ACOE – Wetlands		
Willow scrub	11.0 ha (*2.8 ac)*	1.1%
Freshwater marsh	56.0 ha (*138.3 ac)*	55.9%
Vernal marsh	10.0 ha *(24.7 ac)*	10.0%
Vernal pool	31.0 ha (*76.5 ac)*	30.9%
Vernal swale	2.1 ha (*5.2 ac)*	2.1%
Total - ACOE Wetlands		100.2 ha (*247.5 ac)*
ACOE – Non-wetlands		11.4 ha (*28.2 ac)*
Total - ACOE Wetlands and Non-wetland Waters		111.6 ha (*275.7 ac)*
CDFG Jurisdictional Waters (Estimated)		91.1 ha (*225.2 ac)*

U.S. Army Corps of Engineers (ACOE)

Creeks, marshes, vernal pools and other waters within the Study Area are subject to ACOE permitting authority under Section 404 of the Clean Water Act. A Section 404 permit from the ACOE is required for discharges of dredged or fill material into vernal pools and swales, creeks, marshes and other regulated waters of the U.S. These discharges will occur as a result of roadbed construction, bridge and culvert construction and other similar activities. Based on preliminary impact determinations, an individual 404 permit will likely be required. Riparian communities may not fall under ACOE jurisdiction unless they are below the ordinary high water mark (OHWM) or classified as wetlands.

Both NEPA and Section 404 of the Clean Water Act require a thorough evaluation of project alternatives as part of the review process. NEPA regulations require that an EIS "rigorously explore and objectively evaluate all reasonable alternatives." EPA regulations, which apply to ACOE permitting authority under Section 404, stipulate that only the least environmentally damaging practicable alternative (LEDPA) may be permitted. The NEPA/404 Integration MOU was adopted in 1993 in order to improve interagency coordination and integrate the NEPA and Section 404 procedures. Section 404(b)(1) requires an Alternatives Analysis in order to document the evaluation and identification of the LEDPA.

The project is subject to the NEPA/404 Integration Memorandum of Agreement (MOU); consequently, coordination with the ACOE regarding permitting requirements has been ongoing for some time. Documentation of the NEPA/404 coordination can be found in Chapter 7. A draft Alternatives Analysis, pursuant to Section 404(b)(1) requirements, also has been prepared, which is available for review at the The Department's District 3 Sacramento office, 2800 Gateway Oaks Dr. Sacramento, CA.

California Regional Water Quality Control Board

As part of the 404 permitting process, a Section 401 Certification from the Regional Water Quality Control Board is required. Application to the Regional Board is generally made after the environmental document is complete. A 401 Certification will be required before the 404 permit is considered valid.

Federal Wetland Delineation

The wetland delineation consists of a review and updating of the previous wetland delineation that was completed in 1994. The delineation is preliminary and intended to support the evaluation of project alternatives. Once an alignment is selected, a final delineation of wetlands and other waters will be prepared and provided to the ACOE for verification. In order to be considered a jurisdictional wetland by the ACOE and therefor

subject to regulatory authority under Section 404 of the Clean Water Act, an area must possess three wetland characteristics: hydrophytic vegetation, wetland hydrology and hydric soils. Wetland vegetation, hydrology and soils each have specific criteria that must be satisfied in order for that particular wetland characteristic to be met. There are, however, exceptions to requirement of satisfying all three parameters, especially for atypical wetlands and "problem wetlands."

Wetland Value Assessment

Wetlands and other waters in the Study Area provide a variety of functions and values typical of these aquatic ecosystems. The objective of the wetland value assessment is to provide a useful means for comparing project alternatives based on the relative quality of wetland resources present.

There are two primary wetland types in the Study Area: vernal pool/swale complexes and freshwater marsh. Separate evaluation factors were developed for each type. The acreage of other wetland types such as willow scrub and vernal marsh is relatively limited; consequently, a value assessment of these types was not performed. Locations of the wetlands evaluated are shown in Figure 3-17.

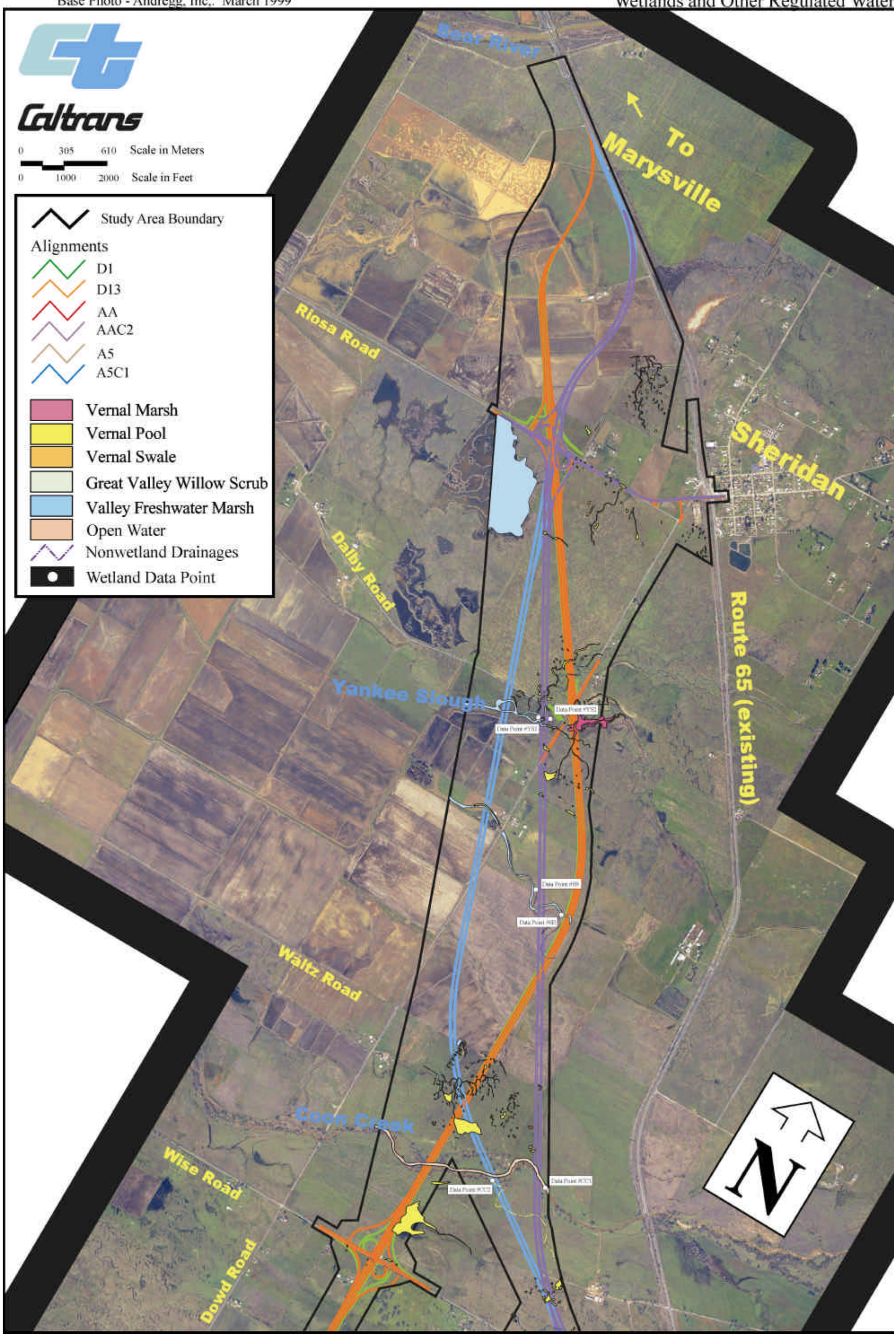
Vernal Pool/Swale Complexes

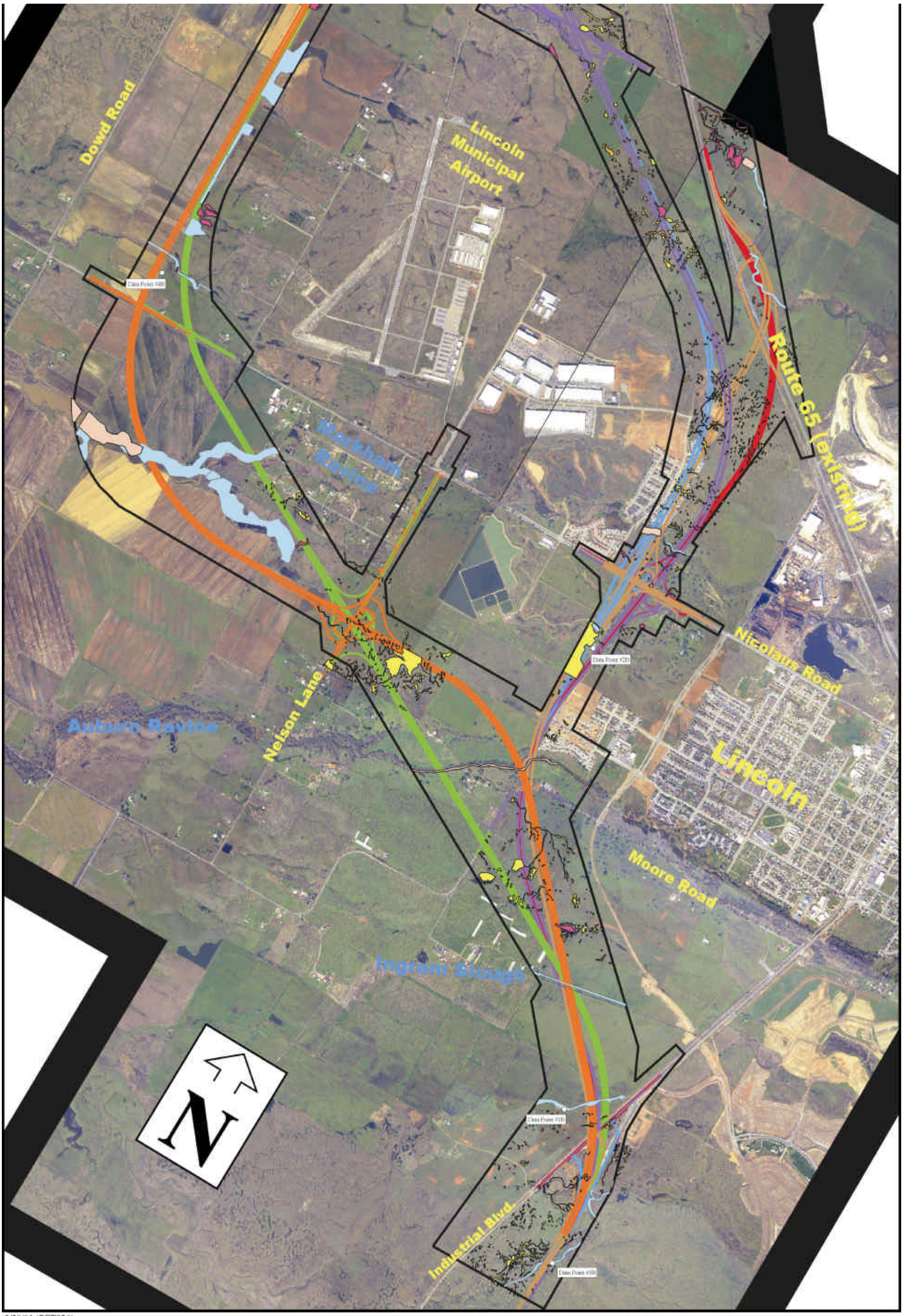
These wetlands are characterized by a seasonal cycle of flooding and saturation during the winter and early spring and desiccation during the summer and fall. Most vernal pool wetlands support specialized plant and invertebrate communities adapted to this hydrologic regime. Vernal pools often occur in complexes consisting of a number of pools interconnected by swales. The wetland value assessment for the vernal pool complexes depicted in Figure 3-17 is presented in Table 3-23.

Figure 3-17

Source: Mapping/GIS - LSA Associates, Inc., 1999
Base Photo - Andregg, Inc., March 1999

Wetlands and Other Regulated Water





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Source: Mapping/GIS - LSA Associates, Inc., 1999
Base Photo - Andregg, Inc,. March 1999

Figure 3-17b
Wetlands and Other Regulated Waters

Evaluation Factors. Factors considered most important for vernal wetlands, generally based on the criteria developed by U.S. Fish and Wildlife Service (FWS), include the following:

Size of vernal pool complex - larger complexes are more likely to exhibit a greater diversity of soils, vernal pool types, plant species, etc. and are more resistant to disturbances. Larger complexes are generally considered to have greater value than small complexes.

Vernal pool density - vernal pool complexes with more wetland acreage (i.e., higher pool density) are considered to have greater value.

Vernal pool type - less common vernal pool types (i.e., volcanic mudflow vernal pool complexes) are considered to have greater value.

Occurrence of special status species - vernal pools supporting State or Federally listed or proposed species, or species with some other special status, are considered to have greater value.

Condition of wetlands - the general condition of the site and level of degradation. Vernal pool complexes in good condition are considered to have higher value.

Table 3-23 Wetland Value Assessment for Vernal Pool Complexes

Complex #	Location	Pool Density[1]	Complex Size[2]	Vernal Pool Type	Special Status Species		Condition	Comments
					Observed in Complex	Potentially Occurring		
All Alignments (A5C1, AAC2, D1, D13)								
1	South end of Study Area	2.2 %	120-400 ha *300-1000 acres*	Northern hardpan and volcanic mudflow	vernal pool fairy shrimp, CA linderiella	vernal pool tadpole shrimp, dwarf downingia, Ahart's dwarf rush, Bogg's Lake hedge-hyssop, legenere	Good	Large, diverse, relatively undisturbed complex; includes some tracts of high quality and density pools (outside of Study Area); all alignments cross the east edge of complex, which is moderately disturbed (fair condition)
2	North of Ingram Slough, adjacent to Moore Road	3.3 %	40-120 ha *100-300 acres*	Northern hardpan	Vernal pool fairy shrimp, CA linderiella	vernal pool tadpole shrimp, dwarf downingia, Ahart's dwarf rush, Bogg's Lake hedge-hyssop, legenere	Fair	Smaller complex surrounded by development and disturbance; has some very large pools; all alignments bisect this complex.

Complex #	Location	Pool Density[1]	Complex Size[2]	Vernal Pool Type	Special Status Species		Condition	Comments
					Observed in Complex	Potentially Occurring		
7	North of Coon Creek	7.0 %	40-120 ha *100-300 acres*	Northern hardpan	Vernal pool fairy shrimp, CA linderiella, dwarf downingia	vernal pool tadpole shrimp, Ahart's dwarf rush, Bogg's Lake hedge-hyssop, legenere	Fair	Smaller complex with high density of pools; generally surrounded by agricultural land; all alignments bisect this complex.
8	Yankee Slough area	1.7 %	> 400 ha *1000 acres*	Northern hardpan	Vernal pool fairy shrimp, CA linderiella	vernal pool tadpole shrimp, dwarf downingia, Ahart's dwarf rush, Bogg's Lake hedge-hyssop, legenere	Fair	Very large complex, extending well east of Study Area; includes scattered development and agricultural uses; some tracts of high quality pools remain; all alignments cross west edge of complex.
Eastern Corridor (A5C1, AAC2)								
5	West of clay pits and Sierra Pacific, adjacent to SR 65	2.9 %	40-120 ha *100-300 acres*	Northern hardpan and Volcanic mudflow	vernal pool fairy shrimp, CA linderiella, dwarf downingia, Ahart's dwarf rush, Bogg's Lake hedge-hyssop	vernal pool tadpole shrimp, legenere	Good	Diverse complex; includes some areas of high quality pools; complex is crossed by existing Rt. 65 and residential development is encroaching on the west; eastern alignments bisect this complex
6	Airport area	3.9 %	> 400 ha *1000 acres*	Northern hardpan	vernal pool fairy shrimp, CA linderiella, dwarf down-ingia	vernal pool tadpole shrimp, Ahart's dwarf rush, Bogg's Lake hedge-hyssop, legenere	Fair	Large, diverse complex; although affected by extensive development, including airport, some large tracts of high quality pools remain; eastern alignments bisect east edge of this complex
Western Corridor (D1, D13)								
3	North of Auburn Ravine, adjacent Nelson Ln.	17.2 %	< 40 ha *100 acres*	Northern hardpan	vernal pool fairy shrimp, CA linderiella	vernal pool tadpole hrimp, dwarf downingia, Ahart's dwarf rush, Bogg's Lake hedge-hyssop, legenere	Good	Small, isolated complex with very high pool density; relatively undisturbed; complex bisected by both western alignments
4	Markham Ravine area	7.0 %	< 40 ha *100 acres*	Northern hardpan	vernal pool fairy shrimp, CA linderiella	vernal pool tadpole shrimp, dwarf downingia, Ahart's dwarf rush, Bogg's Lake hedge-hyssop, legenere	Poor	Small complex includes several residences and is generally degraded; D1 alignment crosses western portion of this complex

[1] Density of overall complex estimated based on density within Study Area.
[2] Total complex size, including portions extending outside of Study Area.

Analysis

The eight vernal pool complexes vary widely in the attributes considered in this evaluation. Complex size ranges from about 50 acres (Complex 4) to over 2,000 acres (Complex 8). Vernal pool density ranges from 1.7 % (Complex 8) to 17.2 % (Complex 3), average density is 5.7 %. Complex condition ranges from good (Complexes 1, 3 and 5) to poor (Complex 4). All of the complexes showed some level of disturbance; consequently, none were considered to be in excellent condition.

In order to compare the various complexes, they were assigned one of three relative value categories (High, Moderate or Low) based on the factors described above.

Complex 4 is clearly the lowest value complex in the Study Area due to its small size and poor condition. Complex 5 is probably the highest value due to the presence of two pool types and large number of observed special status species. Most of Complex 1, which also includes two pool types, is outside of the Study Area and has not been surveyed for special status species.

Freshwater Marsh Complexes

Freshwater marsh is the most abundant wetland type in the Study Area. This habitat is highly variable in configuration, habitat composition and overall quality.

Evaluation Factors. Factors considered most important for freshwater marsh wetlands include the following:

Size of marsh complex - larger complexes are more likely to exhibit a diversity of habitat types, be resistant to disturbances and provide greater opportunities for wildlife use.

Complexity of habitat - marsh wetlands supporting several habitat types (e.g., open water, emergent wetlands, willow scrub, overstory canopy) are considered to have greater value.

Occurrence of special status species - wetlands supporting State or Federally listed or proposed species, or species with some other special status, are considered to have greater value.

Condition of wetlands - the general condition of the site, including the diversity of wetland and upland habitats and level of degradation. Wetlands in good condition are considered to have higher value.

The value assessment for freshwater marsh is presented in Table 3-24. The following ratings were assigned to seven freshwater marsh complexes:

Complex Size: Actual wetland area

Habitat Complexity: High, Moderate or Low

Special Status Species: Species recorded or expected to occur

Condition: Excellent, Good, Fair or Poor

Table 3-24 Wetland Value Assessment for Freshwater Marsh

Wetland No.	Location	Wetland Acreage[1]	Habitat Complexity	Potential Special Status Species	Condition	Comments
All Alignments						
5	Coon Creek	0.7 ha 1.9 ac	Moderate	River otter, double-crested cormorant, northwestern pond turtle, chinook salmon, Central Valley steelhead, river lamprey, Pacific lamprey	Fair	Herbaceous marsh occurs in small, discontinuous patches along low terraces of creek; subject to regular scour; wildlife value enhanced by presence of riparian community
6	Yankee Slough	3.6 ha 9.0 ac	Moderate	Tricolored blackbird, white-faced ibis, American bittern, northwestern pond turtle	Fair-Good	Primarily herbaceous marsh with cattail and tule thickets interspersed with open water and willow scrub
Eastern Corridor (A5C1, AAC2)						
1	Markham Ravine, west of Sierra Pacific	0.3 ha 0.7 ac	High	Tricolored blackbird, double-crested cormorant, Aleutian Canada goose, white-faced ibis, American bittern, northwestern pond turtle	Good	Marsh consists of a small pond and adjacent wetlands; high diversity with open water, mudflats, cattail/tule thickets and willow/riparian scrub
2	Adjacent to existing SR 65, west of clay pits	1.7 ha 4.1 ac	Low	Tricolored blackbird, northwestern pond turtle	Fair	Small, ephemeral marsh associated with low gradient drainage; minimal habitat development
Western Corridor (D1, D13)						
3	West end of Markham Ravine	22.4 ha 55.2 ac	High	River otter, tricolored blackbird, double-crested cormorant, Aleutian Canada goose, white-faced ibis, American bittern, northwestern pond turtle	Good to Excellent	Large marsh complex including a significant amount of open water; high diversity and good habitat development
4	West of airport	11.3 ha 28.0 ac	Low	Tricolored blackbird, northwestern pond turtle	Fair	Marsh consists of low-lying areas that impound water due to blockage by ricefield berm; limited habitat development

Wetland No.	Location	Wetland Acreage[1]	Habitat Complexity	Potential Special Status Species	Condition	Comments
7	Duck ponds, Dowd and Riosa Rds.	19.7 ha 48.6 ac	High	Tricolored blackbird, double-crested cormorant, Aleutian Canada goose, white-faced ibis, American bittern, northwestern pond turtle	Good	Marsh primarily consists of man-made duck ponds; total area of marsh estimated at over 200 ac; this marsh is largely avoided by the western alignments

[1]Acreage within Study Area.

Analysis

Similar to the vernal pool complexes evaluated previously, the seven marsh complexes vary widely in the attributes considered in this evaluation. Wetland acreage within each complex ranges from less than one acre (Wetland 5) to over 55 acres (Wetland 3). Complexity ranges from low to high, and condition ranges from fair to good/excellent. All of the complexes showed some level of disturbance.

In order to compare the various marsh complexes, they were assigned to one of three value categories (High, Moderate or Low) based on the factors described above.

Table 3-25 Value Assessment of Marsh Complexes

High Value:	Marsh 3 - relatively large marsh complex; high diversity and good condition; habitat for several special status species Marsh 7 - very large marsh complex, most of which is outside Study Area; high diversity; good condition; habitat for several special status species
Moderate Value:	Marsh 1 - small in area and close to development but otherwise high quality due to complexity and condition of habitats; potential habitat for several special status species Marsh 6 - relatively small and linear, but with pockets of good herbaceous marsh habitat
Low Value:	Marsh 2 - small in area with low complexity, possibly ephemeral water supply and located close to development Marsh 4 - moderately large marsh complex, but with low complexity and somewhat degraded; limited habitat for special status species Marsh 5 - Although Coon Creek supports a valuable riparian community and provides high quality wildlife habitat, the marsh wetlands associated with the creek are small and discontinuous

Marsh 2 is the lowest value complex in the Study Area due to its small size, limited complexity and fair condition; Marsh 4 is similar but significantly larger. Marsh 3 is probably the highest value in the Study Area due to its large size, diversity of habitats and good to excellent condition.

3.8 CULTURAL RESOURCES

The National Historic Preservation Act of 1966, as amended, established the Advisory Council on Historic Preservation (ACHP) and set precedents and policies for the protection and preservation of historic and cultural resources. Section 106 of this Act mandates that Federal agencies with jurisdiction over a proposed undertaking consider the effects of that project upon any property that is included in, or eligible for inclusion in the National Register of Historic Places (NRHP).

In order to ensure that the requirements of Section 106 are met, FHWA follows procedures contained in 36 CFR 800, a set of regulations issued by the ACHP. Cultural resource investigations performed pursuant to these statutes are documented in a Historic Property Survey Report (HPSR), copies of which are on file at The Department, District 3 Sacramento, 2800 Gateway Oaks, Sacramento, CA 95833.

Documentation of the Department's coordination with the State Historic Preservation Office can be found in Chapter 7.

The cultural resource evaluation begins with the delineation of the Area of Potential Effects (APE). The APE is generally defined as the geographic area or areas within which an undertaking may cause changes in the character or use of historic properties, if any such properties exist. The APE for this project consisted of the existing and proposed right-of-way. Field reviews and surveys of the APE, as well as archaeological record checks and examinations of historic records and archives, were conducted by qualified Department specialists. The following inventories and archives were consulted in preparing the survey reports.

- *National Register of Historic Places,* Through December 1989.
- *California Historical Landmarks,* 1976
- *California Inventory of Historic Resources*, 1976
- *History of Placer County, California with Illustrations and Biographical Sketches of it's Prominent Men and Pioneers*, Thompson and West, Oakland, 1882
- *History of Placer and Nevada Counties, California*, by W.B. Lardner, and M. J. Brock, Historic Record Company, Los Angeles, 1924
- *California Place Names*, by E.G. Gudde, University of California Press, Berkeley, 1967.
- *Historic Spots in California*, by M. B. Hoover, H.E. Rensch and E.G. Rensch, Stanford University Press, Stanford. 1966.

- *Gold Districts of California*, by W.B. Clark, California Division of Mines and Geology, Bulletin 193, Sacramento, CA 1979
- *California Archaeological Inventory*, North Central Information Center, California State University, Sacramento
- *Grantee/Grantor Books* 1-8 Placer County Recorders Office, Auburn.
- *Deed Books*, E, F, G, H, I, K, M, P, Q, EE, MM, QQ, 51, 54 and 168 on microfilm, Placer County Recorders Office, Auburn.

In addition, a number of people and entities were interviewed and contacted via mail for information supporting the HPSR, including the Placer County Historical Society, the Placer County Museum, the California Native American Commission, Northern Sierra Indians, Inc., Placer Indian Association and others.

Approaches to resource identification and evaluation varied with respect to archeological (both historic and prehistoric) and historic architectural properties. Archeological properties were subject to "survey level" treatment, i.e., boundaries and features mapped, surface assemblages characterized and disturbances noted. No subsurface testing or controlled surface collections were attempted. As such, assessments of site structure, chronology, integrity etc. must be viewed as preliminary providing more direction for further evaluation, rather than a definitive statement of significance. In contrast, the historic architectural survey results are more comprehensive, incorporating complete field and archival documentation and ultimately NRHP recommendations for each resource.

3.8.1 Prehistoric Resources

The archaeological surveys identified eleven pre-historic archaeological properties within the Study Area, two of which required further study. In addition, four archaeological properties immediately adjacent to the project area were investigated.

The two prehistoric archaeological sites requiring further study which are mentioned in the previous paragraph included some midden deposit, concentrations of lithic debris and flaked and ground stone tools. Further study will be needed to determine if these sites would be eligible for listing in the NRHP. Information on these sites can be obtained by contacting The Department of Transportation, Environmental Planning, Cultural Resources, District 3, 2800 Gateway Oaks Dr., Sacramento, CA 95833.

3.8.2 Historic Period Resources

The Historic Architectural Survey Report (HASR) and the supplemental HASR (completed in 1989 and 1990) evaluated a total of eight properties, two of which were

determined to be potentially eligible for listing in the NRHP: the Fickewirth Ranch and the Sheridan Cash Store (a.k.a. Country Store). Two additional properties in the vicinity of the project have been listed on the National Register since 1990; the Lincoln Public Library at 590 Fifth Street (listed 12/10/90) and the Women's Club of Lincoln at 499 E Street (listed 5/30/01). Both of these buildings are within the town of Lincoln and not directly affected by the project.

In the Supplemental HASR (dated August 1990), 39 properties were treated in accordance with the December 20, 1989 "Memorandum of Understanding Regarding Evaluation of Post-1945 Buildings, Moved Pre-1945 Buildings, and Altered Pre-1945 Buildings." Of the 39 properties, 21 do not predate 1957 and thus require no further study. The remaining eighteen properties predate 1957 and need to be formally evaluated. The application of "The Department's Interim Policy for the Treatment of Buildings Constructed in 1957 or Later" will be documented in a statement of findings in the Supplemental HASR that will update the August 1990 Supplemental HASR.

Fickewirth Ranch

The property consists of a residence, tankhouse, windmill, long shed, timber-framed hay barn, one-time blacksmith shop and several small sheds. The buildings on the property have been maintained in their original form with little or no modification. It is one of the oldest intact residences remaining in the local area. This property appears to meet the criterion for inclusion in the National Register under Criterion C-1, as an embodiment of its time, period and method of construction. All of the structures on the property, in their form and function contribute to this determination. The State Historic Preservation Officer (SHPO) concurred with this finding on October 21, 1991.

Country Store

The Sheridan Cash Store, presently called the Country Store, is a one story, six course American Bond Brick structure that sports an Italianate Commercial False Front consisting of a stepped parapet with a denticular cornice, which hides a corrugated metal gable roof. It is the sole survivor of a fire that destroyed the town in 1891. This property appears eligible for inclusion in the NRHP under Criterion A for it's association with Sheridan's economic development and under Criterion C. It was designated a Point of Historical Interest by the California Historic Resources Commission on August 3, 1990.

3.9 HAZARDOUS WASTE

An Initial Site Assessment (ISA) was performed for property within the Study Area to assess the potential for encountering hazardous materials during the construction of the

project. The subject parcels were determined to have a low to moderate potential for environmental impairment considering the absence of factors or situations that can naturally cause potential environmental concerns. The factors being taken into account are: industrial manufacturing activities within the alignment areas, suspect asbestos containing materials, industrial wastewater generation, recorded or observed cases of hazardous wastes/materials mismanagement practices on the subject property, pesticide use and potentially PCB-containing electrical devices.

Evaluation of other factors such as neighboring land use and the presence of listed hazardous waste sites potentially within one mile of the subject area gave clear indications that the subject area has a low potential for environmental risk.

The following databases were consulted:

Table 3-26 Databases Searched

Name of Database	Types of Records	Agency
Contaminated Environmental Response Compensation and Liability Information System (CERCLIS)	Contaminated Sites under CERCLA (1980)	US EPA
National Priorities List (NPL)	Federal Superfund sites	US EPA
Liens	Filed Notices of Superfund liens	US EPA
Cortese	Hazardous Waste and Substances Site List	CAL EPA
CAL-Sites/Annual Work Plan (AWP)	Contaminated sites listed on the Annual Work Plan, cleanup sites under the Bond expenditure Plan	CAL EPA
Border Zone Properties (BZP)	Sites designated as Border Zone Properties (Deed restrictions)	CAL EPA
CAL-Sites/Abandoned Site Program Information System (ASPIS)	Actually or potentially contaminated sites under the Abandoned Site Program	CAL EPA
Hazardous Waste Information System (HWIS)	Hazardous Waste Generators, treatment Storage and Disposal Facilities	California Integrated Waste Management Board
Solid Waste Information System (SWIS)	Active and Inactive Sanitary landfills and Disposal Facilities	California Integrated Waste Management Board
Leaking Underground Storage Tanks (LTANK), Underground Tanks (UTANK)	Reported leakage of hazardous substances from underground storage tanks	California Regional Water Quality Control Board, Central Valley Region
Annual Work Plan (AWP)	All verified hazardous waste sites that are or will be targeted for abatement by the CAL EPA under	Dept. of Toxic

Name of Database	Types of Records	Agency
	the Hazardous Substance Cleanup Bond Act of 1984 and the Hazardous Substances Account.	Substances Control
Leaking Underground Storage Tanks (LUST)	Leaking Underground Storage Tanks	California Regional Water Resources Control Board

The following agencies were contacted regarding underground and above-ground storage tanks, landfills and hazardous waste sites:

- Placer County Department of Public Works Special Districts Division
- Placer County Dept. of Public Works Division of Environmental Health.

In addition, the following sources were reviewed in order to identify potential sites of concern:

- Voluntary Registered Heating and Agricultural Tanks Exempt from California Tank Regulations, as of September 25, 1985 and
- Hazardous Materials Handlers, UST and Site Litigation (Open/Active/Closed/Temporarily Closed Facilities) as of June 30, 1994.

The following parcels were determined to warrant further investigation and are shown in Figure 4-7 in chapter 4:

Table 3-27 Parcels Possibly Requiring Further Investigation

Assessors Parcel Number	Problem
021-380-001& 002	Surface staining under some above-ground storage tanks.
021-380-056	Surface staining under a waste oil container.
021-150-076	Potential leaking underground storage tank.
020-150-030	Listed on the SPL[1] list.
021-262-001, 019-320-002,021-262-004, 021-033-007,21-035-007	Underground storage tanks located on parcels.
021-020-009, 021-020-025	Abandoned farm equipment and vehicles covered the soil. Removal of equipment may reveal impacts that were not clearly visible during initial investigation.
021-262-012	Municipal Sewer Treatment Plant.
019-29-010, 019-29-019, 020-150-030	Storage and use of hazardous materials such as pesticides and fuel.
021-056-016	Collection of discarded batteries.
Adjacent to 021-020-008	Questionable disposal practices by WECO Aerospace and Infinity Aviation.

[1] The State Priority List (SPL) is the state equivalent of the Federal Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS list.)

In addition; any building or other structure to be acquired will be evaluated for the presence of asbestos. Due to the agricultural nature of the area, many of the parcels contain above-ground storage tanks, which will be investigated.

Due to the former use of waste oil (potentially containing PCB's) to control dust in railroad right-of-way, the railroad areas within the alignment could contain PCB affected soil.

3.10 VISUAL IMPACTS

Improvement of the visual quality of highways, as with many aspects of the environment, has been a matter of increasing concern in recent years. The Federal-Aid Highway Act of 1968 states that "a special effort should be made to preserve the natural beauty of the countryside." Similarly, NEPA states that "it is the continuous responsibility... to assure for all Americans safe, healthful, productive, aesthetically and culturally pleasing surroundings."

A Visual Impact Assessment Report was completed to comply with this policy, and is available for review at the Department of Transportation District 3, Sacramento office, 2800 Gateway Oaks Dr., Sacramento. The following information was summarized from that report.

3.10.1 Definition of the Visual Assessment Study Area

Definition of the Study Area and all identification, inventory and evaluation of visual resources was accomplished by field inspection, including photography and visual surveys of the site. The Study Area's visual analysis includes that area from 0 to 4.8 km (0-3 mi) from the location of all alignments, and contains both natural elements and built environments. The majority of these areas are undeveloped and comprise a rural visual environment. A smaller area is influenced by urban development around Lincoln and Sheridan.

3.10.2 General Description of Existing Landscape

Terrain within the Study Area is generally flat with rolling grasslands and elevations range from 26 to 61 m (85 to 200 ft). Open grasslands dominate the area. Perennial and intermittent creeks lined with riparian vegetation (including oak stands) traverse from east to west. The general region is rural with vistas of wide, open, non-native grasslands dotted with seasonal wetlands and occasional oak stands. Rural areas tend to be agricultural with individual homes and ranches, whereas Lincoln and Sheridan have developed residential and industrial areas.

3.10.3 Visual Assessment Units

To provide a focused analysis, the Study Area is divided into three distinct visual assessment units, each approximately 6.4 km (4 mi) long (see Figure 3-18). The South Lincoln visual assessment unit, from Orchard Creek to Auburn Ravine, is rural but planned for mixed-use development (see Figure 3-19). The Lincoln visual assessment unit ranges from Auburn Ravine to Coon Creek, including the City of Lincoln and area to the west. This unit has the majority of existing and proposed development (see Figure 3-20). The third unit is the Sheridan visual assessment unit, which contains rural areas from Coon Creek to the Bear River, just north of Sheridan. Extensive development is not planned for this unit (see Figure 3-21). These three visual assessment units provide the basis for assessing impacts of each proposed alignment. To provide an overview of the existing visual landscape, and draw attention to any outstanding visual resources, these three visual units are described briefly below.

Similarities are common throughout all three visual assessment units. Due to relatively flat terrain, the scale of the project area seems huge. Wide, expansive views and the almost never-ending sky panorama makes trees, buildings, vehicles and other elements on the ground seem relatively tiny. Due to this large scale, there is a lack of variation. This continuous thread of non-dramatic visual elements occasionally appears monotonous. Non-native grassland prevails and basic visual elements, such as creeks and related trees, flatlands and rolling foothills, repeat throughout the project area, leading to a lack of drama and variety. However, in scattered locations, glimpses of the Sierra Nevada and the Sutter Buttes can be seen in the background.

South Lincoln Visual Assessment Unit

Terrain east of the Lincoln Bypass' southerly connection with existing SR 65 consists of rolling hills. Middle ground views are prevalent, such as Telegraph Hill to the east. Located adjacent to Orchard Creek is the most dominant foothill with an elevation of 119 m (390 ft). Even though it is not visible to northbound travelers, southbound travelers have outstanding views of this undeveloped, pristine foothill. Background views, including crests of the Sierra Nevada, can be seen from a few locations. Trees associated with Auburn Ravine are visible on the horizon to the north and west. Remaining terrain is generally flat with occasional depressions around Orchard Creek. Since Orchard Creek does not support a heavily tree-lined riparian habitat, views extend through it to the southern horizon line. The southern horizon line on clear days is not visually appealing. Radio towers provide stark vertical accents against horizontal grasslands. The Placer County Sanitary Landfill with its huge towering mounds of refuse will be visible to southbound travelers and detracts from the visual quality. Equally

obtrusive is the Ultrapower Rocklin Biomass Power Plant. Tall machinery and towering smokestacks provide man made dominance over the surrounding middle-ground rural agricultural areas. At night, this well-lit machinery and processing equipment provide a mass of light, accenting the horizon. This same area has many high intensity industrial developments such as auto wreckers, junkyards, silica plants, concrete mix distributors, and transport truck storage yards that lessen the visual quality and character.

Ingram Slough, a freshwater marsh, passes through the South Lincoln visual assessment unit and contains occasional tall trees and grasses. There are two small areas of oak woodland near Auburn Ravine with less than 4 ha (10 ac) each; one is between Auburn Ravine and Moore Road, and the other parallels the southern side of Moore Road. Great valley oak riparian forest follows Auburn Ravine its entire length within this visual unit. Vernal pools are prevalent throughout non-native grasslands and agricultural land.

This visual unit also contains several home sites and a large ranch. Home sites are primarily located adjacent to Moore Road. Aitken Farms is a large turkey ranch consisting of ten extremely large rectangular buildings and some smaller buildings. Cattle are present throughout the area. Horse ranches and extensive rice fields are scattered throughout the southwestern side of this visual assessment unit. However, future development within the south Lincoln visual assessment unit will change the visual character dramatically. Recent developments include Three-D, Lincoln Crossing, Twelve Bridges and Sterling Pointe.

Viewer Quality

Overall quality of the existing visual setting for the South Lincoln visual assessment unit is good. Topography offers some vertical relief by contrasting rolling hills with flat areas. Vegetative and wetland features are vivid in wet months of the year. Home sites are sparse and do not disrupt the integrity of the setting. General visual effects of ranches can improve a visual environment. However, the non-historic structures of Aitken Farms decrease intactness due to their large rectangular size and quantity. In addition, large piles of turkey manure, compost and topsoil (at the bend of Moore Road, near the Aitken Farms entrance) disrupt intactness of the area since they do not blend with nearby natural features.

Lincoln Visual Assessment Unit

This area contains the majority of existing development, including the City of Lincoln and the area west of Lincoln. Existing developments include Lincoln Airpark and Joiner Ranch specific plan areas, two rural subdivisions near Nelson Lane, and the Lincoln Municipal Airport along with its surrounding commercial industries. In addition,

much of the non-developed area in the Lincoln visual assessment unit is slated for development.

Auburn Ravine and its great valley oak riparian forest flows from east to west. Vernal pools are visible in certain locations. The Lincoln Airpark Specific Plan Area and Lakeside Drive is visible to the left. The lumber processing plant and multiple clay pits are located just outside of Lincoln proper.

Viewer Quality

Overall quality of the Lincoln visual assessment unit is more interesting than the South Lincoln visual assessment unit due to the larger diversity of natural elements, such as creeks and vernal pools. Expansive and unified views throughout agricultural areas provide harmony. Topography creates interest while ranches provide focal points. Occasional tree farms provide thick, colorful vertical elements, which contrast with the plainness of the surrounding agricultural uses. The long, large berms of the wastewater treatment plant are visible east of Nelson Drive. These slopes range up to fifteen feet high and block views to the east of the City of Lincoln and the riparian corridor along Markham Ravine. Industrial complexes around the Lincoln Municipal Airport are unsightly, unattractive and ill proportioned to the surrounding rural atmosphere. In addition, the clay pits near existing SR 65 disrupt the intactness and unity of this area. Clay pits are the largest visual encroachments within the Lincoln visual assessment unit.

Sheridan Visual Assessment Unit

The Sheridan visual assessment unit is approximately 8 km (5 mi) long, extending from Coon Creek on the south to the Bear River on the north. This area includes the rural community of Sheridan, which has no plans for development in the near future.

Ranches are sparsely located along rural roads. Curving, winding tributaries, vernal pools and vast acreage of pheasant clubs dominate these expansive views. The large stand of trees is visible along the Bear River.

Terrain in the Sheridan visual assessment unit is the most varied and exciting of all the visual assessment units. A few low-lying hills exist with elevation differences ranging from 8-16 m (25-50 ft). One unique, mile-wide rolling foothill with five saddles is located between Dalby and Riosa Roads. This particular area has the most complete panoramic view of the entire project area, including views of the Sutter Buttes, Sierra Nevada and the Central Valley. Great valley riparian oak forest provides visual corridors for Coon Creek on the south and the Bear River on the north. The majority of land in the Sheridan visual assessment unit is agricultural, especially on the east side of Dowd Road. To the west of Dowd Road is non-native grassland.

Viewer Quality

The Sheridan visual assessment unit has the best visual setting due to its mixture and variety of appealing components. The overall rural feeling of quaint ranches, large spreads of expansive land, creek corridors, elevation changes and panoramic views help define the excellence of this visual experience. Due to the lack of existing and future planned development, this area may remain free of encroaching development. Panoramic views from the top of the unique mile-wide foothill between Dalby and Riosa Roads exhibit the compositional harmony and visual coherence of the Sheridan visual assessment unit.

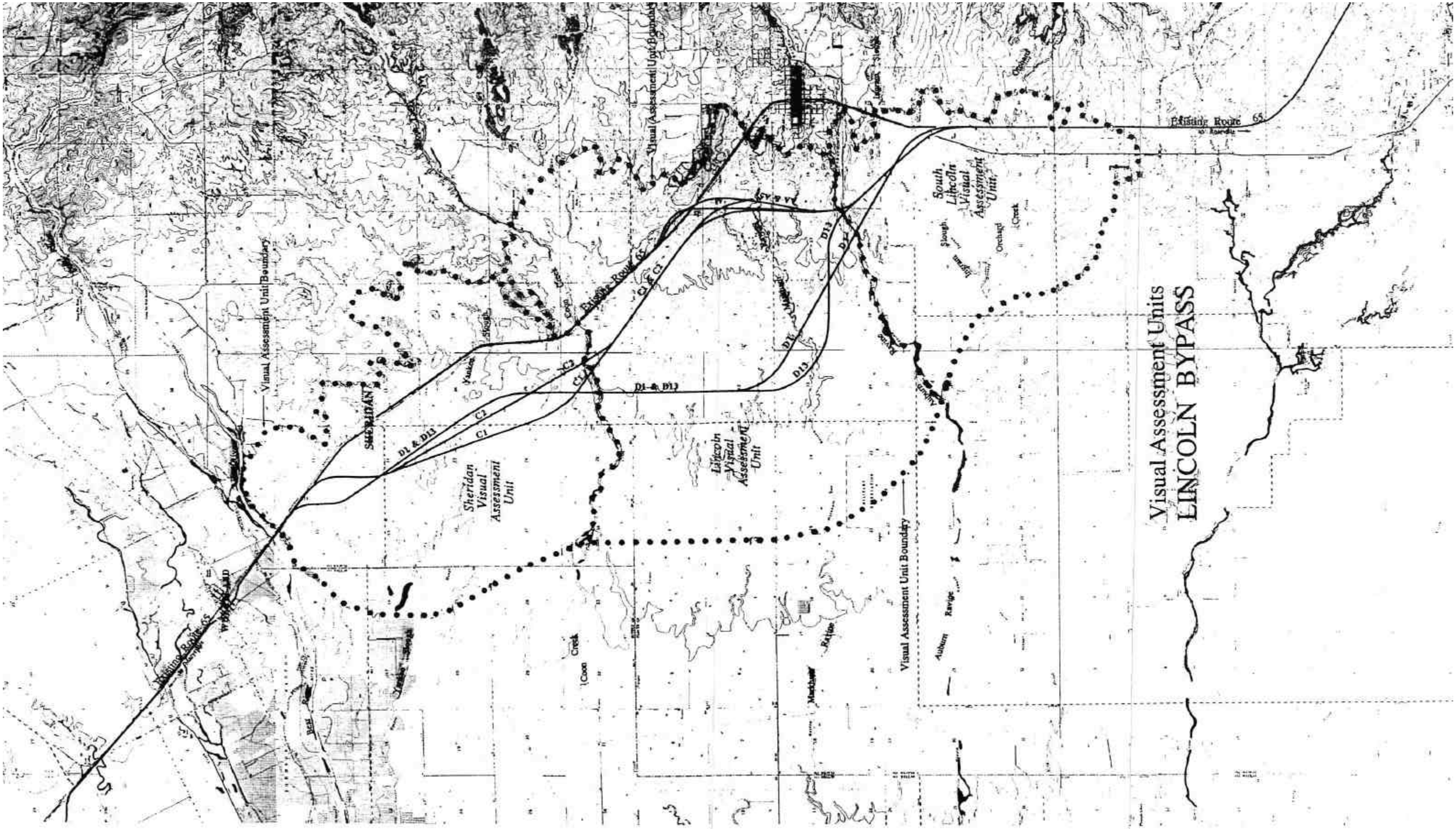


Figure 3-18

Visual Assessment Units

Figure 3-19 South Lincoln Visual Assessment Unit

Figure 3-20 Lincoln Visual Assessment Unit

Figure 3-21 Sheridan Visual Assessment Unit

4 ENVIRONMENTAL CONSEQUENCES

This chapter describes the probable impacts of each alternative. The chapter is divided by type of resource affected such as geology, air quality, noise impacts, water quality, natural environment, cultural resources and visual impacts. The following technical studies from which these sections are derived are incorporated by reference into this Draft Environmental Impact Report/Statement and are available for viewing at the Department of Transportation, District 3, Sacramento Office, 2800 Gateway Oaks, Sacramento.

Air Quality Report
Noise Impact Report
Location Hydraulic Study
Water Quality Report
Visual Impact Assessment
Initial Site Assessment
Initial Site Assessment Update
Community Impact Assessment
Natural Environment Study
Historic Properties Survey Report
Historic Architecture Survey Report
Finding of No Effect
Traffic Studies
Draft Relocation Impact Statement

In some cases, such as with air quality and geography, impacts to the resource will be looked at in general terms rather than by specific alternatives. For resources where impacts vary by alternative, then the impacts are evaluated by alternative.

4.1 SUMMARY OF IMPACTS

Table 4-1 summarizes the right-of-way costs and number of residences and businesses affected by each alternative.

Table 4-1 Summary of Right-of-Way Impacts

Alternative	Residences	Businesses
A5C1	78	5
AAC2	20	2
D1	20	6
D13	10	2
D 13 South Modified	10	1
D 13 North Modified	18	1

Table 4-2 and 4-3 summarize the impacts of all the alternatives on key habitat found in the area. Table 4-28 on page 4-87 compares the impacts on each type of wetland. Keep in mind that some of these habitats are easier to replace than others. For example, freshwater marsh is easier to create and more likely to be successful, than northern hardpan vernal pools or northern volcanic mudflow vernal pools, oak woodlands

or riparian forest. Consequently, impacts to oak woodlands, riparian forest and vernal pool habitats should be viewed as more significant than impacts to freshwater marsh.

Table 4-2 Summary of Impacts A5C1, AAC2 and D1

	A5C1 Alignment	AAC2 Alignment	D1 Alignment
Wetlands/ Nonwetland Waters	9.4 ha (23.1 ac) wetlands/waters 6.5 ha (16.1 ac) vernal pool/swale 2.2 ha (5.4 ac) of marsh two high value vernal pool complexes	6.3 ha (15.5 ac) wetlands/waters 3.3 ha (8.0 ac) vernal pool/swales 2.4 ha (6.0 ac) of marsh two high value vernal pool complexes	5.7 ha (14.1 ac) wetlands/waters 2.8 ha (6.8 ac) vernal pool/swales 2.6 ha (6.3 ac) of marsh one high value marsh
Special Status Species	Vernal pool fairy shrimp Ahart's dwarf rush Raptor foraging and potential nesting habitat two high value vernal pool complexes	Vernal pool fairy shrimp Ahart's dwarf rush Raptor foraging and potential nesting habitat two high value vernal pool complexes	Vernal pool fairy shrimp Raptor foraging and potential nesting habitat one high value marsh
Natural Communities Wildlife, Fisheries	80.1 ha (197.7 ac) grassland/ vernal pool 2.2 ha (5.4 ac) riparian forest 5.8 ha (14.3 ac) oak woodland	76.0 ha (187.7 ac) grassland/ vernal pool 1.1 ha (2.6 ac) riparian forest 10.2 ha (25.2 ac) oak woodland	48.4 ha (119.4 ac) grassland/vernal pool 1.3 ha (3.2 ac) riparian forest 0.4 ha (0.9 acre) oak woodland
Water Quality	185.8 ha (59.0 ac) footprint with 11 stream crossings	178.3 ha (440.6 ac) footprint with 11 stream crossings	182.8 ha (451.7 ac) footprint with 9 stream crossings
Cultural Resources	Requires small amount of right of way from property eligible for National Register.	Requires small amount of right of way from property eligible for National Register. Impacts to recorded archeological site	Requires small amount of right of way from property eligible for National Register.
Section 4(f) Use	Yes 1.5 ha (3.7 ac)	If the archaeological site is determined to require preservation in place, then this alternative would affect a Section 4(f) property.	Yes 10.7 ha (26.5 ac)
Agricultural Land	54.4 ha 134.3 ac	51.1 ha 126.1 ac	84.4 ha 208.5 ac
Hazardous Waste	Potential	Potential	Potential
Land Use/ Socio-economics	Residences: 78 Businesses: 5	Residences: 20 Businesses: 2	Residences: 20 Businesses: 2
Cost	$155 million (min) $196 million (max)	$163 million (min) $195 million (max)	$170 million (min) $201 million (max)

Table 4-3 Summary of Impacts; D13, D13 South Modified and D13 North Modified

	D13 Alignment	**D13 South Modified**	**D13 North Modified**
Wetlands/ Nonwetland Waters	5.3 ha (13.1 ac) wetlands/waters 2.2 ha (5.4 ac) vernal pools/swales 2.8 ha (6.8) ac of marsh one high value marsh	6.8 ha (16.8 ac) wetlands/waters 2.4 ha (6.0 ac) vernal pool/swales 2.2 ha (5.5 ac) marsh	5.1 ha (13.8 ac) wetlands/waters 2.0 ha (4.9 ac) vernal pools/swales 2.5 ha (6.4) ac of marsh
Special Status Species	Vernal pool fairy shrimp Raptor foraging and potential nesting habitat one high value marsh	Vernal pool fairy shrimp Raptor foraging and potential nesting habitat	Vernal pool fairy shrimp Raptor foraging and potential nesting habitat
Natural Communities Wildlife, Fisheries	50.4 ha (123.3 ac) grassland/ vernal pool 1.3 ha (3.3 ac) riparian forest 3.5 ha (8.6 ac) oak woodland	52.5 ha (129.7 ac) grassland/ vernal pool 1.2 ha (3.0 ac) riparian forest 0.2 ha (0.4 ac) oak woodland	64.2 ha (158.7 ac) grassland/ vernal pool 1.3 ha (3.3 ac) riparian forest 3.5 ha (8.6 ac) oak woodland
Water Quality	198.9 ha (491.5 ac) footprint with 9 stream crossings	196.3 ha (485.2 ac) footprint with 9 stream crossings	172.6 ha (426.6 ac) footprint with 8 stream crossings
Cultural Resources	Requires small amount of right-of-way from property eligible for National Register.	Requires small amount of right-of-way from property eligible for National Register.	Requires small amount of right-of-way from property eligible for National Register.
Section 4(f) Use	Yes 10.7 ha (26.5 ac)	Yes 10.7 ha (26.5 ac)	Yes 10.7 ha (26.5 ac)
Agricultural Land	102.5 ha 253.2 ac	95.5 ha 235.7 ac	96.7 ha 238.8 ac
Hazardous Waste	Potential	Potential	Potential
Land Use/ Socio-economics	Residences: 10 Businesses: 2	Residences: 14 Businesses: 2	Residences: 10 Businesses: 1
Cost	$161 million (min) $192 million (max)	$160 million (min) $191 million (max)	$162 million (min) $193 million (max)

4.2 SOCIOECONOMIC IMPACTS

4.2.1 Land Use Impacts

Land use impacts are evaluated in terms of consistency of the proposed project alternatives with local plans. The City of Lincoln's General Plan has a policy to pursue the construction of a SR 65 Bypass. The original proposed SR 65 Bypass, adopted by the California Legislature in 1964, was intended to be located west of the existing SR 65 alignment. In the intervening years, since no right-of-way had been purchased, development has precluded the viability of the adopted alignment as the proposed route. The circulation element of Lincoln's General Plan, updated in 1988, designated the future location of the Bypass along the AC corridor between Joiner Parkway and the Lincoln Airport. Since that time, the updated Circulation Element (1994) has designated the D13 alternative as the location of the future bypass.

The following sections describe the potential effects of the project by subject.

Farmland Impacts

Agricultural land is the dominant community type in the Study Area, with approximately 42.4 percent of the Study Area classified as agricultural land in the Natural Environment Study (NES). The impacts to agricultural land vary from 51 ha (126 ac) for the AAC2 alternative up to 102.4 ha (253 ac) for the D13 alternative.

All of the alternatives will impact prime, unique, statewide, and locally important farmlands. Completion of the Farmland Impact Rating showed that all the alignments had point values that fell below the 160-point threshold for the determination of significant impacts. A copy of the Farmland Impact Rating is located in Appendix D.

Residential

The Placer County general plan has a policy to promote the concentration of new residential development in higher-density residential areas located along major transportation corridors and transit routes. Although alternatives D1 and D13 will reroute the SR 65 alignment away from both Lincoln and Sheridan and alternatives A5C1 and AAC2 will reroute SR 65 away from Sheridan, the ultimate alignment will run relatively along the two towns' western borders.

The City of Lincoln's goal and supporting policies generally address the need to ensure sufficient residential development to meet community needs while discouraging leapfrog or premature development. By implementing the use of planned development

projects, Lincoln has ensured that development would proceed with the needs of the community.

Similar to Lincoln, Sheridan has also adopted the goal to provide adequate housing for its residents. None of the alternatives would impact Sheridan's current housing situation.

Industrial

Placer County, Lincoln and Sheridan have all adopted the goal to designate adequate land for industrial development to meet the present and future needs of all Placer County residents. Although there will not be any industrial units displaced by the project, all six alignments will divert traffic away from the existing industrial companies.

Despite Lincoln's historically modest industrial development, it appears that as new nationally recognized industries move into the Roseville/Rocklin area, Lincoln has also been receiving attention as a market prime for industrial expansion. With 605 ha (1,494 ac) of vacant industrial land available there will not likely be any impacts caused by the construction of the Lincoln Bypass to industrial land uses currently defined in the general plan. Moreover, construction of the Lincoln Bypass will improve travel conditions along SR 65 that will promote the anticipated industrial growth.

Commercial

Similar to the industrial land use goal, commercial land use goals and policies for Placer County, Lincoln and Sheridan are to designate adequate land for commercial development to meet the present and future needs of all Placer County residents. Five of the six mixed-use planned developments have set aside commercial land totaling 113.4 ha (280.1 ac).

The Draft Relocation Impact Report (DRIR) identified two businesses that would be impacted by the D1 and D13 alternatives; a well drilling business and a duck club, each of which have one to three employees. The A5C1 and AAC2 alternatives will displace the duck club.

4.2.2 Growth Inducement

This analysis is an estimation of direct or indirect ways in which the project may foster economic or population growth or the construction of additional housing in the surrounding area. The key consideration is whether the project's effect on growth will be significant in the context of the region's plans, natural setting and growth patterns.

Growth inducement is difficult to measure since the impacts are generally indirect and occur over an extended period of time after the project is completed. The relationship is generally evaluated as either facilitating planned growth or inducing

unplanned growth. A new roadway may create additional market pressure for growth because one constraint for development has been lifted. However, whether or not the project will induce unplanned growth depends on political, physical and socioeconomic factors as well. The proposed project is intended to meet the existing and/or projected traffic demand based upon the local land use plans.

The analytical technique to be used for evaluating growth inducement of the Lincoln Bypass is the Factor Analysis Alternative. The factors include the cost of land, local government plans and policies, articulated public attitudes, cost and labor pool, land use and terrain, commute time, access, infrastructure and facility constraints.

Cost of Land

Although Placer County land values tend to be higher than other counties in the region, the higher cost of land would not likely create a hindrance to unplanned development. Furthermore, accessibility to undeveloped land could cause minor shifts of economic development that would have otherwise have been built elsewhere in the same region. Nevertheless, development of the undeveloped agricultural areas would also rely on any existing farmland contracts and local policies set by governmental officials.

Local government plans and policies

The Department projects are designed to accommodate current and future traffic demand in accordance with local plans. Decision-makers in the City of Lincoln believe that growth and the accompanying increase in traffic is inevitable, and have developed strategies to manage it so Lincoln may retain the qualities of life that its citizens desire.

Local approvals for mixed-use developments have not been contingent upon the construction of the Lincoln Bypass. However, it is now Lincoln's policy that development proposals in the city will be approved only if funding, or the method of funding, has been secured for the construction of the Bypass when the traffic congestion level-of-service "D" is exceeded. It is possible that the Lincoln Bypass could be funded by approved and built developments; consequently, the Bypass would be a response to the growth planned by the City of Lincoln.

In 1988, the City of Lincoln updated its General Plan to designate areas where development should occur. The City determined that the adoption of the proposed Land Use Element would cause significant growth inducing impacts, resulting in levels of population and urban development in excess of that which would otherwise occur within the existing city limits under the former General Plan. The distribution and concentration of population would also be increased by adoption of the Land Use Element. These impacts were found to be both significant and un-mitigatible.

Placer County has placed a moratorium on development in the rural area northwest of Lincoln and considers Lincoln's provision of an urban level of service adjacent to agricultural lands to have the likely effect of placing development pressures on these rural areas. The "Build" alternatives could contribute to development pressures on the agricultural lands northwest of Lincoln by way of providing better accessibility than is provided by the current circulation system. By contributing to the necessary infrastructure, the longer alternatives could indirectly influence the location, distribution and density of future development in both Lincoln and rural areas surrounding Lincoln's sphere of influence. Nevertheless, changes in land use distribution are ultimately influenced by local officials through amending general plans and approval of development permits.

Land Use and Terrain

Lincoln's existing land use controls involving design and property development standards have not been a constraint to area development. Even with the "No Build" alternative, significant growth in the City of Lincoln is projected. Despite the alternative ultimately chosen, any growth beyond the City of Lincoln would require the approval of Placer County officials and/or additional area to be adopted within Lincoln's sphere of influence.

The Study Area's prominent agricultural influence is partly due to the abundance of relatively level ground with a variance of soil types. Historically, developing areas have had few natural obstacles to impede growth and development with the exception of some prominent ravines. However, with growing concerns over the loss of agricultural lands and vernal pools, development projects have to coordinate with the respective responsible resource agencies to comply with environmental laws and regulations. Although compliance with environmental laws and regulations may be lengthy and delay projects, development projects in the Study Area generally have few other barriers.

Articulated Public Attitudes

Following the approval of Lincoln's updated General Plan in 1988, a grass-roots citizen's group called the Lincoln Greenbelt Alliance was formed to amend the adopted plan. In June 1989 the Alliance prepared the "Greenbelt Initiative" to designate approximately 3642 ha (9,000 ac) of land to the southeast, southwest, and north of Lincoln for agricultural use rather than the residential, commercial and industrial uses as called for in the General Plan. Furthermore, the initiative would restrict funding for the Lincoln Bypass only if assurances were made that the new facility would not provide new access to agricultural areas, except to serve farming needs. The initiative was defeated during the April 1990 election by 85.4%. This overwhelming defeat of the Greenbelt

Initiative demonstrated the support of the citizens within Lincoln for annexation and development plans adopted under the 1988 General Plan. However, this vote may not represent the opinion of the rural communities beyond Lincoln's sphere of influence.

Sheridan is a rural community beyond Lincoln's sphere of influence which will be affected by all the alternatives by way of bypassing the town. However, Sheridan's economic stability is not reliant on the existing alignment. The surrounding farming community albeit small, also represents the rural community beyond Lincoln's sphere and will be impacted by all the alternatives with the loss of farmland. Letters have been received from some of the affected landowners in protest of the alternatives due to the fact that these alignments will impact their land. Many of the smaller farms have been passed on from generation to generation and are dependent on farming the land for their livelihood. Not only would the segregation of their land impact their normal farming activities, encroachment of potential urban development in the area would disrupt their lifestyle.

Cost and Labor Pool

As part of Lincoln's plans and policies, the construction of the Lincoln Bypass has been a condition of development proposals in order to secure funding as well as mitigation for the anticipated traffic generated by the influx of people to the local workforce. The Lincoln Bypass has been conceived to facilitate the planned growth of Lincoln and the anticipated expansion of the local workforce while providing to inter-regional travel. However, Lincoln's plans and policies do not address the growth impacts from a growing workforce on the rural areas outside of Lincoln's Sphere of Influence.

Commute Time

Travel time between geographic points may influence the redistribution of economic development and population. The current SR 65 alignment serves both local traffic and through traffic, whereas, the Bypass would divert the through traffic from the core of Lincoln where delays occur due to traffic signals and cross traffic. With the "no build" alternative, future planned development in Lincoln would strain the capacity for the existing roadway system to move traffic efficiently. Therefore, each alternative will ease traffic congestion on the local system by diverting traffic from Lincoln's downtown business district. As Lincoln's planned developments are constructed the bypass could also serve as an alternative route between Lincoln's northwestern and southern areas. However the bypass will also provide direct travel access to undeveloped agricultural lands north and west of Lincoln. Consequently, increased access to undeveloped lands may attract a greater number of commuters willing to sacrifice the longer commutes to live in rural areas.

Access

Transportation access is one of several important factors affecting the development of land. In order to provide for expected growth in Lincoln, interchanges will be constructed at Industrial and Nicolaus for the A corridor, or Nelson for the D corridor (See Traffic Summary, Chapter 1, section 3). Eventually, the A5C1, AAC2, D1 and D13 alternatives and the D13 modifications will have additional interchanges at Wise and Riosa Road. The Riosa Road interchange would be necessary to serve as access to the Sheridan community. The Wise Road interchange would potentially serve as access for the rural community between Lincoln and Sheridan as well as Lincoln's northern region. Although access to a major transportation system is critical to farm communities, a major interchange at Wise Road could add development pressures in this area.

Infrastructure

Lincoln is attempting to direct future growth in an orderly manner by building primarily around the downtown area and projecting outward to avoid leap-frog development that could result in inadequate infrastructure. Proposed developments in Lincoln will be reviewed by the city to determine if the existing developed areas are adequate or if urban reserves would be more appropriate locations. The Lincoln Public Facilities Element, as part of the General Plan, has mapped out the services and physical improvements that would be necessary for transportation, parks and recreation, schools, sewage treatment, police and fire, and city government for future planned developments and would be funded through developer's fees. In the unincorporated areas, the lack of urban services such as water and sewer treatment will likely deter unplanned development.

Facility Constraints

Due to limited funding, the project will be built in phases. Initially a two-lane access-controlled expressway with intersections will be constructed. As demand increases, interchanges will be built with funds from development in the area. The schedule depends on when funds become available.

4.2.3 Social Impacts

Title VI and Environmental Justice

Section 3.1.5 describes the demographics of the project area. Some minorities, elderly and physically challenged persons may potentially be relocated depending on the alternative ultimately chosen. However, considering the relatively low total numbers of people that may be affected, the overall impact to these groups should be minimal. A survey of the residents will be conducted for the Final Relocation Impact Report and will identify the specific numbers of the potentially impacted residents with disadvantages.

Census tract 214 block group 2 has been identified as an area with a higher concentration of minority groups. This area is located east of the existing alignment and is not expected to incur direct impacts from any of the proposed alignments. A potential indirect impact could include a decrease in accessible public transportation. Although minor changes to the current bus route are inevitable due to access changes, local transit authorities anticipate that the areas serviced will increase as the needs change due to development.

Census tract 214 block group 6 was identified to have above the average percentage of low-income people (11.2%). However, it should be noted that 11.2% of the people is not considered a high concentration of low-income people. Furthermore, since the 1990 census data has been collected, portions of census tract 214 block group 6 has been planned for new development. Since it is assumed that low-income people will not be buying these new homes it is also predicted that the mean percentage of low-income people will decrease.

This project will not have a disproportionate impact on minorities or low- income families. This project will also not discriminate, exclude from participation or deny benefits to any person on the grounds of race, color, sex, age, national origin, religion, or disabling condition.

This project has been developed in accordance with the Civil Rights Act of 1964, as amended, and Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." The Executive Order requires each Federal agency (or its designee) to take the appropriate and necessary steps to identify and address "disproportionately high and adverse" effects of Federal projects on minority and low-income populations.

It is the policy of the California Department of Transportation, in accordance with the Civil Rights Act of 1964, the Civil Rights Restoration Act of 1987, 49 CFR 21 and related statutes and regulations that no person in the state of California shall, on the grounds of race, color, sex, age, national origin, religion, or disabling condition, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity administered by the Department.

Community Cohesion

Table 4-4 shows that all of the proposed alternatives would have some impact on residential neighborhoods. Alternative A5C1 would have the greatest impact on people living in single family residences with full takes amounting to a loss of 77 single family homes and one mobile home. The considerable amount of displacements expected for alternatives A5C1 would largely be due to the construction of approximately 55 homes

east of the intersection of Venture and Lakeside Drives. Similarly, the eight displacements for AAC2 are also planned for construction in the near future as part of the Brookview Estates.

Table 4-4 Residential Displacement Properties for Each Alternative

Type of Residence	Alternative			
	A5C1	AAC2	D1	D13
Single Family				
Full Take	77	8	4	3
Partial Take	11	9	10	3
Mobile Home				
Full Take	1	0	4	2
Partial Take	2	3	2	2

Community cohesion refers to the degree to which residents have a "sense of belonging" to their neighborhood. Although the A5C1 alternative will disrupt a larger portion of homes than the other alternatives, it is also noted that the majority of homes are new homes in new developments. At the time of this study, the homes were currently being built or planned to be built, therefore, due to the lack of survey data it was assumed that the community cohesion of the newer neighborhoods have not likely had enough time to develop a sense of community or the neighborhood has not yet been established. Albeit, by the time the bypass is ultimately constructed, these homeowners would have had a chance to develop a sense of community and belonging to the neighborhoods. Therefore, if this alignment is chosen it may be beneficial to relocate the affected residences to avoid future community cohesion impacts.

Access and Circulation

The construction of the bypass will limit the amount of access points from cross streets. All of the alignments will create a barrier from central Lincoln to the surrounding planned developments and the outlying areas within the study area. However, access will be provided by either constructing overpasses or interchanges at existing or proposed major roads. Table 4-5 outlines the overpasses and interchanges proposed for each alignment. Furthermore, the bypass will improve operations by bypassing the railroad crossing in Sheridan.

Table 4-5 Overpasses and Interchanges at Local Streets

Cross Street	Alternative			
	A5/C1	AA/C2	D1	D13
Industrial Blvd.	I/C	I/C	I/C	I/C
Westwood Blvd.	O/C	O/C	O/C	O/C
Moore Road	O/C	O/C	O/C	O/C
Nelson Lane	N/A	N/A	I/C	I/C
Nicolaus Road	I/C	I/C	I/C	I/C
Wise Road	O/C	O/C	I/C	I/C
Dowd Road	O/C	O/C	O/C	O/C
Dalby Road	O/C	O/C	N/A	N/A
Riosa Road	I/C	I/C	I/C	I/C

I/C=interchange O/C=overcrossing N/A=not applicable; alignment does not cross road

Parking Impacts

No parking impacts are anticipated with the construction of any of the alignments. In fact, by bypassing the existing alignment through the City of Lincoln it is expected that parking will be easier for shoppers. Furthermore, relinquishment of the existing alignment would also allow the City of Lincoln to reconfigure parking to provide extra spaces if desired.

4.2.4 Relocation Impacts

As shown in Table 4-6, all of the proposed alternatives would have some impact on residential neighborhoods. Alternative A5C1 would have the greatest impact on people living in single family residences with full takes amounting to a loss of 78 homes. The considerable amount of displacements expected for alternative A5C1 would largely be due to the upcoming construction of approximately 55 homes east of the intersection of Venture and Lakeside Drives. Similarly, AAC2 would also require many displacements due to the construction in the near future of additional portions of the Brookview Estates.

Table 4-6 Residential & Business Displacement Properties for Each Alternative

Type of Residence	Alternative					
	A5C1	AAC2	D1	D13	D13 S Mod	D13 North Mod
Residences	78	20	20	10	10	18
Businesses	5	2	6	3	1	1
Cost estimate (in millions of dollars)	$56	$34	$20	$22	$21.6	$23.5

Nevertheless, the Draft Relocation Impact Report (DRIR) shows that there are adequate resources available to relocate displaced residents resulting from all six alternatives. Although Lincoln's future planned developments expect to construct an additional 16,929 housing units, the DRIR states that the A5C1 and AAC2 alternatives will impact the City of Lincoln's housing stock and may be disruptive to the City's

General Plan. This impact would be largely due to the fact that future industrial development would create an influx of workers also in need of homes.

4.2.5 Housing Impacts

There are adequate resources available to relocate displaced residents resulting from all six alternatives. However, the large of amount of displacements from the A5C1, and AAC2 alternatives will impact the City of Lincoln's housing stock and may be disruptive to the City of Lincoln's general plan. The D1 and D13 alternatives are anticipated to have no negative impact on the Lincoln community. All relocations associated with this project would be subject to the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 as amended 1987.

4.2.6 Community Facilities and Services Impacts

Each alternative except the "No Build" alternative will not reduce the accessibility to public services in the Study Area. The proposed alternatives will reduce response times for emergency vehicles due to the improved circulation expected. All of the alignments will also remove the obstacle of the at-grade railroad crossing at Sheridan.

4.2.7 Traffic Impacts

Traffic congestion will be alleviated within the Lincoln city limits by removing inter-regional travelers. However, congestion in the town of Wheatland will become worse. By making SR 65 an expressway; removing cross traffic and driveway and increasing speeds, it will become more appealing to those traveling between Marysville and Roseville, thus increasing congestion in the town of Wheatland, where the bypass ends. Pressure from the raceway and amphitheater traffic further exacerbate the problem. Operational improvements of the existing highway through Wheatland are currently being pursued, but are not likely to solve the problem.

A highway project to bypass the town of Wheatland has been proposed. The California Transportation Commission has not funded this project at this time, however, it is tentatively scheduled for construction in 2006.

4.2.8 Economic Impacts

Regional Economic Impacts

The estimated tax revenue lost to local government resulting from the right-of-way purchase of the ultimate alternative chosen, including the removal of residences and businesses from the tax base is expected to be negligible. Revenue losses would be partially offset by the decrease in costs to the city and county associated with providing services to residential properties. In addition, past studies indicate most property values

may increase in those areas near the new facility because of increased access. This will net the city and county additional property tax revenue when the properties resale.

Project construction dollars would generate jobs and income over a two to three year construction period. In the 1980's FHWA determined that a $1 million investment would directly generate 10 on-site, full-time construction jobs. When other jobs are considered as part of the formula, such as off-site, construction related or service industry related jobs, the total number of jobs created amount to approximately 23 for each $1 million investment. It has not been determined how these numbers would translate considering the current economic climate; however, these figures are not expected to change significantly. The Lincoln bypass is projected to cost approximately between $157 and 185 million.

Impacts on Local Businesses and Industry

The existing commercial shopping and services area in Lincoln and Sheridan are generally located on and adjacent to SR 65. Some businesses in the Lincoln community have expressed concern that the construction of the Bypass may result in the decline of patronage.

It is difficult to predict the economic impacts of a bypass on businesses that are normally located on the main thoroughfare due to the number of variables affecting the local economy. Some businesses that may be negatively affected by the Bypass include motels, cafés, fast-food restaurants, and gas stations since much of their services are provided to pass through motorists. Although there are several commercial businesses that serve the motoring public, a large segment of the business activity in the downtown Lincoln area cater to local residents. In fact, the rerouting of traffic may result in an increase in sales and income to some businesses as the community members find it more convenient to shop downtown because pedestrian safety is enhanced and more parking is available for local residents.

Since the Bypass is predicated on future development, the downtown business climate should improve due to the increase in the local population growth. Furthermore, the Lincoln Redevelopment Agency has been promoting the concept of developing the downtown business district as "Old Towne." Lincoln's long-range effort to attract tourists and local residents to shop in the central business district is to capitalize on the historic fabric of the area.

The Bypass is likely to enhance the access to and availability of regional commercial centers existing or planned in Roseville. However, the ten-mile distance from Lincoln is currently not a major obstacle. Furthermore, the businesses that local residents would most likely seek in Roseville are generally not available in Lincoln.

4.2.9 Mitigation

Mitigation for Land Use Impacts

After the completion of the environmental document, the California Transportation Commission (CTC) will select and adopt a corridor alignment to be reserved for the ultimate construction of the Lincoln Bypass. The Placer County General Plan, the City of Lincoln General Plan and the Sheridan General Plan should be revised, as necessary, to reflect the selected corridor alignment.

According to the Farmland Protection Policy Act (FPPA) (USC 4201-4209; 7 CFR VI 658), the D1 and D13 alternatives exceed the 160-point threshold for significant farmland impacts. Therefore, the FPPA requires that actions be taken to consider alternatives that would lessen the impacts to farmland. If the D1 or D13 alternative is selected, it will be necessary to consider the implementation of mitigation measures to reduce farmland impacts. Some mitigation measures could include minimizing shoulder widths, using concrete median barriers instead of wider medians, leasing roadside right-of-way for agricultural purposes until future transportation improvements are necessary, and/or placing conservation easements on alternate farmland parcels to avoid the encroachment of unplanned development. The Natural Environment Study (NES) prepared for this project has proposed 181 ha (447 ac) of grasslands/agricultural lands be preserved for mitigation of Swainson's hawk habitat loss which could also be utilized as mitigation for farmland impacts.

Mitigation for Relocation Impacts

The Department’s Relocation Assistance Program, required by Federal and state law, provides each displaced resident with help in finding replacement housing. Payments include moving expenses and payments to enable displaced residents to obtain comparable decent, safe, and sanitary housing within their financial means. No residential occupant will be displaced unless replacement housing is available. If the mobile homes cannot be relocated at the time of displacement, due to age and condition, the occupants may be eligible for assistance in purchasing either a new mobile home or a conventional single family residence. With respect to those residential properties involving a partial acquisition, owners of property appraised as having an uneconomic remnant may request relocation assistance.

The relocations will be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, and Title VI of the Civil Rights Act of 1964. Title VI prohibits discrimination based on race, color, religion, sex, disabilities, age and national origin in providing services and benefits on

Federally assisted projects. The Department's Relocation Assistance Advisory Service can be found in Appendix G.

Business displacement problems can be minimized by way of the Department's' early purchase of business properties and lease-back arrangements. This would allow time for business property relocation and any construction needed while existing facilities are kept in operation. Displaced businesses are eligible for relocation assistance including payment for moving and possible other expenses. Displaced businesses that are unable to relocate, or are expected to suffer a substantial loss of existing patronage, could be eligible for up to $20,000 "in lieu" payment through the Relocation Assistance Program.

Economic Impacts

Economic impacts to the local economy with the construction of any of the alternatives are minimal. Although a few businesses may experience short-term impacts due to the Lincoln Bypass, long-term impacts are not expected. Furthermore, with the large amount of commercial development anticipated for the area, businesses will have the opportunity to relocate near the new alignment.

4.3 BICYCLE IMPACTS

No impacts to bicyclists are anticipated with this proposed project. There are no accommodations for bicycles on the Lincoln Bypass; however, the existing SR 65 will remain as a bicycle route.

4.4 GEOGRAPHY AND TOPOGRAPHY

The proposed project will not substantially change the topography within the project area. Due to the potential for flooding, and the fact that this road will be the primary route through and out of the area, the road will be raised up 1.43 m (4.7 ft) to put it above potential floodwaters. However, culverts and drainage will be provided to maintain the existing hydrology of the area to the greatest extent possible.

The soils in the area present no particular problems with construction. The project will be designed to withstand seismic activity that could be expected in the area.

Reclamation of Minerals

A large amount of fill will be required for this project. Locating the fill will be the responsibility of the contractor. Reclaiming minerals from the fill will also be the responsibility of the contractor.

4.5 AIR QUALITY

This section evaluates air quality impacts that could result from the project. Air pollutant emissions associated with the construction of the project, such as fugitive dust from grading/site preparation and equipment exhaust could occur over the short-term during construction. Long-term emissions could result from the use of the proposed highway/freeway, primarily from vehicular traffic.

The proposed project is not expected to generate any additional traffic. Traffic would be rerouted from other area roadways to the proposed SR 65. Regional traffic trips would remain similar. Therefore, no new long-term regional emissions would result from implementation of the proposed project.

The proposed bypass route will improve traffic movement in the general vicinity, thereby lowering the concentration of pollutants emitted by motor vehicles. Consequently, no significant regional or local air quality impacts are anticipated. The following sections discuss the possible emission generating activities associated with the proposed project and their significance.

4.5.1 Naturally Occurring Asbestos

Naturally occurring asbestos (NOA) can be found in serpentinite and asbestos bearing ultramafic rocks, and can be released when that rock is broken or crushed. At the point of release, the asbestos fibers may become airborne, causing air quality and human health hazards. Placer County is on the Office of Planning and Research's list of counties that have been identified as being particularly abundant with these types of rocks. However, the predominant rock type in the project location is from the merhton formation, and does not contain asbestos. The California Department of Mining and Geology (CDMG) Map (Open File Report 2000-19, August 2000) shows no areas of NOA.

Asbestos has also been used in the construction of older buildings and highway structures. Demolition of these older structures could cause asbestos contamination. Comprehensive inspections that meet the requirements of current EPA and OSHA regulations are recommended prior to any demolition activities associated with structures in the proposed alignment corridor. Any component that is planned to be impacted by demolition activities should be characterized to ensure proper handling and disposal.

The following table shows the possible extent of buildings to be demolished for this project. No highway structures will be demolished.

Table 4-7 Buildings to be demolished

Alternative	Total	Barns	Mobile	Houses	Commercial

			Homes		Or Unknown
D13	17	4	3	5	5
D13 North Modified	23	12	2	8	1
D13 South Modified	20	5	4	8	3
D1	23	4	3	11	5
AAC2	62	1	2	55	4
A5C1	163	2	1	158	2

4.5.2 Long-term Microscale Projections

Each alternative has its own layout and configuration; therefore, the impact will be different for each alternative and thus are analyzed separately. In order to make a comparison, the same receptor locations are used throughout all alternatives and the end results are compared to determine the difference in impact. Receptor locations are illustrated in Figure 3-11, located in Chapter 3. Receptor locations were determined by locating the nearest residents to each proposed alignment. In the case of planned development, receptors were estimated using maps provided by the City of Lincoln.

Carbon Monoxide (CO)

The impact on local CO levels was assessed with the California Air Resources Board (CARB) approved CALINE4 air quality model, which allows microscale CO concentrations to be estimated along roadway corridors or near intersections. This model is designed to identify localized concentrations of CO, often termed "hot spots." The highest CO concentrations typically occur during peak traffic hours, which best represents a worst case analysis for the calculation of CO impacts. Traffic volumes generated by the Department's for all the alternatives for the years 2015 and 2025 were used in the model (Caltrans, December 1999).

CO concentrations were calculated for the one-hour averaging period and compared to the State one hour CO standard of 20 ppm. CO eight-hour averages were calculated from the one-hour CO calculations, using techniques outlined in the Department's Carbon Monoxide Protocol. A persistent factor of 0.7 was used for the conversion of one-hour CO level to the eight-hour CO level. Concentrations are expressed as parts per million (ppm) at each receptor location.

Data in Table 4-8 illustrates the different impact levels of carbon monoxide (CO) concentration in the general vicinity of the project for the year 2015 and 2025, respectively. No adverse impact on local air quality is expected from the proposed project in the years 2015 or 2025. The increases in CO concentrations are equal to or less than 0.1 ppm (particle per million) for both the one-hour and the eight-hour occurrences,

which is considered minor and negligible. In addition, the CO concentrations are below the State and Federal standards, and no CO hot spots were identified. No nearby sensitive receptors would be affected by project related local air quality impacts. Therefore, implementation of the project would not have any adverse impact on local air quality in the years 2015 and 2025.

Table 4-8 CO Concentration for 2015 and 2025

Receptor	1 Hour CO Concentration[1] (ppm)	8 Hour CO Concentration[2] (ppm)	Exceeds State Standards 1 hr	8 hr	Receptor	1 Hour CO Concentration[1] (ppm)	8 Hour CO Concentration[2] (ppm)	Exceeds State Standards 1 hr	8 hr
A5C1 (2015)									
REC1	4.2	2.4	No	No	**REC14**	**4.2**	2.4	No	No
REC2	4.2	2.4	No	No	**REC15**	**4.2**	2.4	No	No
REC3	4.2	2.4	No	No	**REC16A**	**4.3**	2.5	No	No
REC4	4.2	2.4	No	No	**REC16B**	**4.2**	2.4	No	No
REC5	4.2	2.4	No	No	**REC17**	**4.2**	2.4	No	No
REC6	4.2	2.4	No	No	**REC18**	**4.2**	2.4	No	No
REC7	4.2	2.4	No	No	**REC19**	**4.2**	2.4	No	No
REC8	4.2	2.4	No	No	**REC20**	**4.2**	2.4	No	No
REC9	4.2	2.4	No	No	**REC21**	**4.2**	2.4	No	No
REC10A	4.2	2.4	No	No	**REC22**	**4.2**	2.4	No	No
REC10B	4.2	2.4	No	No	**REC23**	**4.2**	2.4	No	No
REC13	4.2	2.4	No	No	**REC24**	**4.2**	2.4	No	No
					REC25	**4.2**	2.4	No	No
AAC2 (2015)									
REC1	4.2	2.4	No	No	**REC15**	4.2	2.4	No	No
REC2	4.2	2.4	No	No	**REC16A**	4.2	2.4	No	No
REC3	4.2	2.4	No	No	**REC16B**	4.2	2.4	No	No
REC4	4.2	2.4	No	No	**REC17**	4.2	2.4	No	No
REC5	4.2	2.4	No	No	**REC18**	4.2	2.4	No	No
REC6	4.2	2.4	No	No	**REC19**	4.3	2.5	No	No
REC7	4.2	2.4	No	No	**REC20**	4.2	2.4	No	No
REC8	4.2	2.4	No	No	**REC21**	4.2	2.4	No	No
REC9	4.2	2.4	No	No	**REC22**	4.2	2.4	No	No
REC10A	4.2	2.4	No	No	**REC23**	4.2	2.4	No	No
REC10B	4.2	2.4	No	No	**REC24**	4.2	2.4	No	No
REC13	4.2	2.4	No	No	**REC25**	4.2	2.4	No	No
REC14	4.2	2.4	No	No					
D1 – 2015									
REC1	4.2	2.4	No	No	**REC12**	4.2	2.4	No	No
REC2	4.2	2.4	No	No	**REC13**	4.2	2.4	No	No
REC3	4.2	2.4	No	No	**REC14**	4.2	2.4	No	No
REC4	4.2	2.4	No	No	**REC15**	4.2	2.4	No	No
REC5	4.2	2.4	No	No	**REC17**	4.2	2.4	No	No
REC6	4.2	2.4	No	No	**REC18**	4.2	2.4	No	No

Receptor	1 Hour CO Concentration[1] (ppm)	8 Hour CO Concentration[2] (ppm)	Exceeds State Standards 1 hr	8 hr	Receptor	1 Hour CO Concentration[1] (ppm)	8 Hour CO Concentration[2] (ppm)	Exceeds State Standards 1 hr	8 hr
REC7	4.2	2.4	No	No	**REC19**	4.2	2.4	No	No
REC9	4.2	2.4	No	No	**REC20**	4.2	2.4	No	No
REC10B	4.2	2.4	No	No	**REC21**	4.3	2.5	No	No
REC11	4.2	2.4	No	No					
D13 – 2015									
REC1	4.2	2.4	No	No	**REC12**	4.2	2.4	No	No
REC2	4.2	2.4	No	No	**REC13**	4.2	2.4	No	No
REC3	4.2	2.4	No	No	**REC14**	4.2	2.4	No	No
REC4	4.2	2.4	No	No	**REC15**	4.2	2.4	No	No
REC5	4.2	2.4	No	No	**REC17**	4.2	2.4	No	No
REC6	4.2	2.4	No	No	**REC18**	4.2	2.4	No	No
REC7	4.2	2.4	No	No	**REC19**	4.2	2.4	No	No
REC9	4.2	2.4	No	No	**REC20**	4.2	2.4	No	No
REC11	4.2	2.4	No	No	**REC21**	4.2	2.4	No	No
A5C1 – 2025									
REC1	4.2	2.4	No	No	**REC15**	4.2	2.4	No	No
REC2	4.2	2.4	No	No	**REC16A**	4.3	2.5	No	No
REC3	4.2	2.4	No	No	**REC16B**	4.3	2.5	No	No
REC4	4.2	2.4	No	No	**REC17**	4.2	2.4	No	No
REC5	4.2	2.4	No	No	**REC18**	4.2	2.4	No	No
REC6	4.2	2.4	No	No	**REC19**	4.2	2.4	No	No
REC7	4.2	2.4	No	No	**REC20**	4.2	2.4	No	No
REC8	4.2	2.4	No	No	**REC21**	4.2	2.4	No	No
REC9	4.2	2.4	No	No	**REC22**	4.2	2.4	No	No
REC10A	4.2	2.4	No	No	**REC23**	4.2	2.4	No	No
REC10B	4.2	2.4	No	No	**REC24**	4.2	2.4	No	No
REC13	4.2	2.4	No	No	**REC25**	4.2	2.4	No	No
REC14	4.2	2.4	No	No					
A5C1 – 2025									
REC1	4.2	2.4	No	No	**REC15**	4.2	2.4	No	No
REC2	4.2	2.4	No	No	**REC16A**	4.2	2.4	No	No
REC3	4.2	2.4	No	No	**REC16B**	4.2	2.4	No	No
REC4	4.2	2.4	No	No	**REC17**	4.2	2.4	No	No
REC5	4.2	2.4	No	No	**REC18**	4.2	2.4	No	No
REC6	4.2	2.4	No	No	**REC19**	4.3	2.5	No	No
REC7	4.2	2.4	No	No	**REC20**	4.2	2.4	No	No
REC8	4.2	2.4	No	No	**REC21**	4.2	2.4	No	No
REC9	4.2	2.4	No	No	**REC22**	4.2	2.4	No	No
REC10A	4.2	2.4	No	No	**REC23**	4.2	2.4	No	No
REC10B	4.2	2.4	No	No	**REC24**	4.2	2.4	No	No
REC13	4.2	2.4	No	No	**REC25**	4.2	2.4	No	No
REC14	4.2	2.4	No	No					
D1 – 2025									

Receptor	1 Hour CO Concentration[1] (ppm)	8 Hour CO Concentration[2] (ppm)	Exceeds State Standards 1 hr	8 hr	Receptor	1 Hour CO Concentration[1] (ppm)	8 Hour CO Concentration[2] (ppm)	Exceeds State Standards 1 hr	8 hr
REC1	4.2	2.4	No	No	**REC11**	4.2	2.4	No	No
REC2	4.2	2.4	No	No	**REC12**	4.2	2.4	No	No
REC3	4.2	2.4	No	No	**REC13**	4.2	2.4	No	No
REC4	4.2	2.4	No	No	**REC14**	4.2	2.4	No	No
REC5	4.2	2.4	No	No	**REC15**	4.2	2.4	No	No
REC6	4.2	2.4	No	No	**REC17**	4.2	2.4	No	No
REC7	4.2	2.4	No	No	**REC18**	4.2	2.4	No	No
REC9	4.2	2.4	No	No	**REC19**	4.2	2.4	No	No
REC10B	4.2	2.4	No	No	**REC20**	4.2	2.4	No	No
					REC21	4.3	2.5	No	No
D13 – 2025									
REC1	4.2	2.4	No	No	**REC12**	4.2	2.4	No	No
REC2	4.2	2.4	No	No	**REC13**	4.2	2.4	No	No
REC3	4.2	2.4	No	No	**REC14**	4.2	2.4	No	No
REC4	4.2	2.4	No	No	**REC15**	4.2	2.4	No	No
REC5	4.2	2.4	No	No	**REC17**	4.2	2.4	No	No
REC6	4.2	2.4	No	No	**REC18**	4.2	2.4	No	No
REC7	4.2	2.4	No	No	**REC19**	4.2	2.4	No	No
REC9	4.2	2.4	No	No	**REC20**	4.2	2.4	No	No
REC11	4.2	2.4	No	No	**REC21**	4.2	2.4	No	No

[1] Includes ambient one hour CO concentration of 4.2 ppm. The State's one hour CO standard is 20 ppm.
[2] Includes ambient eight hour CO concentration of 2.4 ppm. The State's eight hour CO standard is 9.0 ppm.

As shown in Table 4-8, none of the alternatives will have a substantial impact on local air quality. In addition, no new regional trips will be generated as a result of the project. The project would alleviate local congestion and have beneficial regional effects. Therefore, in accordance with the CEQA, this project is not considered to have a substantial impact on existing ambient air quality.

Air Quality Conformity Determination

This project has been included in the 2000/01 Metropolitan Transportation Improvement Program (MTIP) and the 1999 Metropolitan Transportation Plan (MTP). On July 20, 2000, the SACOG signed Resolution 29-2000 finding that the 2000/01 Metropolitan Transportation Improvement Program (MTIP) conforms to the 1994 State Implementation Plan (SIP) under the EPA conformity rule for the Sacramento ozone nonattainment area, carbon monoxide attainment area and particulate matter unclassified area. The conformity determination was signed by the Federal Highway and Federal Transit Administrations on October 5, 2000. At this time, only the purchase of right-of-way is programmed.

Conformity with the SIP plays an essential role in local agency project review by linking local planning and unique individual projects to the Air Quality Attainment Plan (AQAP). Since the AQAP is based on projections from local General Plans, projects that are consistent with the local General Plan are considered consistent with the AQAP per the CEQA requirements.

Air quality models are used to demonstrate that the project's emissions will not contribute to the deterioration or impede the progress of air quality goals stated in the AQAP. The SACOG Regional Air Quality Model uses project specific data to estimate the amount of pollutants generated from the implementation of a project. The results for the "No build" and "Build" scenarios in the horizon year (twenty years from construction, 2025) are compared to the AQAP air quality projections. If the analysis shows compliance with the requirements, it is considered to be consistent with the AQAP.

This project is in accordance with the goals and policies of the City's General Plan that is to provide for the long-range planning and development of the County's roadway system in order to ensure the safe and efficient movement of people and goods. The alternatives proposed are necessary for the safety of the public in the City of Lincoln and would accommodate future planned growth that is projected in the general vicinity. As shown above, the proposed project will not substantially contribute to or cause deterioration of existing air quality; therefore, mitigation measures are not required for the long-term operation of the project. Hence, the proposed project is considered to be consistent with the City of Lincoln General Plan and the Placer County General Plan, and therefore consistent with the AQAP and in conformity with the State Implementation Plan.

Short-Term Construction Related Impacts

Construction Equipment Exhaust Emissions

Construction activities produce combustion emissions from various sources such as site grading, utility engines, on-site heavy-duty construction vehicles, equipment hauling materials to and from the site and vehicles transporting the construction crew. The use of construction equipment on site would result in localized exhaust emissions. On site exhaust emissions during construction would vary daily, as construction activity levels change. The Department's' standard specifications for construction will be adhered to in order to reduce construction related emissions.

Mitigation Measures

Construction Impacts

The following measures are provided to reduce air pollutants generated by vehicle and equipment exhaust during the project construction phase:

- The contractor shall ensure that grading plans include a statement that all construction equipment will be tuned and maintained in accordance with the manufacturer's specifications.
- The contractor shall utilize electric powered equipment in lieu of gasoline powered engines where feasible.
- The contractor shall ensure that grading plans include a statement that work crews will shut off equipment when not in use.
- The contractor shall time the construction activities so as not to interfere with peak hour traffic and minimize obstruction of through traffic lanes adjacent to the site. If necessary, a flag person shall be retained to maintain safety adjacent to existing roadways.
- The contractor shall support and encourage ridesharing and transit incentives for the construction crew.

The following measure would reduce or minimize air pollutant emissions associated with asphalt paving:

- The construction contractor shall adhere to the requirements of the rules addressing the emission control measures covering the asphalt paving emissions.

In addition to the recommended mitigation measures listed above, the Department's' Standard Construction Specifications shall be adhered to further reduce emissions. Following is a list of mitigation measures to reduce the emission of fugitive dust.

- All disturbed areas, including storage piles, that are not being actively utilized for construction purposes shall be effectively stabilized for dust emissions using water, chemical stabilizers/suppressants, or vegetative ground cover.
- All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized for dust emissions using water or chemical stabilizers/ suppressants.
- All land clearing, grubbing, scraping, excavations, land leveling, grading, cut and fill, and demolition activities shall be effectively controlled for fugitive dust emissions utilizing applications of water, or by presoaking.

- When materials are transported off site, all material shall be covered or effectively wetted to limit visible dust emission; or at least six inches of freeboard space from the top of the container shall be maintained.
- All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at least once every 24 hours when operations are occurring. The use of dry rotary brushes is expressly prohibited, except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. The use of blower devices is expressly forbidden.
- Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized for fugitive dust emissions utilizing sufficient water or chemical stabilizers/suppressants.
- Traffic speeds on unpaved roads shall be limited to 15 mph.
- Sandbags or other erosion control measures shall be installed to prevent silt runoff to public roadways from sites with a slope greater than one percent.
- Wheel washers for all exiting trucks shall be installed, or all trucks and equipment washed off before leaving the site.
- Wind breaks shall be installed at windward side(s) of construction areas.
- Excavation and grading activity shall be suspended when winds exceed 20 mph.
- Areas subject to excavation, grading and other construction activity shall be limited at any one time.

Compliance with the above mitigation measures would lessen the fugitive dust impact during construction.

Operational Impacts

No mitigation is required.

Level Of Significance After Mitigation

The emissions from the construction exhaust and grading activities with the implementation of the above mitigation measures will reduce impacts to a less than adverse level.

4.6 NOISE IMPACTS

Federal guidelines for assessing traffic noise are contained in Title 23 of the Code of Federal Regulations Part 772, (23 CFR 772), “Procedures for Abatement of Highway Traffic Noise and Construction Noise.” These guidelines require consideration of noise

abatement measures for highway projects when traffic related noise impacts have been identified. The Federal and State guidelines state that there will be a noise impact when design year noise levels approach or exceed the noise abatement criterion for the specified land use, or when the predicted traffic noise levels substantially exceed the existing noise levels.

The land use in the noise impacts Study Area is primarily rural/agricultural. At present there are scattered residences along all the alignments, however, development has been completed and planned for much of the area southeast of the airport. All of the identified receptors are considered Activity Category B or C.

2025 is the ultimate Design Year and is considered in the traffic noise model. Four alignments, AAC2, A5C1, D1 and D13, were modeled using Sound32. Of the 31 receptor locations, 8 receptors represent undeveloped lands for which development is anticipated to be planned, designed and programmed prior to the date of public knowledge of the planned project. When traffic noise impacts are predicted for undeveloped lands for which development is planned, designed and programmed before the date of public knowledge, noise abatement/mitigation must be considered as part of the project. (See Figure 3-11, Noise and Air Receptors.)

Noise impacts from the D13 South Modifications have not been quantitatively analyzed because all of the existing and future planned housing developments, represented by receptors NR-15, NR-21, NR-27 and NR-28, are located north of the D13 alignments. The D13 South Modification is south of D13. Because of this, future noise levels at these receptor locations for D13 South Modification are expected to be less than D13. It is therefore assumed that traffic noise impacts and any proposed mitigation measures for D13 South Modification to be similar to the D13.

For specific details on the noise impact evaluation, please refer to the Noise Impact Report, available for review at the Department of Transportation, District 3, Sacramento Office, 2800 Gateway Oaks Dr., Sacramento, CA.

4.6.1 Long Term Noise Impacts

Table 4-9 shows the existing noise levels at the 31 receptors within the Study Area and the predicted noise levels, without sound walls, for each of the alignments. Noise levels were predicted for 2025. Bold numbers indicate approach or exceed NAC at impacted receptors. Italic numbers indicate a "substantial increase" over existing levels.

Table 4-9 Projected Traffic Noise Levels – Ultimate Plan 2025

Noise Level Location	Existing Noise (Monitored) Leq dBA	A5C1	AAC2	D1	D13
NR-1	49.1	60.6	60.5	56.8	56.8
NR-2	45.6	*60.6*	*62.6*	57.3	57.3

Noise Level Location	Existing Noise (Monitored) Leq dBA	A5C1	AAC2	D1	D13
NR-3	54	55.2	55.2	52.9	55.0
NR-4	45.6	53.4	55.5	*60.5*	*60.5*
NR-5	51.3	57.8	*64.6*	63.1	63.1
NR-6	49.6	50.3	50.7	56.6	56.6
NR-7	38.1	*58.2*	*51.2*	*55.2*	*57.6*
NR-8	48.1	62.0	59.1	N/A	N/A
NR-9	36.4	*53.0*	*52.4*	N/A	N/A
NR-10a	54.4	64.3	63.6	N/A	N/A
NR-10b	52.7	63.8	63.2	N/A	N/A
NR-11	36.6	N/A	N/A	*54.7*	*51.6*
NR-12	46	N/A	N/A	*60.5*	56.2
NR-13	43.3	N/A	N/A	***68.2***	*57.9*
NR-14	43.4	N/A	53.0	***68.6***	*60.1*
NR-15	45.6	*62.4*	*60.5*	N/A	53.1
NR-16a	47.7	***65.9***	*60.7*	N/A	N/A
NR-16b	47.9	***66.2***	*60.1*	N/A	N/A
NR-17[4] (8)	48.1	59.6	*61.3*	58.6	58.1
NR-18[4] (10a)	54.4	***70.4***	***70.0***	***65.7***	***69.5***
NR-19[4] (10a)	54.4	***66.6***	***65.9***	***73.7***	***68.0***
NR-20[4] (14)	43.4	***70.4***	***70.3***	*59.1*	*63.2*
NR-21[4] (15)	45.6	***73.9***	***69.6***	57.0	55.6
NR-22[4] (16b)	47.9	***72.5***	***66.4***	N/A	N/A
NR-23[4] (10b)	52.7	***72.2***	*65.2*	N/A	N/A
NR-24[4] (8)	48.1	*65.0*	*63.0*	N/A	N/A
NR-25[4] (6)	49.6	*63.4*	*62.2*	N/A	N/A
NR-26[4] (14)	43.4	N/A	N/A	N/A	N/A
NR-27[4] (14)	43.4	N/A	N/A	*60.2*	***73.6***
NR-28[4] (14)	43.4	N/A	N/A	*59.7*	***65.9***
NR-29[4] (14)	43.4	***71.0***	***69.6***	***67.9***	***65.8***
NR-30[4] (14)	43.4	***70.7***	***68.7***	***69.1***	***67.8***
NR-31[4] (15)	45.6	***68.6***	***64.6***	N/A	N/A

[1] N/A- The modeled segment does not contribute significantly to the noise level at the considered receptor location. Receptor location not modeled for the considered alignment.
[2] Italic numbers indicate "substantial increase" over existing levels.
[3] Bold numbers indicate noise levels that "approach or exceed" the NAC at impacted receptor.
[4] An "acoustical equivalent" was used as indicated in parenthesis.

Table 4-10 Summary of Traffic Noise Modeling Results (A5C1)

Receiver ID	Location Description	Type of Development	Noise Abate-ment Category Leq (h)	Existing Measured Noise Level dBA Leq (h)	Predicted[4] Worst Noise Hour Noise Level dBA Leq (h)	Noise Increase (+) or Decrease (-)	Impact Type[5]
NR-1	4221 North Dowd Road	Res.	B [1]	49.1	60.6[2] [3]	+11.5	None
NR-2	100m north of Riosa Road	Res.	B[1]	45.6	60.6 [3]	+15.0	S
NR-3	100 feet from Existing SR 65	Res.	B[1]	54	55.2 [3]	+1.2	None
NR-4	4710 North Dowd Road	Res.	B[1]	45.6	53.4 [3]	+7.8	S
NR-5	4221 North Dowd Road	Res.	B[1]	51.3	57.8 [3]	+6.5	None
NR-6	700 feet from Existing SR 65	Res.	B[1]	49.6	50.3 [3]	+0.7	None
NR-7	2780 Dowd Road	Res.	B[1]	38.1	68.2 [3]	+30.1	S, A/E
NR-8	2000 feet from Existing SR 65, 1000 feet from C1 and C2	Res.	B[1]	48.1	62.0 [3]	+13.9	S
NR-9	200m south of Wise Road	Res.	B[1]	36.4	53.0 [3]	+16.6	S
NR-10a	Along Wise Road	Res.	B[1]	54.4	64.3 [3]	+9.9	None
NR-10b	Along Wise Road	Res.	B[1]	52.7	63.8 [3]	+11.1	None
NR-11	Along Airport Road	Res.	B[1]	36.6	N/A	N/A	N/A
NR-12	Along Nicolaus Road	Res.	B[1]	46	N/A	N/A	N/A
NR-13	On Rockwell Lane	Res.	B[1]	43.3	N/A	N/A	N/A
NR-14	Along Moore Road	Res.	B[1]	43.4	N/A	N/A	S
NR-15	400 feet east of C1 and C2	Res.	B[1]	45.6	62.4 [3]	+16.8	S
NR-16a	North end of El Camino Verde	Res.	B[1]	47.7	65.9 [3]	+18.2	S, A/E
NR-16b	1245 Cobblestone Dr	Res.	B[1]	47.9	66.2 [3]	+18.3	S, A/E
NR - 17	2000 feet from SR 65	Res.	B[1]	48.1	59.6 [3]	+11.5	S
NR-18	Lincoln Crossing	Res.	B[1]	54.4	70.4 [3]	+16.0	S, A/E
NR-19	Lincoln Crossing	Res.	B [1]	54.4	66.6 [3]	+12.2	S, A/E
NR-20	Lincoln Crossing	Res.	B [1]	43.4	70.4 [3]	+27.0	S, A/E
NR-21	50 feet from Existing SR 65	Res.	B [1]	45.6	73.9 [3]	+28.3	S, A/E
NR-22	50 feet from Existing SR 65, south of Nicolaus Road	Res.	B [1]	47.9	72.5 [3]	+24.6	S, A/E
NR-23	50 feet south of Nicolaus Road	Res.	B [1]	52.7	72.2 [3]	+19.5	S, A/E
NR-24	50 feet from C1	Res.	B [1]	48.1	65.0 [3]	+16.9	S
NR-25	50 feet from Existing SR 65	Res.	B [1]	49.6	63.4 [3]	+13.8	S
NR-26	NW corner of SR 65/Westwood Blvd	Comm.	C[2]	43.4	N/A	N/A	S, A/E
NR-27	100 feet North of D13	Res.	B [1]	43.4	N/A	N/A	N/A
NR-28	100 feet North of D13	Res.	B [1]	43.4	N/A	N/A	N/a
NR-31	3-D Development	Res.	B [1]	43.4	71.0 [3]	27.6	S, A/E
NR-30	3-D Development	Res.	B [1]	43.4	70.7 [3]	+27.3	S, A/E
NR-31	Lincoln West Development	Res.	B [1]	45.6	68.6 [3]	+23.0	S, A/E

[1] 67 dB [2] 72 dB [3] Modeled [4] Predicted for design year 2025 [5] Impact Types:
None - no impacts identified, A/E - noise abatement criteria approached or exceeded, S - existing noise level substantially increased, N/A- Not Applicable

Table 4-11 Summary of Traffic Noise Modeling Results AAC2

Receiver ID	Location Description	Type of Development	Noise Abate-ment Category Leq (h)	Existing Measured Noise Level dBA Leq (h)	Predicted[4] Worst Noise Hour Noise Level dBA Leq (h)	Noise Increase (+) or Decrease (-)	Impact Type[6]
NR-1	6355 North SR 65	Res.	B[1]	49.1	60.5 [3]	+11.4	None
NR-2	100m north of Riosa Road	Res.	B[1]	45.6	62.6[3] [3]	+17.0	S
NR-3	100 feet from Existing SR 65	Res.	B[1]	54	55.2 [3]	+1.2	None
NR-4	4710 North Dowd Road	Res.	B[1]	45.6	55.5 [3]	+9.9	None
NR-5	4221 North Dowd Road	Res.	B[1]	51.3	64.6 [3]	+13.3	S
NR-6	700 feet from Existing SR 65	Res.	B[1]	49.6	50.7 [3]	+1.1	None
NR-7	2780 Dowd Road	Res.	B[1]	38.1	51.2 [3]	+13.1	S
NR-8	2000 feet from Existing SR 65, 1000 feet from C1 and C2	Res.	B[1]	48.1	59.1 [3]	+11.0	None
NR-9	200m south of Wise Road	Res.	B[1]	36.4	52.4 [3]	+16.0	S
NR-10a	Along Wise Road	Res.	B[1]	54.4	63.6 [3]	+9.2	None
NR-10b	Along Wise Road	Res.	B[1]	52.7	63.2 [3]	+10.5	None
NR-11	Along Airport Road	Res.	B[1]	36.6	N/A	N/A	N/A
NR-12	Along Nicolaus Road	Res.	B[1]	46	N/A	N/A	N/A
NR-13	On Rockwell Lane	Res.	B[1]	43.3	N/A	N/A	N/A
NR-14	Along Moore Road	Res.	B[1]	43.4	53.0 [3]	+9.6	None
NR-15	400 feet east of C1 and C2	Res.	B[1]	45.6	60.5 [3]	+14.9	S
NR-16a	North end of El Camino Verde	Res.	B[1]	47.7	60.7 [3]	+13.0	S
NR-16b	1245 Cobblestone Dr	Res.	B[1]	47.9	60.1 [3]	+12.2	S
NR-17	2000 feet from SR 65	Res.	B[1]	48.1	61.3 [3]	+13.2	S
NR-18	Lincoln Crossing	Res.	B[1]	54.4	70.0 [3]	+15.6	S, A/E
NR-19	Lincoln Crossing	Res.	B[1]	54.4	65.9 [3]	+11.5	S, A/E
NR-20	Lincoln Crossing	Res.	B[1]	43.4	70.3 [3]	+26.9	S, A/E
NR-21	50 feet from Existing SR 65	Res.	B[1]	45.6	69.6 [3]	+24.0	S, A/E
NR-22	50 feet from Existing SR 65, south of Nicolaus Road	Res.	B[1]	47.9	66.4 [3]	+18.5	S, A/E
NR-23	50 feet south of Nicolaus Road	Res.	B[1]	52.7	65.2 [3]	+12.5	S
NR-24	50 feet from C1	Res.	B[1]	48.1	63.0 [3]	+14.9	S
NR-25	50 feet from Existing SR 65	Res.	B[1]	49.6	62.2 [3]	+12.6	S
NR-26	NW corner of SR 65/Westwood Blvd	Comm.	C[2]	43.4	N/A	N/A	N/A
NR-27	100 feet North of D13	Res.	B[1]	43.4	N/A	N/A	N/A
NR-28	100 feet North of D13	Res.	B[1]	43.4	N/A	N/A	N/A
NR-29	3-D Development	Res.	B[1]	43.4	69.6 [5]	+26.2	S, A/E
NR-30	3-D Development	Res.	B[1]	43.4	68.7 [5]	+25.3	S, A/E
NR-31	Lincoln West Development	Res.	B[1]	45.6	64.6 [5]	+19.0	S

[1] 67 dB [2] 72 dB [3] Modeled [4] Predicted for design year 2025 [5] Measured
[6]Impact Types: None - no impacts identified, A/E - noise abatement criteria approached or exceeded, S - existing noise level substantially increased, N/A- Not Applicable

Table 4-12 Summary of Traffic Noise Modeling Results D1

Receiver ID	Location Description	Type of Development	Noise Abate-ment Category Leq (h)	Existing Measured Noise Level dBA Leq (h)	Predicted [4] Worst Noise Hour Noise Level dBA Leq (h)	Noise Increase (+) or Decrease (-)	Impact Type[5]
NR-1	6355 North SR 65	Res.	B[1]	49.1	56.8 [3]	+7.7	S
NR-2	100m north of Riosa Road	Res.	B[1]	45.6	57.3 [3]	+11.7	None
NR-3	100 feet from Existing SR 65	Res.	B[1]	54	52.9 [3]	0	None
NR-4	4710 North Dowd Road	Res.	B[1]	45.6	60.5 [3]	+14.9	S
NR-5	4221 North Dowd Road	Res.	B[1]	51.3	63.1 [3]	+11.8	None
NR-6	700 feet from Existing SR 65	Res.	B[1]	49.6	56.6 [3]	+7	None
NR-7	2780 Dowd Road	Res.	B[1]	38.1	55.2 [3]	+17.1	S
NR-8	2000 feet from Existing SR 65, 1000 feet from C1 and C2	Res.	B[1]	48.1	N/A	N/A	N/A
NR-9	200m south of Wise Road	Res.	B[1]	36.4	N/A	N/A	N/A
NR-10a	Along Wise Road	Res.	B[1]	54.4	N/A	N/A	N/A
NR-10b	Along Wise Road	Res.	B[1]	52.7	N/A	N/A	N/A
NR-11	Along Airport Road	Res.	B[1]	36.6	54.7 [3]	+18.1	S
NR-12	Along Nicolaus Road	Res.	B[1]	46	60.5 [3]	+14.5	S
NR-13	On Rockwell Lane	Res.	B[1]	43.3	68.2 [3]	+24.9	S, A/E
NR-14	Along Moore Road	Res.	B[1]	43.4	68.6 [3]	+25.2	S, A/E
NR-15	400 feet east of C1 and C2	Res.	B[1]	45.6	N/A	N/A	N/A
NR-16a	North end of El Camino Verde	Res.	B[1]	47.7	N/A	N/A	N/A
NR-16b	1245 Cobblestone Dr	Res.	B[1]	47.9	N/A	N/A	N/A
NR-17	2000 feet from SR 65	Res.	B[1]	48.1	58.6 [3]	+10.5	None
NR-18	Lincoln Crossing	Res.	B[1]	54.4	65.7 [3]	+11.3	S, A/E
NR-19	Lincoln Crossing	Res.	B[1]	54.4	73.7 [3]	+19.3	S, A/E
NR-20	Lincoln Crossing	Res.	B[1]	43.4	59.1 [3]	+15.7	S
NR-21	50 feet from Existing SR 65	Res.	B[1]	45.6	57.0 [3]	+11.4	S
NR-22	50 feet from Existing SR 65, south of Nicolaus Road	Res.	B[1]	47.9	N/A	N/A	N/A
NR-23	50 feet south of Nicolaus Road	Res.	B[1]	52.7	N/A	N/A	N/A
NR-24	50 feet from C1	Res.	B[1]	48.1	N/A	N/A	N/A
NR-25	50 feet from Existing SR 65	Res.	B[1]	49.6	N/A	N/A	N/A
NR-26	NW corner of SR 65/ Westwood Blvd	Comm.	C[2]	43.4	N/A	N/A	N/A
NR-27	100 feet North of D13	Res.	B[1]	43.4	60.2 [3]	+16.8	S
NR-28	100 feet North of D13	Res.	B[1]	43.4	59.7 [3]	+16.3	S
NR-29	3-D Development	Res.	B[1]	43.4	67.9 [3]	+24.5	S, A/E
NR-30	3-D Development	Res.	B[1]	43.4	69.1 [3]	+25.7	S, A/E
NR-31	Lincoln West Development	Res.	B[1]	45.6	N/A	N/A	N/A

[1] 67 dB [2] 72 dB [3] Modeled [4] Predicted for design year 2025 [5] Impact Types:
None - no impacts identified, A/E - noise abatement criteria approached or exceeded, S - existing noise level substantially increased, N/A- Not Applicable

Table 4-13 Summary of Traffic Noise Modeling Results D13

Receiver ID	Location Description	Type of Development	Noise Abate-ment Category Leq (h)	Existing Noise Level dBA Leq (h)	Predicted [4] Worst Noise Hour Noise Level dBA Leq (h)	Noise Increase (+) or Decrease (-)	Impact Type[5]
NR-1	6355 North SR 65	Res.	B[1]	49.1	56.8 [3]	+7.7	None
NR-2	100m north of Riosa Road	Res.	B[1]	45.6	57.3 [3]	+11.7	None
NR-3	100 feet from Existing SR 65	Res.	B[1]	54	55.0 [3]	+1.0	None
NR-4	4710 North Dowd Road	Res.	B[1]	45.6	60.5 [3]	+14.9	S
NR-5	4221 North Dowd Road	Res.	B[1]	51.3	63.1 [3]	+11.8	None
NR-6	700 feet from Existing SR 65	Res.	B[1]	49.6	56.6 [3]	+7.0	None
NR-7	2780 Dowd Road	Res.	B[1]	38.1	57.6 [3]	+19.5	S
NR-8	2000 feet from Existing SR 65, 1000 feet from C1 and C2	Res.	B[1]	48.1	N/A	N/A	N/A
NR-9	200m south of Wise Road	Res.	B[1]	36.4	N/A	N/A	N/A
NR-10a	Along Wise Road	Res.	B[1]	54.4	N/A	N/A	N/A
NR-10b	Along Wise Road	Res.	B[1]	52.7	N/A	N/A	N/A
NR-11	Along Airport Road	Res.	B[1]	36.6	51.6 [3]	+15	S
NR-12	Along Nicolaus Road	Res.	B[1]	46	56.2 [3]	+10.2	None
NR-13	On Rockwell Lane	Res.	B[1]	43.3	57.9 [3]	+14.6	S
NR-14	Along Moore Road	Res.	B[1]	43.4	60.1 [3]	+16.7	S
NR-15	400 feet east of C1 and C2	Res.	B[1]	45.6	53.1 [3]	+7.5	None
NR-16a	North end of El Camino Verde	Res.	B[1]	47.7	N/A	N/A	N/A
NR-16b	1245 Cobblestone Dr	Res.	B[1]	47.9	N/A	N/A	N/A
NR-17	2000 feet from SR 65	Res.	B[1]	48.1	58.1 [3]	+10	None
NR-18	Lincoln Crossing	Res.	B[1]	54.4	69.5 [3]	+15.1	S, A/E
NR-19	Lincoln Crossing	Res.	B[1]	54.4	68.0 [3]	+13.6	S, A/E
NR-20	Lincoln Crossing	Res.	B[1]	43.4	63.2 [3]	+19.8	S
NR-21	50 feet from Existing SR 65	Res.	B[1]	45.6	55.6 [3]	+10	None
NR-22	50 feet from Existing SR 65, south of Nicolaus Road	Res.	B[1]	47.9	N/A	N/A	N/A
NR-23	50 feet south of Nicolaus Road	Res.	B[1]	52.7	N/A	N/A	N/A
NR-24	50 feet from C1 Alignment	Res.	B[1]	48.1	N/A	N/A	N/A
NR-25	50 feet from Existing SR 65	Res.	B[1]	49.6	N/A	N/A	N/A
NR-26	NW corner of SR 65/Westwood Blvd	Comm.	C[2]	43.4	N/A	N/A	N/A
NR-27	100 feet North of D13 Alignment	Res.	B[1]	43.4	73.6 [3]	+30.2	S, A/E
NR-28	100 feet North of D13	Res.	B[1]	43.4	65.9 [3]	+22.5	S, A/E
NR-29	3-D Development	Res.	B[1]	43.4	65.8 [3]	+22.4	S, A/E
NR-30	3-D Development	Res.	B[1]	43.4	67.8 [3]	+24.4	S, A/E
NR-31	Lincoln West Development	Res.	B[1]	45.6	N/A	N/A	N/A

[1] 67 dB [2] 72 dB [3] Modeled [4] Predicted for design year 2025 [5] Impact Types:
None - no impacts identified, A/E - noise abatement criteria approached or exceeded, S - existing noise level substantially increased, N/A- Not Applicable

4.6.2 Noise Abatement/Mitigation Measures

Long Term noise impact abatement measures

Under Federal/FHWA regulations (23 CFR 772) and the Department's policy, noise abatement must be considered when the project results in a noise impact and feasible and reasonable abatement measures must be included in the draft environmental documentation. Receptor locations that are predicted to be noise impacted are summarized in Table 4-10 through Table 4-13. Noise abatement is considered not reasonable at commercial use sites, as soundwalls are generally not desired for these land use types. Rural, single family residences would be not obviously reasonable from a cost perspective. No further evaluation was made at these locations. A final decision on sound walls, including the specific locations and heights, will be made by the Project Development Team (PDT) after final design has been completed, and local government and public input has been made. Table 4-14 through Table 4-17 discuss the soundwalls evaluated as noise abatement, including cost effectiveness.

Table 4-14 Soundwalls Evaluated for Abatement Alternative A5C1

Sound Wall	Recvr(s) Protected	SW Height	Length (ft)	SW Location Description	Total Reasonable Allowance	Engr's Est
C1.1	19	3.0 m (10 ft)	671 m (2,200 ft)	N/B SR65 to Westwood Off-Ramp 163+00 to 185+00	NF	NF
		3.6 m (12 ft)	671 m (2,200 ft)	N/B SR65 to Westwood Off-Ramp 163+00 to 185+00	NF	NF
		4.3 m (14 ft)	671 m (2,200 ft)	N/B SR65 to Westwood Off-Ramp 163+00 to 185+00	$1,890,000	$664,800
		4.6 m (16ft)	671 m (2,200 ft)	N/B SR65 to Westwood Off-Ramp 163+00 to 185+00	$1,890,000	$997,200
C1.2	20,29 (3-D Dev.)	3.0 m (10 ft)	1859 m (6,100 ft)	W/B Westwood to N/B SR65 185+00 to 246+00	NF	NF
		3.6 m (12 ft)	1859 m (6,100 ft)	W/B Westwood to N/B SR65 185+00 to 246+00	NF	NF
		4.3 m (14 ft)	1859 m (6,100 ft)	W/B Westwood to N/B SR65 185+00 to 246+00	$1,591,000	$1,843,300
		4.6 m (16ft)	1859 m (6,100 ft)	W/B Westwood to N/B SR65 185+00 to 246+00	$1,677,000	$2,764,900
C1.3	30 (3-D Dev.	3.0 m (10 ft)	853 m (2,800 ft)	S/B SR65 246+00 to 218+00	$1,560,000	$604,400
		3.6 m (12 ft)	853 m (2,800 ft)	S/B SR65 246+00 to 218+00	$1,560,000	$725,200
		4.3 m (14 ft)	853 m (2,800 ft)	S/B SR65 246+00 to 218+00	$1,640,000	$846,100
		4.6 m (16ft)	853 m (2,800 ft)	S/B SR65 246+00 to 218+00	$1,640,000	$1,269,100
C1.4	18	3.0 m (10 ft)	671 m (2,200 ft)	E/B Westwood to S/B SR65 185+00 to 163+00	$2,220,000	$474,900
		3.6 m (12 ft)	671 m	E/B Westwood to S/B SR65	$2,340,000	$569,800

Sound Wall	Recvr(s) Protected	SW Height	Length (ft)	SW Location Description	Total Reasonable Allowance	Engr's Est
			(2,200 ft)	185+00 to 163+00		
		4.3 m (14 ft)	671 m (2,200 ft)	E/B Westwood to S/B SR65 185+00 to 163+00	$2,340,000	$664,800
		4.6 m (16ft)	671 m (2,200 ft)	E/B Westwood to S/B SR65 185+00 to 163+00	$2,340,000	$997,200
C1.5	15,21	3.0 m (10 ft)	1097 m (3,600 ft)	N/B SR65 253+00 to 289+00	NF	NF
		3.6 m (12 ft)	1097 m (3,600 ft)	N/B SR65 253+00 to 289+00	$2,769,000	$932,400
		4.3 m (14 ft)	1097 m (3,600 ft)	N/B SR65 253+00 to 289+00	$2,769,000	$1,087,800
		4.6 m (16 ft)	1097 m (3,600 ft)	N/B SR65 253+00 to 289+00	$2,911,000	$1,631,700
C1.6	16a, 16b	3.0 m (10 ft)	1707 m (5,600 ft)	S/B SR65 to Nicolaus Off-Ramp 356+00 to 300+00	NF	NF
		3.6 m (12 ft)	1707 m (5,600 ft)	S/B SR65 to Nicolaus Off-Ramp 356+00 to 300+00	NF	NF
		4.3 m (14 ft)	1707 m (5,600 ft)	S/B SR65 to Nicolaus Off-Ramp 356+00 to 300+00	$1,184,000	$1,692,200
		4.6 m (16ft)	1707 m (5,600 ft)	S/B SR65 to Nicolaus Off-Ramp 356+00 to 300+00	$1,184,000	$2,538,200
C1.7a[1]	22,23	3.0 m (10 ft)	396 m (1,300 ft)	Nicolaus to S/B SR65 300+00 to 287+00	NF	NF
		3.6 m (12 ft)	396 m (1,300 ft)	Nicolaus to S/B SR65 300+00 to 287+00	NF	NF
		4.3 m (14 ft)	396 m (1,300 ft)	Nicolaus to S/B SR65 300+00 to 287+00	$962,000	$392,900
		4.6 m (16ft)	396 m (1,300 ft)	Nicolaus to S/B SR65 300+00 to 287+00	$962,000	$589,300
C1.7b[1]	31 (Lincoln West Dev.)	3.0 m (10 ft)	518 m (1,700 ft)	S/B SR65 275+00 to 258+00	$1,155,000	$367,000
		3.6 m (12 ft)	518 m (1,700 ft)	S/B SR65 275+00 to 258+00	$1,155,000	$440,300
		4.3 m (14 ft)	518 m (1,700 ft)	S/B SR65 275+00 to 258+00	$1,221,000	$513,700
		4.6 m (16ft)	518 m (1,700 ft)	S/B SR65 275+00 to 258+00	$1,221,000	$770,600
C1.13	10a	3.0 m (10 ft)	304.8 m (1,000ft)	E/B Wise Road	NF	NF
		3.6 m (12 ft)	304.8 m (1,000ft)	E/B Wise Road	$66,000	$259,000
		4.3 m (14 ft)	304.8 m (1,000ft)	E/B Wise Road	$66,000	$302,200
		4.6 m (16ft)	304.8 m (1,000ft)	E/B Wise Road	$66,000	$453,300
C1.14	10b	3.0 m (10 ft)			NF	NF
		3.6 m (12 ft)			NF	NF
		4.3 m (14 ft)			NF	NF
		4.6 m (16ft)			NF	NF

Sound Wall	Recvr(s) Protected	SW Height	Length (ft)	SW Location Description	Total Reasonable Allowance	Engr's Est
C1.11	7	3.0 m (10 ft)			NF	NF
		3.6 m (12 ft)			NF	NF
		4.3 m (14 ft)			NF	NF
C1.12	8	3.0 m (10 ft)			NF	NF
		3.6 m (12 ft)			NF	NF
		4.3 m (14 ft)			NF	NF
		4.6 m (16ft)			NF	NF
C1.10	4,5	3.0 m (10 ft)	3444 m (11,300 ft)	N/B SR65 532+00 to 645+00	$99,000	$111,000
		3.6 m (12 ft)	3444 m (11,300 ft)	N/B SR65 532+00 to 645+00	$99,000	$2,926,700
		4.3 m (14 ft)	3444 m (11,300 ft)	N/B SR65 532+00 to 645+00	$105,000	$3,414,500
		4.6 m (16ft)	3444 m (11,300 ft)	N/B SR65 532+00 to 645+00	$105,000	$5,121,800
C1.8	1	3.0 m (10 ft)			NF	NF
		3.6 m (12 ft)			NF	NF
		4.3 m (14 ft)			NF	NF
		4.6 m (16ft)			NF	NF
C1.9	2	3.0 m (10 ft)	427 m (1,400ft)	W/B Riosa N/B SR65 532+00 to 645+00	NF	NF
		3.6 m (12 ft)	304.8 m (1,000ft)	W/B Riosa N/B SR65 532+00 to 645+00	NF	NF
		4.3 m (14 ft)	304.8 m (1,000ft)	W/B Riosa N/B SR65 532+00 to 645+00	NF	NF
		4.6 m (16ft)	304.8 m (1,000ft)	W/B Riosa N/B SR65 532+00 to 645+00	NF	NF

[1]City of Lincoln sewage facility left unshielded
NF Not Feasible, NR No Receptors

Table 4-15 Soundwalls Evaluated for Abatement Alternative AAC2

Sound Wall	Recvr(s) Protected	SW Height	Length (ft)	SW Location Description	Total Reasonable Allowance	Engr's Est
C2.1	19	3.0 m (10 ft)	671 m (2,200 ft)	N/B SR65 to Westwood Off-Ramp 165+00 to 187+00	NF	NF
		3.6 m (12ft)	671 m (2,200 ft)	N/B SR65 to Westwood Off-Ramp 165+00 to 187+00	NF	NF
		4.3 m (14 ft)	671 m (2,200 ft)	N/B SR65 to Westwood Off-Ramp 165+00 to 187+00	$1,890,000	$664,800
		4.6 m (16 ft)	671 m (2,200 ft)	N/B SR65 to Westwood Off-Ramp 165+00 to 187+00	$1,890,000	$997,200
C2.2	20, 29 (3-D Dev.)	3.0 m (10 ft)	1859 m (6,100 ft)	W/B Westwood to N/B SR65 187+00 to 248+00	NF	NF
		3.6 m (12ft)	1859 m (6,100 ft)	W/B Westwood to N/B SR65 187+00 to 248+00	$1,591,000	$1,579,900
		4.3 m (14 ft)	1859 m (6,100 ft)	W/B Westwood to N/B SR65 187+00 to 248+00	$1,591,000	$1,843,300

Sound Wall	Recvr(s) Protected	SW Height	Length (ft)	SW Location Description	Total Reasonable Allowance	Engr's Est
		4.6 m (16 ft)	1859 m (6,100 ft)	W/B Westwood to N/B SR65 187+00 to 248+00	$1,591,000	$2,764,900
C2.3[1]	30 (3-D Dev)	3.0 m (10 ft)	975 m (3,200ft)	S/B SR65 248+00 to 216+00	$1,400,000	$690,700
		3.6 m (12ft)	975 m (3,200ft)	S/B SR65 248+00 to 216+00	$1,480,000	$828,800
		4.3 m (14 ft)	975 m (3,200ft)	S/B SR65 248+00 to 216+00	$1,480,000	$967,000
		4.6 m (16 ft)	975 m (3,200ft)	S/B SR65 248+00 to 216+00	$1,560,000	$1,450,400
C2.4	18	3.0 m (10 ft)	671 m (2,200 ft)	E/B SR65 Westwood to S/B SR65 187+00 to 165+00	$2,220,000	$474,900
		3.6 m (12ft)	671 m (2,200 ft)	E/B SR65 Westwood to S/B SR65 187+00 to 165+00	$2,220,000	$569,800
		4.3 m (14 ft)	671 m (2,200 ft)	E/B SR65 Westwood to S/B SR65 187+00 to 165+00	$2,340,000	$664,800
		4.6 m (16 ft)	671 m (2,200 ft)	E/B SR65 Westwood to S/B SR65 187+00 to 165+00	$2,340,000	$997,200
C2.5	15,21	3.0 m (10 ft)	1402 m (4,600 ft)	N/B SR65 to Nicolaus Off-Ramp 257+00 to 303+00	NF	NF
		3.6 m (12ft)	1402 m (4,600 ft)	N/B SR65 to Nicolaus Off-Ramp 257+00 to 303+00	NF	NF
		4.3 m (14 ft)	1402 m (4,600 ft)	N/B SR65 to Nicolaus Off-Ramp 257+00 to 303+00	$2,145,000	$1,390,000
		4.6 m (16 ft)	1402 m (4,600 ft)	N/B SR65 to Nicolaus Off-Ramp 257+00 to 303+00	$2,145,000	$2,085,000
C2.6nb	25	3.0 m (10 ft)			NF	NF
		3.6 m (12ft)			NF	NF
		4.3 m (14 ft)			NF	NF
		4.6 m (16 ft)			NF	NF
C2.6sb[2]	16a	3.0 m (10 ft)	1494 m (4,900ft)	S/B SR65 Venture to Nicolaus OR 303+00 to 352+00	NF	NF
		3.6 m (12ft)	1494 m (4,900ft)	S/B SR65 Venture to Nicolaus OR 303+00 to 352+00	NF	NF
		4.3 m (14 ft)	1494 m (4,900ft)	S/B SR65 Venture to Nicolaus OR 303+00 to 352+00	NF	NF
		4.6 m (16 ft)	1494 m (4,900ft)	S/B SR65 Venture to Nicolaus OR 303+00 to 352+00	$1,050,000	$2,221,000
C2.6sb[3] (altern)	16a	3.0 m (10 ft)	610 m (2,000ft)	S/B SR65 335+00 to 355+00	NF	NF
		3.6 m (12ft)	610 m (2,000ft)	S/B SR65 335+00 to 355+00	NF	NF
		4.3 m (14 ft)	610 m (2,000ft)	S/B SR65 335+00 to 355+00	NF	NF
		4.6 m (16 ft)	610 m (2,000ft)	S/B SR65 335+00 to 355+00	$700,000	$906,500
C2.7[4]	22,23,30 (Lincoln West Dev)	3.0 m (10 ft)	1311 m (4,300 ft)	E/B Nicolaus to S/B SR65 303+00 to 260+00	NF	NF

Sound Wall	Recvr(s) Protected	SW Height	Length (ft)	SW Location Description	Total Reasonable Allowance	Engr's Est
		3.6 m (12ft)	1311 m (4,300 ft)	E/B Nicolaus to S/B SR65 303+00 to 260+00	NF	NF
		4.3 m (14 ft)	1311 m (4,300 ft)	E/B Nicolaus to S/B SR65 303+00 to 260+00	NF	NF
		4.6 m (16 ft)	1311 m (4,300 ft)	E/B Nicolaus to S/B SR65 303+00 to 260+00	$1,855,000	$1,949,000
C.2.12	10a	3.0 m (10 ft)			NF	NF
		3.6 m (12ft)			NF	NF
		4.3 m (14 ft)			NF	NF
		4.6 m (16 ft)			NF	NF
C2.13	10b	3.0 m (10 ft)	304.8 m (1,000ft)	E/B Wise Road near SR65	NR	NR
		3.6 m (12ft)	304.8 m (1,000ft)	E/B Wise Road near SR65	NR	NR
		4.3 m (14 ft)	304.8 m (1,000ft)	E/B Wise Road near SR65	NR	NR
		4.6 m (16 ft)	304.8 m (1,000ft)	E/B Wise Road near SR65	NR	NR
C2.10	4	3.0 m (10 ft)	6187 m (20,300ft)	N/B SR65 450+00 to 650+00	NR	NR
		3.6 m (12ft)	6187 m (20,300ft)	N/B SR65 450+00 to 650+00	NR	NR
		4.3 m (14 ft)	6187 m (20,300ft)	N/B SR65 450+00 to 650+00	NR	NR
		4.6 m (16 ft)	6187 m (20,300ft)	N/B SR65 450+00 to 650+00	NR	NR
C2.11	5	3.0 m (10 ft)	5060 m (16,600ft)	S/B SR65 650+00 to 490+00	$74,000	$3,582,900
		3.6 m (12ft)	5060 m (16,600ft)	S/B SR65 650+00 to 490+00	$74,000	$4,299,400
		4.3 m (14 ft)	5060 m (16,600ft)	S/B SR65 650+00 to 490+00	$78,000	$5,016,000
		4.6 m (16 ft)	5060 m (16,600ft)	S/B SR65 650+00 to 490+00	$78,000	$7,524,000
C2.8	2	3.0 m (10 ft)			NF	NF
		3.6 m (12ft)			NF	NF
		4.3 m (14 ft)			NF	NF
		4.6 m (16 ft)			NF	NF
C2.9	1	3.0 m (10 ft)			NF	NF
		3.6 m (12ft)			NF	NF
		4.3 m (14 ft)			NF	NF
		4.6 m (16 ft)			NF	NF

[1] Southwest quad of SR65 @ Wstwood is commerical (NR-26)
[2] 16b N/F for all heights
[3] Shields 16a only
[4] If homes are condemned West of SR65 from 289+00 to 275+00 SW may be dropped for this segment. Undetermined at this time
NF- Not Feasible, NR- No Receptors

Table 4-16 Soundwalls Evaluated for Abatement Alternative D1

Sound Wall	Recvr(s) Protected	SW Height	Length (ft)	SW Location Description	Total Reasonable Allowance	Engr's Est
D1.1	19	3.0 m (10 ft)	671 m (2,200 ft)	N/B SR65 to Westwood Off-Ramp 168+00 to 190+00	$2,106,000	$474,900
		3.6 m (12ft)	671 m (2,200 ft)	N/B SR65 to Westwood Off-Ramp 168+00 to 190+00	$2,106,000	$569,800
		4.3 m (14 ft)	671 m (2,200 ft)	N/B SR65 to Westwood Off-Ramp 168+00 to 190+00	$2,214,000	$664,800
		4.6m (16 ft)	671 m (2,200 ft)	N/B SR65 to Westwood Off-Ramp 168+00 to 190+00	$2,214,000	$997,200
D1.2a[1]	20	3.0 m (10 ft)	610 m (2,000ft)	W/B Westwood to N/B SR65 190+00 to 210+00	NF	NF
		3.6 m (12ft)	610 m (2,000ft)	W/B Westwood to N/B SR65 190+00 to 210+00	NF	NF
		4.3 m (14 ft)	610 m (2,000ft)	W/B Westwood to N/B SR65 190+00 to 210+00	$700,000	$604,400
		4.6 m (16ft)	610 m (2,000ft)	W/B Westwood to N/B SR65 190+00 to 210+00	$700,000	$906,500
D1.2b[1]	29 (3-D Dev.)	3.0 m (10 ft)	610 m (2,000ft)	N/B SR65 220+00 to 240+00	NF	NF
		3.6 m (12ft)	610 m (2,000ft)	N/B SR65 220+00 to 240+00	$805,000	$518,000
		4.3 m (14 ft)	610 m (2,000ft)	N/B SR65 220+00 to 240+00	$851,000	$604,400
		4.6m (16 ft)	610 m (2,000ft)	N/B SR65 220+00 to 240+00	$851,000	$906,500
D1.3[2]	30 (3-D Develop ment)	3.0 m (10 ft)	610 m (2,000ft)	S/B SR65 240+00 to 220+00	$1,400,000	$431,700
		3.6 m (12ft)	610 m (2,000ft)	S/B SR65 240+00 to 220+00	$1,480,000	$518,000
		4.3 m (14 ft)	610 m (2,000ft)	S/B SR65 240+00 to 220+00	$1,480,000	$604,400
		4.6 m (16ft)	610 m (2,000ft)	S/B SR65 240+00 to 220+00	$1,560,000	$906,500
D1.4	18	3.0 m (10 ft)	671 m (2,200 ft)	E/B Westwood to S/B SR65 190+00 to 168+00	$2,100,000	$474,900
		3.6 m (12ft)	671 m (2,200 ft)	E/B Westwood to S/B SR65 190+00 to 168+00	$2,100,000	$569,800
		4.3 m (14 ft)	671 m (2,200 ft)	E/B Westwood to S/B SR65 190+00 to 168+00	$2,100,000	$664,800
		4.6 m (16ft)	671 m (2,200 ft)	E/B Westwood to S/B SR65 190+00 to 168+00	$2,220,000	$997,200
D1.5	14	3.0 m (10 ft)	671 m (2,200 ft)	N/B65 249+00 to 271+00	$37,000	$474,900
		3.6 m (12ft)	671 m (2,200 ft)	N/B65 249+00 to 271+00	$37,000	$569,800
		4.3 m (14 ft)	671 m (2,200 ft)	N/B65 249+00 to 271+00	$39,000	$664,800
		4.6 m (16ft)	671 m (2,200 ft)	N/B65 249+00 to 271+00	$39,000	$997,200
D1.6	13	3.0 m (10 ft)	823 m (2,700ft)	N/B65 322+00 to 349+00	$1,036,000	$582,800

Sound Wall	Recvr(s) Protected	SW Height	Length (ft)	SW Location Description	Total Reasonable Allowance	Engr's Est
		3.6 m (12ft)	823 m (2,700ft)	N/B65 322+00 to 349+00	$1,036,000	$699,300
		4.3 m (14 ft)	823 m (2,700ft)	N/B65 322+00 to 349+00	$1,092,000	$815,900
		4.6 m (16ft)	823 m (2,700ft)	N/B65 322+00 to 349+00	$1,092,000	$1,223,800
D1.11	12	3.0 m (10 ft)			NF	NF
		3.6 m (12ft)			NF	NF
		4.3 m (14 ft)			NF	NF
		4.6 m (16ft)			NF	NF
D1.10	7	3.0 m (10 ft)	1433 m (4,700ft)	N/B SR65 505+00 to 552+00	NF	NF
		3.6 m (12ft)	1433 m (4,700ft)	N/B SR65 505+00 to 552+00	NF	NF
		4.3 m (14 ft)	1433 m (4,700ft)	N/B SR65 505+00 to 552+00	NF	NF
		4.6 m (16f ft)	1433 m (4,700ft)	N/B SR65 505+00 to 552+00	NF	NF
D1.7	4	3.0 m (10 ft)	823 m (2,700ft)	N/B SR65 621+00 to 648+00	NF	NF
		3.6 m (12ft)	823 m (2,700ft)	N/B SR65 621+00 to 648+00	$35,000	$699,300
		4.3 m (14 ft)	823 m (2,700ft)	N/B SR65 621+00 to 648+00	$35,000	$815,900
		4.6 m (ft)	823 m (2,700ft)	N/B SR65 621+00 to 648+00	$35,000	$1,223,800
D1.9	2	3.0 m (10 ft)	427 m (1,400ft)	W/B Riosa Rd to N/B SR65 691+00 to 701+00	$210,000	$302,200
		3.6 m (12ft)	427 m (1,400ft)	W/B Riosa Rd to N/B SR65 691+00 to 701+00	$210,000	$362,600
		4.3 m (14 ft)	427 m (1,400ft)	W/B Riosa Rd to N/B SR65 691+00 to 701+00	$210,000	$423,100
		4.6 m (16 ft)	427 m (1,400ft)	W/B Riosa Rd to N/B SR65 691+00 to 701+00	$222,000	$634,600
D1.8	1	3.0 m (10 ft)	1372 m (4,500ft)	N/B SR65 705+00 to 750+00	NR	NR
		3.6 m (12ft)	1372 m (4,500ft)	N/B SR65 705+00 to 750+00	NR	NR
		4.3 m (14 ft)	1372 m (4,500ft)	N/B SR65 705+00 to 750+00	NR	NR
		4.6 m (16 ft)	1372 m (4,500ft)	N/B SR65 705+00 to 750+00	NR	NR

[1] Section of SR65 traverses thru Ag land, [2] SW quad of SR65/Woodside I/C is commercial

NF Not Feasible, NR No Receptors

Table 4-17 Soundwalls Evaluated for Abatement Alternative D13

Sound Wall	Recvr(s) Protected	SW Height	Length (ft)	SW Location Description	Total Reasonable Allowance	Engr's Est
D13.1	19	3.0 m (10 ft)	671 m (2,200 ft)	N/B SR65 to Westwood Off-Ramp 664+00 to 686+00	NF	NF
		3.6 m (12 ft)	671 m (2,200 ft)	N/B SR65 to Westwood Off-Ramp 664+00 to 686+00	$1,890,000	$569,800
		4.3 m (14 ft)	671 m (2,200 ft)	N/B SR65 to Westwood Off-Ramp 664+00 to 686+00	$1,890,000	$664,800
		4.6 m (16 ft)	671 m (2,200 ft)	N/B SR65 to Westwood Off-Ramp 664+00 to 686+00	$1,998,000	$997,200
D13.2	20, 29 (3D Dev)	3.0 m (10 ft)	1859 m (6,100 ft)	W/B Westwood to N/B SR65 686+00 to 747+00	NF	NF
		3.6 m (12 ft)	1859 m (6,100 ft)	W/B Westwood to N/B SR65 686+00 to 747+00	NF	NF
		4.3 m (14 ft)	1859 m (6,100 ft)	W/B Westwood to N/B SR65 686+00 to 747+00	$1,505,000	$1,843,300
		4.6 m (16 ft)	1859 m (6,100 ft)	W/B Westwood to N/B SR65 686+00 to 747+00	$1,591,000	$2,764,900
D13.3	30(3-D Dev	3.0 m (10 ft)	1036 m (3,400ft)	S/B SR65 746+00 to 712+00	NF	NF
	Part of Lincoln Crossing	3.6 m (12 ft)	1036 m (3,400ft)	S/B SR65 746+00 to 712+00	$1,400,000	$880,600
		4.3 m (14 ft)	1036 m (3,400ft)	S/B SR65 746+00 to 712+00	$1,480,000	$1,027,400
		4.6 m (16 ft)	1036 m (3,400ft)	S/B SR65 746+00 to 712+00	$1,480,000	$1,541,100
D13.4	18	3.0 m (10 ft)	671 m (2,200ft)	E/B Westwood to S/B SR65 686+00 to 664+00	NF	NF
		3.6 m (12 ft)	671 m (2,200ft)	E/B Westwood to S/B SR65 686+00 to 664+00	$2,220,000	$569,800
		4.3 m (14 ft)	671 m (2,200ft)	E/B Westwood to S/B SR65 686+00 to 664+00	$2,220,000	$664,800
		4.6 m (16 ft)	671 m (2,200ft)	E/B Westwood to S/B SR65 686+00 to 664+00	$2,340,000	$997,200
D13.6	27,28	3.0 m (10 ft)	488 m (1,600ft)	N/B SR65 765+00 to 781+00	NF	NF
		3.6 m (12 ft)	488 m (1,600ft)	N/B SR65 765+00 to 781+00	NF	NF
		4.3 m (14 ft)	488 m (1,600ft)	N/B SR65 765+00 to 781+00	$2,960,000	$483,500
		4.6 m (16 ft)	488 m (1,600ft)	N/B SR65 765+00 to 781+00	$3,120,000	$725,200
D13.11	14	3.0 m (10 ft)	610 m (2,000ft)	S/B SR65 783+00 to 763+00	NF	NF
		3.6 m (12 ft)	610 m (2,000ft)	S/B SR65 783+00 to 763+00	NF	NF
		4.3 m (14 ft)	610 m (2,000ft)	S/B SR65 783+00 to 763+00	NF	NF
		4.6 m (16 ft)	610 m (2,000ft)	S/B SR65 783+00 to 763+00	NF	NF
D13.10	13	3.0 m (10 ft)	427 m	N/B SR65 833+00 to 847+00	NF	NF

Sound Wall	Recvr(s) Protected	SW Height	Length (ft)	SW Location Description	Total Reasonable Allowance	Engr's Est
			(1,400ft)			
		3.6 m (12 ft)	427 m (1,400ft)	N/B SR65 833+00 to 847+00	NF	NF
		4.3 m (14 ft)	427 m (1,400ft)	N/B SR65 833+00 to 847+00	NF	NF
		4.6 m (16 ft)	427 m (1,400ft)	N/B SR65 833+00 to 847+00	NF	NF
D13.9	11,12	3.0 m (10 ft)	2438 m (8,000ft)	N/B SR65 915+00 to 1005+00	NF	NF
		3.6 m (12 ft)	2438 m (8,000ft)	N/B SR65 915+00 to 1005+00	NF	NF
		4.3 m (14 ft)	2438 m (8,000ft)	N/B SR65 915+00 to 1005+00	NF	NF
		4.6 m (16 ft)	2438 m (8,000ft)	N/B SR65 915+00 to 1005+00	NF	NF
D13.8	7	3.0 m (10 ft)	518 m (1,700ft)	S/B SR65 1043+00 to 1060+00	NF	NF
		3.6 m (12 ft)	518 m (1,700ft)	S/B SR65 1043+00 to 1060+00	NF	NF
		4.3 m (14 ft)	518 m (1,700ft)	S/B SR65 1043+00 to 1060+00	NF	NF
		4.6 m (16 ft)	518 m (1,700ft)	S/B SR65 1043+00 to 1060+00	NF	NF
D13.5	4	3.0 m (10 ft)	945 m (3,100ft)	N/B SR65 1145+00 to 1176+00	NF	NF
		3.6 m (12 ft)	945 m (3,100ft)	N/B SR65 1145+00 to 1176+00	$35,000	$802,900
		4.3 m (14 ft)	945 m (3,100ft)	N/B SR65 1145+00 to 1176+00	$35,000	$936,800
		4.6 m (16 ft)	945 m (3,100ft)	N/B SR65 1145+00 to 1176+00	$35,000	$1,405,100
D13.12	2	3.0 m (10 ft)	1707 m (5,600ft)	W/B Riosa Rd to N/B SR65	NF	NF
		3.6 m (12 ft)	1707 m (5,600ft)	W/B Riosa Rd to N/B SR65	NF	NF
		4.3 m (14 ft)	1707 m (5,600ft)	W/B Riosa Rd to N/B SR65	NF	NF
		4.6 m (16 ft)	1707 m (5,600ft)	W/B Riosa Rd to N/B SR65	NF	NF
D13.7	1	3.0 m (10 ft)	335 m (1,100ft)	N/B SR65 1244+00 to 1255+00	NR	NR
		3.6 m (12 ft)	335 m (1,100ft)	N/B SR65 1244+00 to 1255+00	NR	NR
		4.3 m (14 ft)	335 m (1,100ft)	N/B SR65 1244+00 to 1255+00	NR	NR
		4.6 m (16 ft)	335 m (1,100ft)	N/B SR65 1244+00 to 1255+00	NR	NR

NF- Not Feasible, NR- No Receptors

Long Term Noise Impact Mitigation Measures

Under State/CEQA regulations, an evaluation must be made whether the project or proposed abatement measures result in a Significant Adverse Environmental Effect (SAEE). An SAEE may result when one or both of the following occur: 1) traffic noise impacts predicted are due to substantial noise increases or 2) the proposed noise abatement has the potential for a significant effect on a competing resource such as a designated scenic highway, historical site, endangered species etc.

When determining whether the substantial noise increase would result in an SAEE, consideration must be given to the context and intensity of the substantial increase. Context refers to the project setting and uniqueness, or sensitive nature of the noise receiver(s). Intensity refers to the project induced substantial noise increase, i.e. the increase over the "no-build" condition; it also refers to the number of residential units affected and to the absolute noise levels. Where an SAEE is incurred noise measures are considered mitigation. If the noise mitigation itself is not expected to cause an SAEE then noise mitigation will be a condition of project approval.

Table 4-18 summarizes locations considered SAEE impacted locations while Table 4-19 through Table 4-22 summarize the evaluation of noise mitigation measures. The noise mitigation itself is not considered to result in an SAEE.

Table 4-18 Noise Impacted Areas Considered a SAEE

Alternative	Noise Receiver Location(s)	No. of Impacted Residents
A5C1	NR-16a, NR-16b	29
	NR-19	54
	NR-20, NR-29	43
	NR-30	40
	NR-18	60
	NR-21	54
	NR-22, NR-23	34
	NR-31	25
AAC2	NR-15, NR-21	55
	NR-16a, NR-16b	29
	NR-19	54
	NR-20, NR-29	43
	NR-30	40
	NR-18	60
	NR-22, NR-23, NR-31	59
D1	NR-18	60
	NR-19	54
	NR-20	20
	NR-29	23
	NR-30	40
D13	NR-18	60
	NR-19	54

Alternative	Noise Receiver Location(s)	No. of Impacted Residents
	NR-20, NR-29	43
	NR-30	40
	NR-27, NR-28	50

Table 4-19 Soundwalls evaluated for Mitigation AAC2

Sound Wall	Noise Level Locations	SW Height	Length (ft)	SW Location Description	Noise Level Considered Threshold of Significance (+12 dBA)	Noise Reduction	Noise Level	Threshold of Significance Achievable
C2.5	NR-15, NR-21	3.0 m (10 ft)	1402 m (4,600 ft)	N/B SR65 to Nicolaus Off-Ramp 257+00 to 303+00	57.6	3.6	61.5	No
		3.6 m (12 ft)	1402 m (4,600 ft)	N/B SR65 to Nicolaus Off-Ramp 257+00 to 303+00		4.7	60.4	No
		4.3 m (14 ft)	1402 m (4,600 ft)	N/B SR65 to Nicolaus Off-Ramp 257+00 to 303+00		5.9	59.2	No
		4.6 m (16 ft)	1402 m (4,600 ft)	N/B SR65 to Nicolaus Off-Ramp 257+00 to 303+00		7.0	58.1	No
C2.6sb	NR-16a, NR-16b	3.0 m (10 ft)	1493 m (4,900 ft)	S/B SR65 to Venture to Nicolaus OR 303+00 to 352+00	59.8	2.0	58.4	No
		3.6 m (12 ft)	1493 m (4,900 ft)	S/B SR65 to Venture to Nicolaus OR 303+00 to 352+00		3.0	57.4	No
		4.3 m (14 ft)	1493 m (4,900 ft)	S/B SR65 to Venture to Nicolaus OR 303+00 to 352+00		3.9	56.5	No
		4.6 m (16 ft)	1493 m (4,900 ft)	S/B SR65 to Venture to Nicolaus OR 303+00 to 352+00		4.7	55.7	No
C2.6sb (alt)	NR-16a	3.0 m (10 ft)	610 m (2,000 ft)	S/B SR65 335+00 to 355+00	59.7	2.3	58.4	Yes
		3.6 m (12 ft)	610 m (2,000 ft)	S/B SR65 335+00 to 355+00		3.4	57.3	Yes
		4.3 m (14 ft)	610 m (2,000 ft)	S/B SR65 335+00 to 355+00		4.4	56.3	Yes
		4.6 m (16 ft)	610 m (2,000 ft)	S/B SR65 335+00 to 355+00		5.3	55.4	Yes
C2.4	NR-18	3.0 m	671 m	E/B SR65	66.4	4.6	65.4	Yes

Sound Wall	Noise Level Locations	SW Height	Length (ft)	SW Location Description	Noise Level Considered Threshold of Significance (+12 dBA)	Noise Reduction	Noise Level	Threshold of Significance Achievable
		(10 ft)	(2,200 ft)	Westwodd to S/B SR65 187+00 to 165+00				
		3.6 m (12 ft)	671 m (2,200 ft)	E/B SR65 Westwodd to S/B SR65 187+00 to 165+00		5.7	64.3	Yes
		4.3 m (14 ft)	671 m (2,200 ft)	E/B SR65 Westwodd to S/B SR65 187+00 to 165+00		6.8	63.2	Yes
		4.6 m (16 ft)	671 m (2,200 ft)	E/B SR65 Westwodd to S/B SR65 187+00 to 165+00		7.7	62.3	Yes
C2.1	NR-19	3.0 m (10 ft)	671 m (2,200 ft)	N/B SR65 to Westwood Off-Ramp 165+00 to 187+00	66.6	2.9	63.0	Yes
		3.6 m (12 ft)	671 m (2,200 ft)	N/B SR65 to Westwood Off-Ramp 165+00 to 187+00		3.8	62.1	Yes
		4.3 m (14 ft)	671 m (2,200 ft)	N/B SR65 to Westwood Off-Ramp 165+00 to 187+00		4.7	61.2	Yes
		4.6 m (16 ft)	671 m (2,200 ft)	N/B SR65 to Westwood Off-Ramp 165+00 to 187+00		5.6	60.3	Yes
C2.2	NR-20,NR-29	3.0 m (10 ft)	1859 m (6,100 ft)	W/B Westwood to N/B SR65 187+00 to 248+00	55.4	4.8	65.2	No
		3.6 m (12 ft)	1859 m (6,100 ft)	W/B Westwood to N/B SR65 187+00 to 248+00		6.0	64.0	No
		4.3 m (14 ft)	1859 m (6,100 ft)	W/B Westwood to N/B SR65 187+00 to 248+00		6.7	63.3	No
		4.6 m (16 ft)	1859 m (6,100 ft)	W/B Westwood to N/B SR65 187+00 to 248+00		8.0	62.0	No
C2.7	NR-	3.0 m	1311 m	E/B Nicolaus to	60.7	3.2	62.2	No

Sound Wall	Noise Level Locations	SW Height	Length (ft)	SW Location Description	Noise Level Considered Threshold of Significance (+12 dBA)	Noise Reduction	Noise Level	Threshold of Significance Achievable
	22,23,31	(10 ft)	(4,300 ft)	S/B SR65 303+00 to 260+00				
		3.6 m (12 ft)	1311 m (4,300 ft)	E/B Nicolaus to S/B SR65 303+00 to 260+00		4.0	61.4	No
		4.3 m (14 ft)	1311 m (4,300 ft)	E/B Nicolaus to S/B SR65 303+00 to 260+00		4.7	60.7	Yes
		4.6 m (16 ft)	1311 m (4,300 ft)	E/B Nicolaus to S/B SR65 303+00 to 260+00		5.3	60.1	Yes
C2.3	NR-30	3.0 m (10 ft)	975 m (3,200 ft)	S/B SR65 248+00 to 216+00	55.4	4.9	63.8	No
		3.6 m (12 ft)	975 m (3,200 ft)	S/B SR65 248+00 to 216+00		6.5	62.2	No
		4.3 m (14 ft)	975 m (3,200 ft)	S/B SR65 248+00 to 216+00		7.9	60.8	No
		4.6 m (16 ft)	975 m (3,200 ft)	S/B SR65 248+00 to 216+00		9.1	59.6	No

Table 4-20 Soundwalls evaluated for Mitigation A5C1

Sound Wall	Noise Level Locations	SW Height	Length (ft)	SW Location Description	Noise Level Considered Threshold of Significance (+12 dBA)	Noise Reduction	Noise Level	Threshold of Significance Achievable
C1.6	NR-16a NR-16b	3.0 m (10 ft)	1707 m (5,600ft)	S/B SR65 to Nicolaus Off-Ramp 356+00 to 300+00	59.8	3.9	62.2	No
		3.6 m (12 ft)	1707 m (5,600ft)	S/B SR65 to Nicolaus Off-Ramp 356+00 to 300+00		5.0	61.1	No
		4.3 m (14 ft)	1707 m (5,600ft)	S/B SR65 to Nicolaus Off-Ramp 356+00 to 300+00		6.3	59.8	Yes
		4.6 m (16 ft)	1707 m (5,600ft)	S/B SR65 to Nicolaus Off-Ramp 356+00 to 300+00		7.3	58.8	Yes
C1.4	NR-18	3.0 m (10 ft)	671 m (2,200ft)	E/B Westwood to S/B SR65 185+00 to 163+00	66.4	4.8	65.6	Yes
		3.6 m (12 ft)	671 m (2,200ft)	E/B Westwood to S/B SR65 185+00 to		5.8	64.6	Yes

Sound Wall	Noise Level Locations	SW Height	Length (ft)	SW Location Description	Noise Level Considered Threshold of Significance (+12 dBA)	Noise Reduction	Noise Level	Threshold of Significance Achievable
				163+00				
		4.3 m (14 ft)	671 m (2,200ft)	E/B Westwood to S/B SR65 185+00 to 163+00		6.9	63.5	Yes
		4.6 m (16 ft)	671 m (2,200ft)	E/B Westwood to S/B SR65 185+00 to 163+00		7.8	62.6	Yes
C1.1	NR-19	3.0 m (10 ft)	671 m (2,200ft)	N/B SR65 to Westwood Off-Ramp 163+00 to 185+00	66.6	3.0	63.6	Yes
		3.6 m (12 ft)	671 m (2,200ft)	N/B SR65 to Westwood Off-Ramp 163+00 to 185+00		3.9	62.7	Yes
		4.3 m (14 ft)	671 m (2,200ft)	N/B SR65 to Westwood Off-Ramp 163+00 to 185+00		4.6	62.0	Yes
		4.6 m (16 ft)	671 m (2,200ft)	N/B SR65 to Westwood Off-Ramp 163+00 to 185+00		5.2	61.4	Yes
C1.2	NR-20,NR-29	3.0 m (10 ft)	1859 m (6,100ft)	W/B Westwood to N/B SR65 185+00 to 246+00	55.4	5.1	65.6	No
		3.6 m (12 ft)	1859 m (6,100ft)	W/B Westwood to N/B SR65 185+00 to 246+00		6.4	64.4	No
		4.3 m (14 ft)	1859 m (6,100ft)	W/B Westwood to N/B SR65 185+00 to 246+00		7.3	63.5	No
		4.6 m (16 ft)	1859 m (6,100ft)	W/B Westwood to N/B SR65 185+00 to 246+00		8.5	62.3	No
C1.5	NR-21	3.0 m (10 ft)	1097 m (3,600 ft)	N/B SR65 to Nicolaus Off-Ramp 253+00 to 289+00	57.6	5.3	68.6	No
		3.6 m (12 ft)	1097 m (3,600 ft)	N/B SR65 to Nicolaus Off-Ramp 253+00 to 289+00		6.5	67.4	No
		4.3 m (14 ft)	1097 m (3,600 ft)	N/B SR65 to Nicolaus Off-Ramp 253+00 to 289+00		7.8	66.1	No
		4.6 m (16 ft)	1097 m (3,600 ft)	N/B SR65 to Nicolaus Off-Ramp 253+00 to 289+00		9.4	64.5	No
C1.7a	NR-22, NR-23	3.0 m (10 ft)	396 m (1,300ft)	Nicolaus to S/B SR65 300+00 to 287+00	62.3	5.0	67.4	No
		3.6 m (12 ft)	396 m (1,300ft)	Nicolaus to S/B SR65 300+00 to 287+00		7.0	65.4	No
		4.3 m	396 m	Nicolaus to S/B SR65		8.3	64.1	No

Sound Wall	Noise Level Locations	SW Height	Length (ft)	SW Location Description	Noise Level Considered Threshold of Significance (+12 dBA)	Noise Reduction	Noise Level	Threshold of Significance Achievable
		(14 ft)	(1,300ft)	300+00 to 287+00				
		4.6 m (16 ft)	396 m (1,300ft)	Nicolaus to S/B SR65 300+00 to 287+00		9.3	63.1	No
C1.3	NR-30	3.0 m (10 ft)	853 m (2,800ft)	S/B SR65 246+00 to 218+00	55.4	6.3	64.4	No
		3.6 m (12 ft)	853 m (2,800ft)	S/B SR65 246+00 to 218+00		8.0	62.7	No
		4.3 m (14 ft)	853 m (2,800ft)	S/B SR65 246+00 to 218+00		9.5	61.2	No
		4.6 m (16 ft)	853 m (2,800ft)	S/B SR65 246+00 to 218+00		10.8	59.9	No
C1.7b	NR-31	3.0 m (10 ft)	518 m (1,700ft)	S/B SR65 275+00 to 258+00	57.6	4.7	63.9	No
		3.6 m (12 ft)	518 m (1,700ft)	S/B SR65 275+00 to 258+00		5.7	62.9	No
		4.3 m (14 ft)	518 m (1,700ft)	S/B SR65 275+00 to 258+00		6.8	61.8	No
		4.6 m (16 ft)	518 m (1,700ft)	S/B SR65 275+00 to 258+00		8	60.6	No

Table 4-21 Soundwalls evaluated for Mitigation D1

Sound Wall	Noise Level Locations	SW Height	Length (ft)	SW Location Description	Noise Level Considered Threshold of Significance (+12 dBA)	Noise Reduction	Noise Level	Threshold of Significance Achievable
D1.4	NR-18	3.0 m (10 ft)	671 m (2,200 ft)	E/B Westwood to S/B SR65 190+00 to 168+00	54.4	4.8	60.9	No
		3.6 m (12 ft)	671 m (2,200 ft)	E/B Westwood to S/B SR65 190+00 to 168+00		5.7	60.0	No
		4.3 m (14 ft)	671 m (2,200 ft)	E/B Westwood to S/B SR65 190+00 to 168+00		6.6	59.1	No
		4.6 m (16 ft)	671 m (2,200 ft)	E/B Westwood to S/B SR65 190+00 to 168+00		7.4	58.3	No
D1.1	NR-19	3.0 m (10 ft)	671 m (2,200 ft)	N/B SR65 to Westwood Off-Ramp 168+00 to 190+00	54.4	6.5	67.2	No
		3.6 m (12 ft)	671 m (2,200 ft)	N/B SR65 to Westwood Off-Ramp 168+00 to 190+00		7.8	65.9	No
		4.3 m	671 m	N/B SR65 to		9.1	64.6	No

Sound Wall	Noise Level Locations	SW Height	Length (ft)	SW Location Description	Noise Level Considered Threshold of Significance (+12 dBA)	Noise Reduction	Noise Level	Threshold of Significance Achievable
		(14 ft)	(2,200 ft)	Westwood Off-Ramp 168+00 to 190+00				
		4.6 m (16 ft)	671 m (2,200 ft)	N/B SR65 to Westwood Off-Ramp 168+00 to 190+00		10.4	63.3	No
D1.2a	NR-20	3.0 m (10 ft)	610 m (2,000 ft)	W/B Westwood to N/B SR65 190+00 to 210+00	55.4	3.7	55.4	Yes
		3.6 m (12 ft)	610 m (2,000 ft)	W/B Westwood to N/B SR65 190+00 to 210+00		4.1	55.0	Yes
		4.3 m (14 ft)	610 m (2,000 ft)	W/B Westwood to N/B SR65 190+00 to 210+00		4.5	54.6	Yes
		4.6 m (16 ft)	610 m (2,000 ft)	W/B Westwood to N/B SR65 190+00 to 210+00		4.7	54.4	Yes
D1.2b	NR-29	3.0 m (10 ft)	610 m (2,000 ft)	N/B SR65 220+00 to 240+00	55.4	3.9	64.0	No
		3.6 m (12 ft)	610 m (2,000 ft)	N/B SR65 220+00 to 240+00		5.3	62.6	No
		4.3 m (14 ft)	610 m (2,000 ft)	N/B SR65 220+00 to 240+00		6.5	61.4	No
		4.6 m (16 ft)	610 m (2,000 ft)	N/B SR65 220+00 to 240+00		7.6	60.3	No
D1.3	NR-30	3.0 m (10 ft)	610 m (2,000 ft)	S/B SR65 240+00 to 220+00	55.4	5.1	64.0	No
		3.6 m (12 ft)	610 m (2,000 ft)	S/B SR65 240+00 to 220+00		6.4	62.7	No
		4.3 m (14 ft)	610 m (2,000 ft)	S/B SR65 240+00 to 220+00		7.7	61.4	No
		4.6 m (16 ft)	610 m (2,000 ft)	S/B SR65 240+00 to 220+00		8.8	60.3	No

Table 4-22 Soundwalls evaluated for Mitigation D13

Sound Wall	Noise Level Locations	SW Height	Length (ft)	SW Location Description	Noise Level Considered Threshold of Significance (+12 dBA)	Noise Reduction	Noise Level	Threshold of Significance Achievable
D13.6	NR-27, NR-28	3.0 m (10 ft)	488 m (1,600 ft)	N/B SR65 765+00 to 781+00	55.4	4.4	65.4	No
		3.6 m (12 ft)	488 m (1,600 ft)	N/B SR65 765+00 to 781+00		5.4	64.4	No
		4.3 m	488 m	N/B SR65 765+00 to		6.8	63.0	No

Sound Wall	Noise Level Locations	SW Height	Length (ft)	SW Location Description	Noise Level Considered Threshold of Significance (+12 dBA)	Noise Reduction	Noise Level	Threshold of Significance Achievable
		(14 ft)	(1,600 ft)	781+00				
		4.6 m (16 ft)	488 m (1,600 ft)	N/B SR65 765+00 to 781+00		8.0	61.8	No
D13.4	NR-18	3.0 m (10 ft)	671 m (2,200 ft)	E/B Westwood to S/B SR65 686+00 to 664+00	66.4	3.4	66.1	Yes
		3.6 m (12 ft)	671 m (2,200 ft)	E/B Westwood to S/B SR65 686+00 to 664+00		4.6	64.9	Yes
		4.3 m (14 ft)	671 m (2,200 ft)	E/B Westwood to S/B SR65 686+00 to 664+00		5.7	63.8	Yes
		4.6 m (16 ft)	671 m (2,200 ft)	E/B Westwood to S/B SR65 686+00 to 664+00		6.6	62.9	Yes
D13.1	NR-19	3.0 m (10 ft)	671 m (2,200 ft)	N/B SR65 to Westwood Off-Ramp 664+00 to 686+00	66.4	4.0	64.0	Yes
		3.6 m (12 ft)	671 m (2,200 ft)	N/B SR65 to Westwood Off-Ramp 664+00 to 686+00		4.6	63.4	Yes
		4.3 m (14 ft)	671 m (2,200 ft)	N/B SR65 to Westwood Off-Ramp 664+00 to 686+00		5.8	62.2	Yes
		4.6 m (16 ft)	671 m (2,200 ft)	N/B SR65 to Westwood Off-Ramp 664+00 to 686+00		6.7	61.3	Yes
D13.2	NR-20, NR-29	3.0 m (10 ft)	1859 m (6,100 ft)	W/B Westwood to N/B SR65 686+00 to 747+00	54.4	3.0	61.5	No
		3.6 m (12 ft)	1859 m (6,100 ft)	W/B Westwood to N/B SR65 686+00 to 747+00		4.3	60.2	No
		4.3 m (14 ft)	1859 m (6,100 ft)	W/B Westwood to N/B SR65 686+00 to 747+00		5.1	59.1	No
		4.6 m (16 ft)	1859 m (6,100 ft)	W/B Westwood to N/B SR65 686+00 to 747+00		6.3	58.2	No
D13.3	NR-30	3.0 m (10 ft)	1036 m (3,400 ft)	S/B SR65 746+00 to 712+00	55.4	3.6	64.2	No
		3.6 m (12 ft)	1036 m (3,400 ft)	S/B SR65 746+00 to 712+00		4.9	62.9	No
		4.3 m (14 ft)	1036 m (3,400 ft)	S/B SR65 746+00 to 712+00		6.0	61.8	No
		4.6 m (16 ft)	1036 m (3,400 ft)	S/B SR65 746+00 to 712+00		6.9	60.9	No

4.6.3 Preliminary Noise Abatement/Mitigation Decision (Soundwall Descriptions)

Based on the studies completed so far, the Department intends to incorporate noise mitigation measures in the form of sound walls at the locations indicated in Table 4-23. Calculations based on preliminary design data indicated that the barriers would reduce noise levels 5 dBA to 11 dBA. If during final design conditions have substantially changed, noise barriers might not be provided. The final decision of the noise barriers will be made upon completion of the project design and the public involvement process.

Table 4-23 Proposed Soundwalls

Alignment	Sound Wall	Height (ft)	Length (ft)	SW Location Description	SW Proposed as Mitigation or Abatement
A5C1	C1.1	4.3 m (14 ft)	671 m (2,200 ft)	N/B SR65 to Westwood Off-Ramp 163+00 to 185+00	Mitigation
	C1.2	4.3 m (16 ft)	1859 m (6,100 ft)	W/B Westwood to N/B SR65 185+00 to 246+00	Mitigation
	C1.3	4.3 m (16 ft)	853 m (2,800 ft)	S/B SR65 246+00 to 218+00	Mitigation
	C1.4	4.3 m (14 ft)	671 m (2,200 ft)	E/B Westwood to S/B SR65 185+00 to 163+00	Mitigation
	C1.5	4.6 m (16 ft)	1097 m (3,600 ft)	N/B SR65 253+00 to 289+00	Mitigation
	C1.6	4.6 m (14 ft)	1707 m (5,600 ft)	S/B SR65 to Nicolaus Off-Ramp 356+00 to 300+00	Mitigation
	C1.7a	4.6 m (16 ft)	396 m (1,300 ft)	Nicolaus to S/B SR65 300+00 to 287+00	Mitigation
	C1.7b	4.6 m (16 ft)	518 m (1,700 ft)	S/B SR65 275+00 to 258+00	Mitigation
AAC2	C2.1	4.3 m (14 ft)	671 m (2,200 ft)	N/B SR65 to Westwood Off-Ramp 165+00 to 187+00	Mitigation
	C2.2	4.3 m (16 ft)	1859 m (6,100 ft)	W/B Westwood to N/B SR65 187+00 to 248+00	Mitigation
	C2.3	4.3 m (16 ft)	975 m (3,200 ft)	S/B SR65 248+00 to 216+00	Mitigation
	C2.4	4.3 m (14 ft)	671 m (2,200 ft)	E/B SR65 Westwood to S/B SR65 187+00 to 165+00	Mitigation
	C2.5	4.6 m (16 ft)	1402 m (4,600 ft)	N/B SR65 to Nicolaus Off-Ramp 257+00 to 303+00	Mitigation
	C2.6sb(alt)	4.6 m (16 ft)	610 m (2,000 ft)	S/B SR65 335+00 to 355+00	Mitigation
	C2.7	4.6 m (16 ft)	1311 m (4,300 ft)	E/B Nicolaus to S/B SR65 303+00 to 260+00	Mitigation

Alignment	Sound Wall	Height (ft)	Length (ft)	SW Location Description	SW Proposed as Mitigation or Abatement
D1	D1.1	4.3 m (16 ft)	671 m (2,200 ft)	N/B SR65 to Westwood Off-Ramp 168+00 to 190+00	Mitigation
	D1.2a	4.3 m (14 ft)	610 m (2,000 ft)	W/B Westwood to N/B SR65 190+00 to 210+00	Mitigation
	D1.2b	4.3 m (16 ft)	610 m (2,000 ft)	N/B SR65 220+00 to 240+00	Mitigation
	D1.3	4.3 m (16 ft)	610 m (2,000 ft)	S/B SR65 240+00 to 220+00	Mitigation
	D1.4	4.3 m (16 ft)	671 m (2,200 ft)	E/B Westwood to S/B SR65 190+00 to 168+00	Mitigation
	D1.6	4.6 m (16 ft)	823 m (2,700 ft)	N/B65 322+00 to 349+00	Abatement
D13	D13.1	4.3 m (14 ft)	671 m (2,200 ft)	N/B SR65 to Westwood Off-Ramp 664+00 to 686+00	Mitigation
	D13.2	4.6 m (16 ft)	1859 m (6,100 ft)	W/B Westwood to N/B SR65 686+00 to 747+00	Mitigation
	D13.3	4.6 m (16 ft)	1036 m (3,400 ft)	S/B SR65 746+00 to 712+00	Mitigation
	D13.4	4.3 m (14 ft)	671 m (2,200 ft)	E/B Westwood to S/B SR65 686+00 to 664+00	Mitigation
	D13.6	4.6 m (16 ft)	518 m (1,700 ft)	N/B SR65 765+00 to 781+00	Mitigation

4.6.4 Construction Noise Impacts

Short-term impacts resulting from construction are considered significant under the following conditions;

- Hourly average construction noise levels exceeding 60 dBA during the daytime or 55 dBA during the nighttime outside of a residence and
- Bypass noise levels exceeding existing ambient noise levels.

Two types of short-term noise impacts would occur during construction of the project. First, construction crew commutes and the transport of construction equipment and materials to the project site would incrementally increase noise levels on access roads leading to the site. The pieces of heavy equipment for grading and construction activities will be moved on site, will remain for the duration of each construction phase and will not add to the daily traffic volume. When added to the current traffic volumes along SR 65 and Main Street, the projected volume of construction traffic will be small and its associated long-term noise level change will not be perceptible. However, there will be a relatively high single event noise exposure potential with passing trucks at a maximum level of 87 dBA L_{max} at 15.24 m (50 ft).

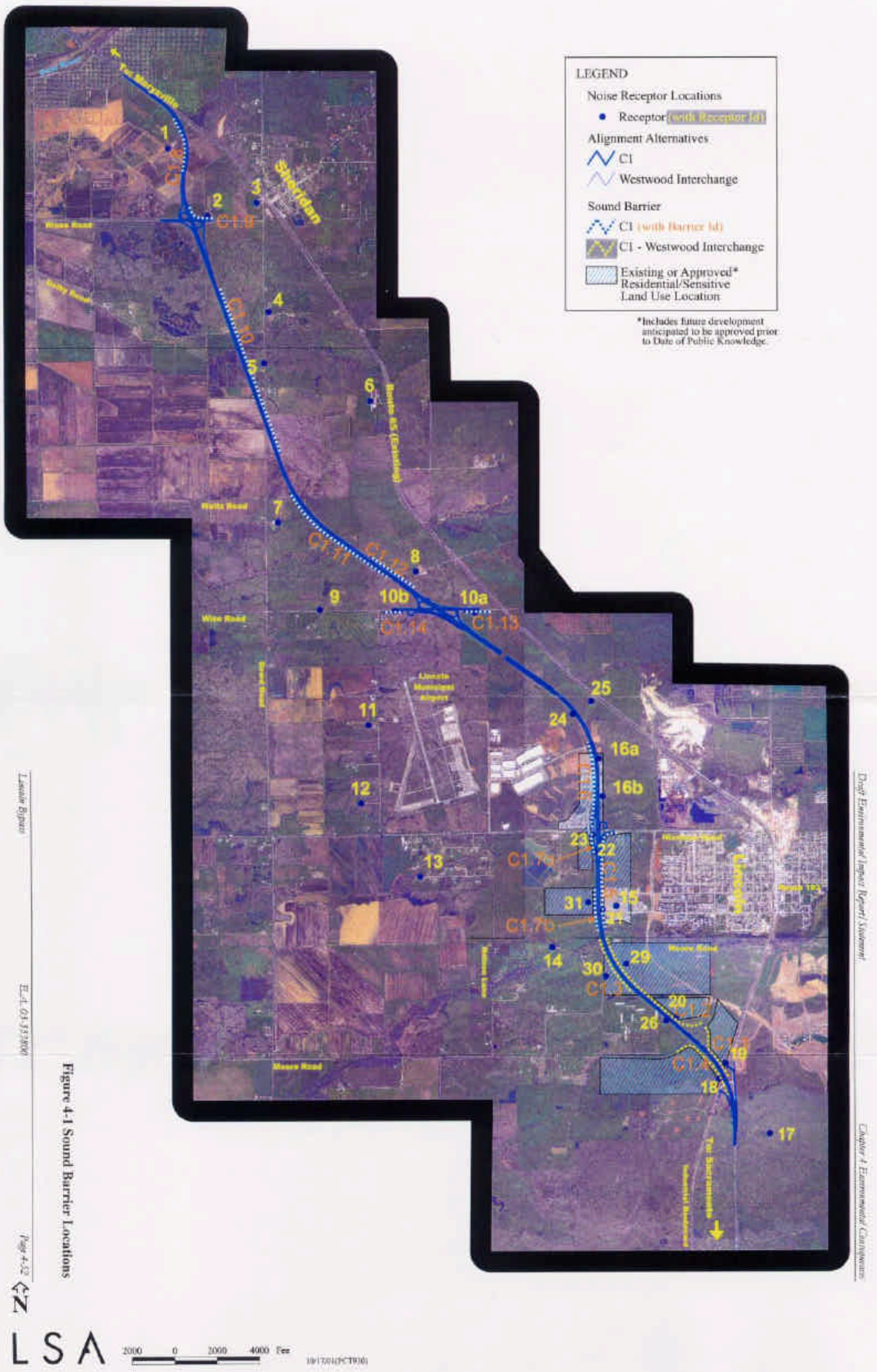
The second type of short-term noise impact is related to noise generated during excavation, grading and building erection on the project site. Construction of the proposed project is expected to require the use of earthmovers, bulldozers, water and pickup trucks. Noise typically associated with the use of construction equipment is estimated between 79 and 89 dBA at a distance of 50 feet from the project site for the grading phase.

To minimize the construction noise impact for existing residences adjacent to the project site, noisy construction activity will be limited to the standard hours of 7:00 a.m. to 7:00 p.m. Later phases of construction, such as the pouring of concrete into forms, typically involve smaller and quieter pieces of equipment.

Construction noise impact abatement

Initial construction has the potential to create noise impacts at the homes located along SR 65 and mitigation is warranted to reduce these impacts to the extent feasible. Implementation of these measures would reduce construction noise impacts. Applicable mitigation includes the following:

- Standard practice requires that construction be restricted to between the hours of 7:00 a.m. and 7:00 p.m. (8:00 a.m. and 7:00 p.m. on Saturdays) and not permitted on Sundays and Federal holidays.
- All construction equipment must conform to the provisions of the Department Standard Specifications, Section 7-10/I; "Sound Control Requirements." This section requires the contractor to comply with all local ordinances (i.e., City of Lincoln and Placer County) that apply to any work as part of the contract.
- Portable equipment should be located as far as possible from noise sensitive locations as is feasible.
- Construction vehicle staging areas and equipment maintenance areas should be located as far as possible from sensitive receptor locations.


LEGEND
Noise Receptor Locations
Receptor (with Receptor Id)
Alignment Alternatives
C1
Westwood Interchange
Sound Barrier
C1 (with Barrier Id)
C1 - Westwood Interchange
Existing or Approved* Residential/Sensitive Land Use Location
*Includes future development anticipated to be approved prior to Date of Public Knowledge.
To Marysville
To Sacramento
Sheridan
Lincoln
Lincoln Municipal Airport
Sunset Road
Moore Road
Wise Road
Nelis Road
Dotty Road
Route 65 (existing)
Route 193
C1.1
C1.2
C1.3
C1.4
C1.5
C1.6
C1.7a
C1.7b
C1.8
C1.9
C1.10
C1.11
C1.12
C1.13
C1.14
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LSA
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Page 4-32
Lincoln Bypass
E-4 03-333000
Figure 4-1 Sound Barrier Locations
Draft Environmental Impact Report/Statement
Chapter 4 Environmental Consequences

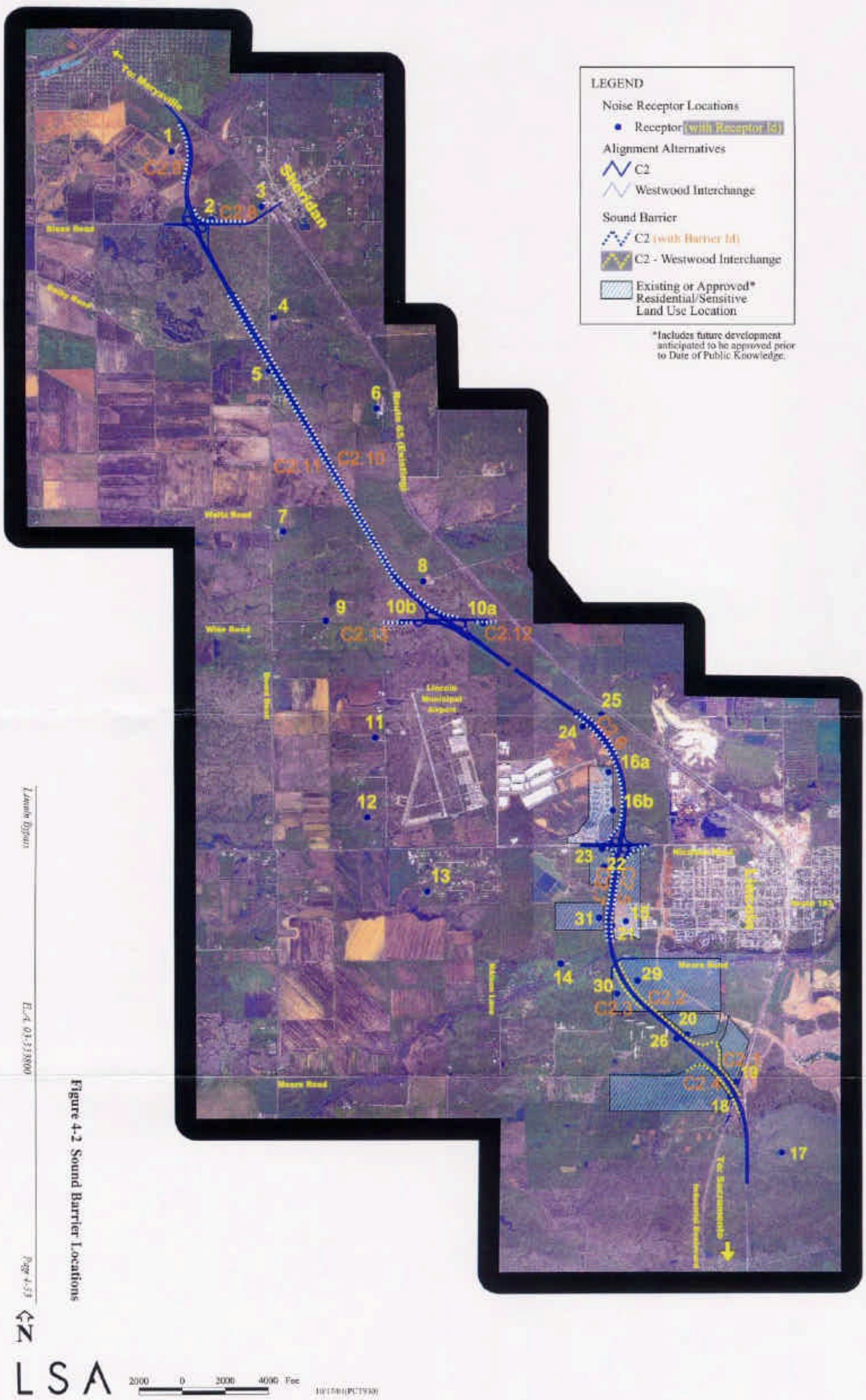


Figure 4-2 Sound Barrier Locations

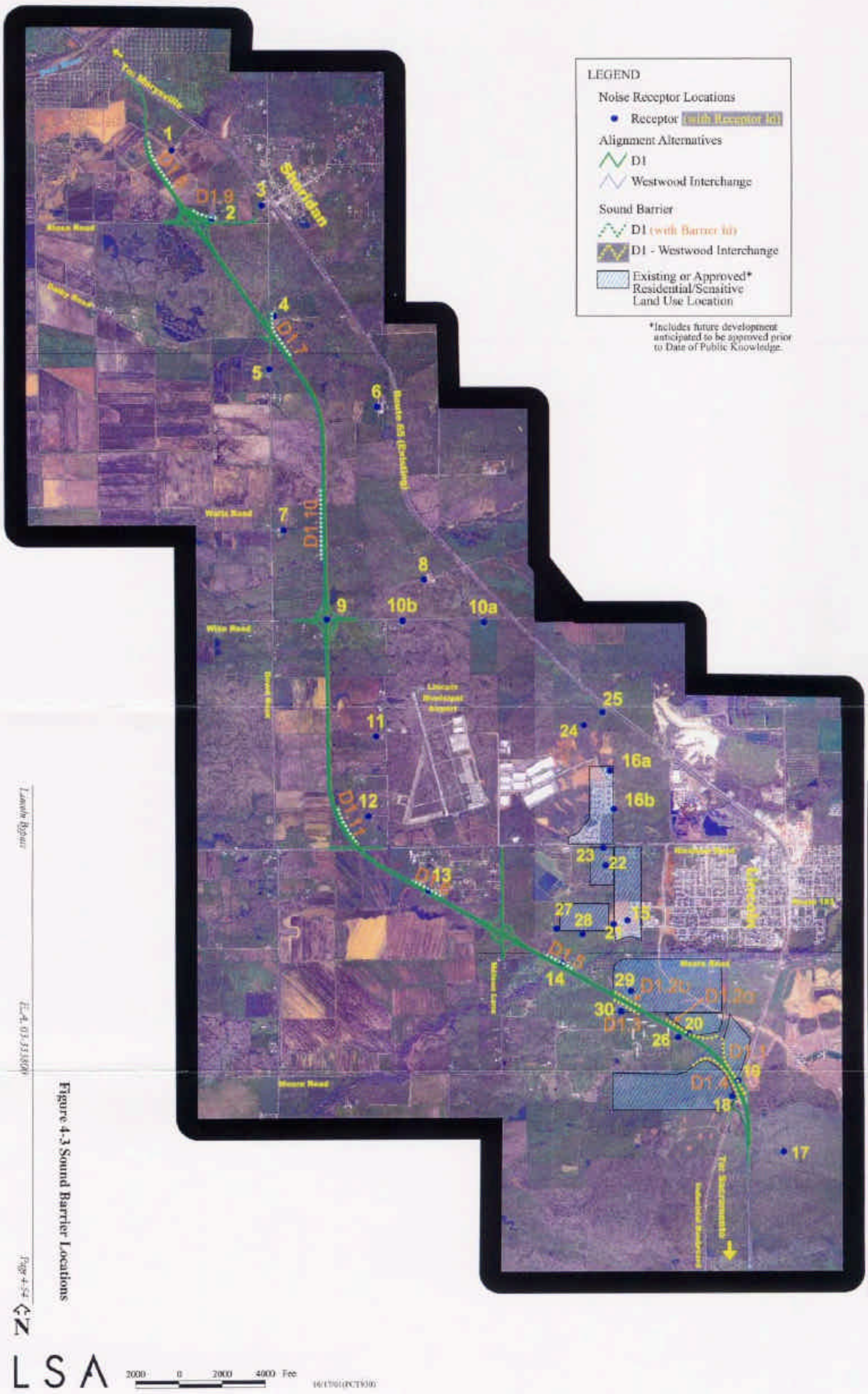


Figure 4-3 Sound Barrier Locations

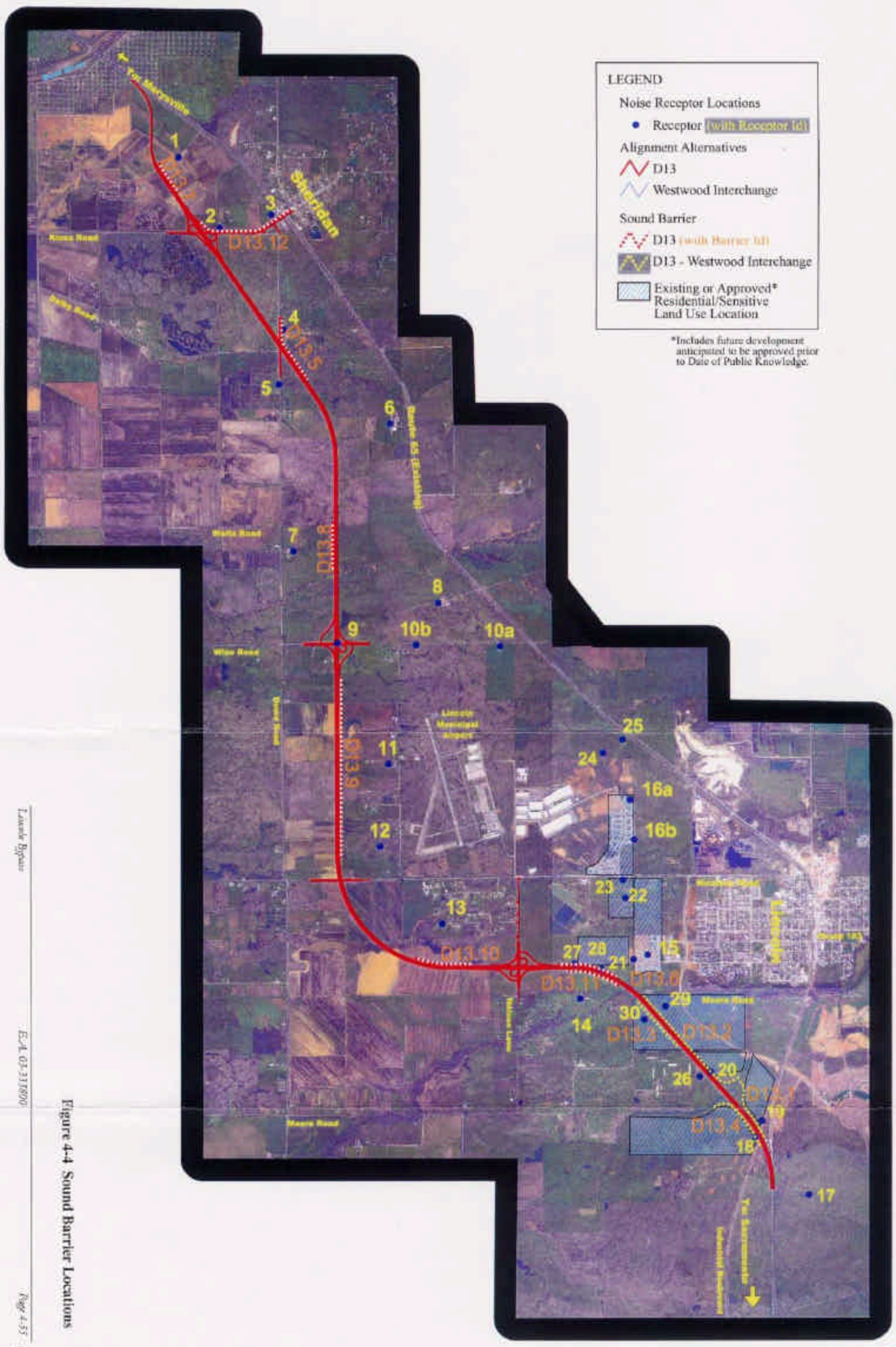


Figure 6f

Modeled Sound Barrier Locations for Alternative D13

LSA

2000 0 2000 4000 Feet

N

(6/10/01)(PCT930)

4.7 WATER QUALITY

This section summarizes the Water Quality Assessment Report, which documents which streams, lakes, rivers and other receiving waters could be affected by this project and the potential impacts on those waters by the construction and maintenance of each alternative. In addition, this section evaluates the project for compliance with the Sole Source Aquifer (SSA) program and the Drinking Water Source Assessment and Protection (DWSAP) program.

Other regulatory requirements discussed below are the ACOE Section 404 permit, the California Department of Fish and Game 1601 Agreement, and the California Regional Water Quality Control Board Section 401 water quality certification and the National Pollution Discharge Elimination System (NPDES) permit.

In Section 4.9, Natural Resources, the impacts of the project on water quality are discussed as they pertain to the natural resources and protected species.

Potential impacts for this project can be divided into those associated with short-term construction activities and long-term operations and maintenance activities. The construction activities discussed below would apply to all of the build alternatives, while the operation activities would apply to all the "build" and "no build" alternatives.

4.7.1 Regulatory Requirements

The National Pollution Discharge Elimination System (NPDES) was established by the EPA and implemented by the states Regional Water Quality Control Boards. The Department's currently has a statewide permit for the NPDES program. The Department's has developed a State Storm Water Management Plan (SWMP) designed to reduce the discharge of pollutants associated with storm water and non-storm water to the maximum extent practicable. The SWMP describes how the Department's will comply with NPDES requirements through the application of various Best Management Practices (BMP). BMP include those practices that provide pollution control benefit, are feasible to implement and meet legal and legislative funding restraints (Camp, Dresser & McKee 1999).

In addition to BMP the SWMP requires a Storm Water Pollution Prevention Plan (SWPPP) for projects where the impacts are greater than 2 ha (5 ac). The SWPPP requires that pollution sources be identified and also identifies and commits to implementing storm water pollution prevention measures to reduce pollutants in storm water discharges from construction sites both during construction and after construction has been completed.

Other regulatory/permit requirements are the ACOE Section 404 permit, the California Department of Fish and Game Section 1601 Stream Bed Alteration Agreement and the California Regional Water Quality Control Board Section 401 water quality certification. These requirements are discussed in more depth in the Natural Resources section. Measures to comply with permit requirements as they pertain to water quality are discussed below.

4.7.2 Impacts On Sole Source Aquifers Or Well Head Protection Areas

To help prevent groundwater contamination, the EPA has established the Sole Source Aquifer (SSA) program. The SSA program was established to increase public awareness of groundwater resources and help prevent contamination of aquifers that are the only available local or regional source of drinking water and supply more than 50 percent of a community's drinking water. The EPA web site listing the SSA in California was consulted and showed no sole source aquifer in Placer County (EPA, 1999).

The State of California Department of Health Services (DHS) recently developed the Drinking Water Source Assessment and Protection Program (DWSAP) program to help protect drinking water wells from contamination. All public water supply wells used for domestic purposes will be subject to the DWSAP. This program evaluates individual wells' susceptibility for potential contamination caused by existing conditions (e.g., underground tanks, septic systems, etc.), and provides guidelines to evaluate the potential impacts of proposed projects such as the Lincoln Bypass.

4.7.3 Groundwater Impacts

The only penetration into the water table that would be anticipated as part of any build alternatives would be support piles and footings for bridges and structures. These minor and isolated intrusions are not expected to impact the quality of groundwater.

Wells within the proposed right-of-way will be treated in accordance with the requirements set forth in the Highway Design Manual (Caltrans 1992) and other California codes. Municipal wells are required to have wellhead protection areas delineated under the State of California Department of Health Services DWSAP program. These protection areas can be delineated in a site-specific manner or in a more general calculated fixed radius (CFR) method. Until the City of Lincoln completes their delineation, the CFR minimum distances should be considered in the design: 183 m (600 ft) for Zone A (microbiological), 305 m (1,000 ft) for Zone B5 (chemical), and 457 m (1,500 ft) for Zone B10 (chemical). The final delineation of the wellhead protection areas is anticipated to be complete before the Department’s completes designing the preferred alternative.

If any wells are affected by the project, then additional municipal wells may need to be provided for the water supply for the City of Lincoln. This is not expected to impact the quality of ground water.

Impacts to groundwater for all of the alternatives are less than substantial. The remainder of this water quality section focuses on surface water quality impacts.

4.7.4 Construction Impacts

Suspended material caused by erosion in storm water runoff is considered by the Department as a pollutant of primary importance. Project construction activities such as grading and vegetation removal would result in soil and ground disturbances, creating loose or unprotected soil that could be transported by surface runoff or wind to nearby watercourses. Such increases in sediment and turbidity could adversely affect receiving water quality. These impacts have the potential to occur for the duration of construction activities. Beneficial uses that could be affected include REC-1, REC-2, WARM, COLD, WILD, MIGR and SPWN[1].

The following construction activities would be part of any of the build alternatives, and may contribute to increases in sediment, turbidity, and floating materials to receiving waters:

- **Daily contractor activity** - Routine construction activities such as material delivery, storage and usage, waste management, vehicle/equipment cleaning and operation and use of a construction staging area could result in generation of dust, sediments and debris.
- **Vegetation removal/trimming** - Removal or trimming of vegetation would be required for both construction and access. This activity would eliminate the groundcover that protects the topsoil. Exposed topsoil would be more susceptible to erosion. Additionally, trimmings could fall or be carried by runoff into surface waters, resulting in introduction of floating material and the potential for increased organic loading to the creeks.
- **Grading** - Grading would include removal of the natural and/or stabilizing cover (topsoil) and the creation of engineered slopes using fill material. Prior to establishment of temporary or permanent erosion control measures, graded material would be highly susceptible to erosion.

[1] The beneficial uses for the two watersheds are: MUN = Municipal, AGR I = Agricultural Irrigation, AGR S = Ag. Stock Watering, POW = Industry Power, REC-1 = Recreation Contact, REC-2 = Other Non-Contact Recreation, WARM = Freshwater Habitat Warm, COLD = Freshwater Habitat Cold, MIGR(W) = Migration Warm, MIGR(C) = Migration Cold, SPWN(W) = Spawning Warm, SPWN(C) = Spawning Cold, and WILD = Wildlife Habitat.

- **Temporary roads** - Construction of temporary roads would require grading, vegetation removal and other changes to the topography and drainage characteristics of the watershed. These temporary roads are typically composed of native material and/or aggregate base rock.
- **Activities within the creek corridor** - Construction of culverts, bridges and viaducts require an extensive presence in stream corridors. These activities may also require construction of temporary access roads; temporary cofferdams and/or jetties to re-route the watercourses.
- **De-watering** - Construction may require localized de-watering in areas of shallow groundwater. De-watering activities would be continuous but temporary for the duration of work in a particular area. Discharged groundwater may be high in turbidity.
- **Construction of temporary structures** - To support construction equipment, laborers and construction forms, it would be necessary to erect falsework. Falsework is typically constructed of wood and metal connectors. Although the majority of woodcutting would take place outside of the stream corridors, some woodcutting would be necessary as the falsework is erected. This woodcutting could introduce sawdust to surface waters. Disassembly of the falsework may result in small pieces of wood, nails and metal cuttings entering creeks.
- **Seeding and application of fertilizers and nutrients** - To prepare the ground for temporary and/or permanent cover and promote better growth, fertilizers and plant nutrients may be applied before and after planting. In the early stages of the seeding process, surface runoff could wash some of the re-vegetation material, fertilizers, nutrients and seeds into surface waters.

Mitigation of Construction impacts due to erosion

To address these potential water quality impacts, the Department would require the contractor to use a combination of Best Management Practices (BMP) during construction through the Plans, Specification and Estimates (PS&E) documents. the Department would include special provisions in the PS&E for this project requiring the contractor to prepare and implement a Storm Water Pollution Prevention Plan (SWPPP), and other project specific Standard Special Provisions (SSP).

The purpose of the BMP is to stabilize disturbed soil, to minimize erosion and to capture and remove sediment suspended in runoff before the runoff leaves the site. These measures would provide a high degree of protection to the local receiving waters from discharge of sediment during construction. With the implementation of the Department's

standard practices and procedures, all of the build alternatives would have less than substantial impacts from construction induced erosion.

4.7.5 Construction impacts from Oil, Greases, and Chemical Contamination

Construction activities may introduce chemicals, oils and greases that could be carried by surface runoff to surface water if not properly managed. These impacts have the potential to occur for the duration of construction activities. Beneficial uses that could be impacted include REC-1, REC-2, WARM, COLD, RARE, MIGR and SPWN. The following construction activities would be part of any of the build alternatives:

- **Cement and grout** - As part of the bridge construction process, concrete and grout work would take place within stream corridors. Spillage of concrete and grout into receiving waters during bridge construction could increase turbidity and alter the pH.
- **Application and storage of chemicals** - Accidental spills, improper storage, and improper application of chemicals during construction could potentially impact water quality. Chemicals such as herbicides and fertilizers could also be washed into the creeks. Herbicides could be poisonous to fish and aquatic plants. Conversely, fertilizers may promote algae growth, which would reduce dissolved oxygen levels.
- **Application and storage of oils, greases and fuels** - Improper storage of oils and fuels could result in accidental spills and/or leaks within the construction area. Accidental spills during refueling and maintenance of construction vehicles and equipment could occur. Surface runoff could transport these materials to the local creeks. Similarly, application of petroleum chemicals during road construction could be washed into surface waters. These materials could have toxic effects on aquatic organisms.

Mitigation of Construction impacts from Oil, Grease or chemical contamination

The Department's SSP prohibit the contractor from discharging oils, greases or chemicals into receiving waters. For example, on this project, equipment operating in water bodies would be required to be steam cleaned prior to arrival on site and be maintained in a clean condition during the length of activities. With implementation of the BMP and SSP, all of the build alternatives would not have a major impact from construction induced oils, greases and chemicals.

4.7.6 Construction Impacts Due To Increases In Water Temperature

Certain construction activities may contribute to short-term temperature changes of the surface water. Beneficial uses that could be affected include COLD, MIGR and SPWN. These activities include:

- **Concrete curing** - Piers are typically constructed using reinforced concrete. Once concrete is poured in the forms, it takes up to several weeks to set - referred to as the curing period. During the curing period, concrete releases heat into its surrounding environment. Water is often used during this process to prevent the concrete from hardening too fast. To the extent that this water were to reach surface waters, it could cause a localized increase in the ambient temperature.
- **Vegetation removal/trimming** - During construction, vegetation at or near the creeks would require trimming or removal. Vegetation provides shade, which maintains cooler water temperature in the creeks. Once vegetation is removed or trimmed, water temperatures may increase due to exposure to direct sun light.
- **Creek realignment** - Where segments of creeks are realigned, they may not have the same canopy cover/shade as before the project. Prior to vegetation reestablishment, increases in temperature may occur.

Mitigation for Short-Term Increases in Water Temperature

The Department does not have any standard BMP or other provisions that directly address temperature impacts. However, concrete curing would occur over a period of several weeks and is so localized in nature that it is not expected to have a major impact on water temperature.

Regarding vegetation removal/trimming and creek realignments, The Department would follow standard practices for minimizing the amounts of vegetation trimmed or removed at crossings. To some extent, the project would tend to be self-mitigating with respect to impacts, since shade provided by the new crossings would tend to offset some loss in canopy cover through trimming/removal and realignment. Measurable temperature impacts are not expected where work is done in limited areas.

Treatment of runoff, such as diverting the water to detention ponds, may be required where storm water enters sensitive receiving waters, such as vernal pools. Additional drainage studies, surveys and bridge modeling will be required to finalize project plans and complete floodplain encroachment mitigation proposals.

4.7.7 Long-term Impacts to Water Quality Due to Erosion

As previously mentioned, sediment is of specific concern in the project area since it is listed as a source of impairment to beneficial uses. Following the construction process,

disturbed areas would be stabilized through permanent re-vegetation or other means. The Storm Water Quality Handbook-Planning and Design Staff Guide (P&DSG) provide detailed procedures for design of permanent slope stabilization controls. Storm runoff detention is typically provided by detention ponds accessed via roadside ditches (Caltrans 1999).

In spite of re-vegetation efforts, sediment and turbidity could still have an adverse effect on water quality. These impacts have the potential to occur for the duration of the project operation. Beneficial uses that could be affected include REC-1, REC-2, WARM, COLD, WILD, MIGR and SPWN. The following factors may also contribute to adverse impacts:

- **Hydrologic impacts -** The increase in impervious areas could cause an increase in the peak flow and higher runoff volumes that could lead to stream downcutting, stream bank erosion and loss of stream structure. The result could be an increase in sediment and turbidity in receiving waters. Along with the increase in sediment, there is an increased opportunity for pollutants such as herbicides and road pollution to enter the streams.
- **Concentration of runoff -** Typical highway drainage design involves collecting runoff in pipes or ditches and discharging, either directly or indirectly, into creeks. To the extent that localized flows were concentrated and/or altered from pre-project conditions, potential impacts would be similar to those described for increases in impervious areas.

Mitigation for long-term impacts of erosion

To address these potential water quality impacts resulting from project hydrology and concentration of runoff, the Department would utilize permanent BMP incorporated into the design and construction of the project in combination with BMP during maintenance operations.

Examples of the BMP likely to be used in this project as mitigation for long-term impacts of erosion would be directing highway runoff via ditches and culverts into retention basins.

Grading of embankments to minimize erosion potential will also be incorporated into the design of the highway.

In addition, the P&DSG require that the design team take into account hydrologic impacts of the project and provide measures such that stream channel stability is maintained.

4.7.8 Long-term impacts from Oils, Greases, and Chemical Contamination

Highway runoff and other long-term maintenance activities may introduce chemicals, oils and greases to surface water. Beneficial uses that could be impacted include REC-1, REC-2, WARM, COLD, WILD and SPWN. Typical highway related activity and maintenance that affect runoff quality are:

- **Highway runoff** - Contaminants generated by traffic, pavement materials and airborne particles that settle and are carried by runoff into receiving waters.
- **Accidental spills** - Spills caused by highway-related traffic accidents have the ability to cause great damage to water quality, depending on the type and quantity of the material spilled.
- **Application of chemicals** - Application of chemicals from landscaping operation and maintenance activities could potentially enter into receiving waters. Herbicides could be poisonous to fish and aquatic plants. Conversely, fertilizers may promote algae growth, which would reduce dissolved oxygen levels.

Few, if any, of the hydrocarbons (except oil and grease), volatile and semi-volatile organic compounds or pesticides/herbicides are anticipated to be found in highway runoff, given the rural setting of the site. There are no large industrial (manufacturing), agri-industrial (packing plants), or agricultural operation/activities in the project area that use large amounts of solvents, pesticides or herbicides.

Table 4-24 summarizes the results of the Department study on pollutants of concern in typical highway runoff. Mean values are presented for 17 parameters. Water quality objectives established for the Bear River are also presented. Constituents with mean values exceeding water quality are highlighted in bold type.

Table 4-24 Pollutants of Concern in Typical Highway Runoff

Pollutant	No. of Samples	Mean Value (mg/L)	Water Quality Objective for the Bear River (mg/L)
Barium	25	0.13	1.0
Cadmium	30	0.0009	0.005
Chromium	56	0.0082	0.05
Copper	52	0.035	1.3
Iron	27	3.76	Not listed
Lead	**35**	**0.0814**	**0.015**
Manganese	17	0.08	Not listed
Nickel	56	0.0091	0.1
Zinc	62	0.186	Not listed
Oil and Grease	Not listed	10.3	Qualitative Standard
TSS	Not listed	112	Not Available
COD	Not listed	120	Not Available
Ammonia	25	1.9	Not Available

Pollutant	**No. of Samples**	**Mean Value (mg/L)**	**Water Quality Objective for the Bear River (mg/L)**
Nitrate	33	2.8	10
TKN	37	2.6	Not Available
Phosphate	5	0.4	Not Available
Phosphorus	67	0.3	Not Available

Source: Mean Values: Brown and Caldwell, 1997; Water Quality Objectives: RWQCBCVR, 1998.

If these concentrations were not sufficiently diluted upon entering the receiving waters, they could cause potential significant impacts to water quality. The proposed impervious surface that would create highway runoff was compared to the total area in the watershed to determine whether the proposed project would result in an increase in pollutant loading to the receiving water that would exceed the water quality objectives.

The watershed areas were delineated on 7.5 minute USGS topographic maps. The paved width of the highway was assumed to be 36.6 m (120 ft), the maximum paved area, even though the right-of-way may exceed this dimension in places. The results are as follows:

The **Orchard Creek watershed** above SR 65 covers approximately 17.7 km^2 (11 mi^2) (2849 ha [7040 ac]). All build alternatives will cover about 2.4 km (1.5 mi) (8.8 ha [21.8 ac]) of land. Any of the build alternatives would affect about 0.3% of the watershed.

The **Auburn Ravine watershed** above the City of Lincoln covers an area of about 53 km^2 (33 mi^2) (8547 ha [21120 ac]). The alternative that has the longest section within the Auburn Ravine watershed is D13. This alternative affects about 8.8 ha (21.8 ac) or less than 0.1% of the watershed. Other alternatives would also affect less than 0.1% of the watershed.

The **Markham Ravine watershed** above the D alternatives is about 19.3 km^2 (12 mi^2) (3108 ha [7680 ac]). The D alternatives affect about 20.6 ha (50.9 ac) or less than 0.6% of the watershed. Only 11.26 km^2 (7 mi^2) (1813 ha [4480 ac]) of the Markham Ravine watershed is above the AC alternatives. These alternatives affect about 14.6 ha (36 ac) or approximately 0.8% of the watershed.

The **Coon Creek watershed** covers over 112.6 km^2 (70 mi^2). Approximately 11.7 ha (29 ac) of land will be affected, or less than 0.1% of the watershed.

The **Yankee Slough watershed** above all of the alternatives is about 27.4 km^2 (17 mi^2) (4403 ha [10,880 ac]). The AC and D alternatives affect about 23.6 ha (58.2 ac) or approximately 0.5% of the watershed.

Mitigation for long-term impacts of Oil, Grease and Chemical Contamination

The results demonstrate that paved surfaces in the Department's right-of-way would not be a very big percentage of the watershed. In all cases, the paved area is less than 1% of the watershed. Therefore, highway runoff would be sufficiently diluted as to not cause an impact to receiving water quality.

Runoff from the highway right-of-way would be retained on-site to prevent significant adverse effects on the local surface and groundwater quality. When construction is complete, permanent erosion control measures and landscaping would be implemented throughout the project area. Final plans may include sediment basins, detention ponds and other design mechanisms to treat the storm water run-off if the run-off cannot be separated from the sensitive receiving waters. Vernal pools complexes that are cut off from sheet flow are included in the total impacts to wetlands. However, culverts will be used extensively to maintain flows to vernal pools. Environmentally Sensitive Areas (ESA) will be established to prevent herbicides and pesticides from contaminating the vernal pools and waterways.

During final design, a more detailed evaluation will be made of the corridor hydraulics, with particular emphasis on ensuring that existing water flows are maintained.

4.7.9 Long-term Increases in Water Temperature

Certain activities may contribute to long-term temperature changes of the surface water after construction is complete which may adversely affect existing water quality. Beneficial uses that could be affected include COLD, MIGR and SPWN. These activities include:

- **Increase in paved areas** - Due to continuous use and its affinity to absorb heat from sunlight, pavement surfaces may get warmer than soil. Highway runoff may be warmer than pre-project runoff temperature.
- **Creek crossings and realignments** - Where segments of creeks are crossed and possibly realigned, they may not have the same canopy cover/shade as before the project. The bridge crossings will provide permanent shade to the waterway. However, prior to vegetation reestablishment increases in water temperature may occur.

Mitigation for Long-term Increase in Water Temperature

As discussed previously, the estimated area of paved surfaces associated with the Department's right-of-way, and therefore the percentage of runoff discharged, is a minimal percentage of the local watersheds for all alternatives. Therefore, it is not anticipated that increases in runoff temperatures from paved areas would lead to a measurable increase in stream temperatures.

4.7.10 Summary of Effects on Water Quality

Each of the alternatives will affect the water temperature and toxicity to varying degrees. The "No Build" alternative has the least affect, the AAC2 and A5C1 alternatives the next greatest affect and the D1 and D13 alternatives have the most affect. The magnitude of the increase in water temperature and toxicity from the bypass project is relatively small when comparing the impervious surface area of each alternative to the size of the watershed.

The geographic extent of the effects is relatively small. The watersheds involved are a small segment of the Sacramento River Basin, approximately 0.5%.

The duration and frequency of the effect varies. During the first major rainfall, the toxic nature of the water is higher than any other time and the water quality objectives may be exceeded. Throughout the rest of the rainy season, the pollutant level is much lower, probably lower than the water quality objective. Monitoring of the water constituents would be necessary to determine when water quality objectives would be exceeded.

Water temperature would fluctuate throughout the rainy season. Whenever rain would wash into the waterways from impervious surfaces, the temperature would be higher than if it had washed from vegetated surfaces. During the time that fall-run Chinook salmon would be migrating and spawning, the water temperature of the waterways could be higher than normal. It is not possible to determine whether the elevation of the water temperature would be sufficient to affect the spawning and early development.

The city's monitoring program could be an effective evaluative mechanism for managing development and mitigation measures in order to maintain water quality objectives for the receiving waters. If monitoring indicated that water temperatures exceeded the water quality objective for cold water spawning, then additional shade could be created along the waterway with more plantings in order to cool the water. If monitoring indicated that the water exceeded toxic water quality objectives, then additional mechanisms could be instituted to limit the amount of toxic loading that enters the waterways.

4.8 FLOODPLAIN

A Floodplain Hydraulic Study update was completed for the proposed alignments A5C1, AAC2, D1 and D13 using information from the District 3 Hydraulics Branch files and library. The exhibits were compiled from Placer County and City of Lincoln Flood

Insurance Rate Maps (FIRM) effective date June 8, 1998. (See Figure 3-12) Floodplain elevations are referenced to the National Geodetic Vertical Datum (NGVD) of 1929.

Floodplain encroachments are unavoidable with the Lincoln Bypass. The north/south route of the roadway crosses the east/west drainage pattern existing between the Sierra Foothills and the Sacramento Valley. All of the resulting floodplain crossings are transverse encroachments.

The proposed alternative alignments encroach upon the 100-year floodplain at Auburn Ravine, Markham Ravine, Coon Creek and Yankee Slough. Additional waterway crossings which are not within the floodplain boundaries include; Ingram Slough, tributaries of Markham Ravine and the South Sutter Water District Aqueduct.

The roadway encroachments upon the 100-year floodplain are subject to Federal regulations. The alignment will be designed to avoid or minimize floodplain encroachment. Encroachments that impact a regulatory floodway or exceed the permitted increase to the water surface elevation require administrative determination by the Federal Emergency Management Agency (FEMA). An amendment to the FEMA floodway/floodplain mapping along with supporting hydraulic studies are required submittals for significant floodplain encroachments.

The Department's Division of Structures has responsibility for determining hydraulic adequacy for bridge waterway openings. By providing sufficient survey and topographic data to Structures Design the proposed bridge crossings will be engineered to minimize impacts on the existing floodplains.

The proposed project will be designed to provide for an all-weather route to ensure safe passage of emergency vehicles and serve as an emergency evacuation route. The roadway profile grade elevation will be 1.43 m (4.7 ft) above the original ground elevation.

In general, the proposed floodplain crossings will include a bridge over the floodway or main stream channel. Cross culverts will be provided through any embankment within the floodplain overbank area / floodway fringe to mitigate the impacts of bridge approach embankment fills within the floodplain boundaries.

The vegetation and soils along the various proposed waterway crossings are similar in nature. The erosion hazard of the soils varies from slight erosion hazard in the floodway fringes to high erosion hazard in the recent alluvium deposits adjacent to stream channels. The availability of detailed soil information will ensure that appropriate erosion control measures are included to mitigate the floodplain encroachments.

Discussions with the Placer County Flood Control Engineer indicate that storm water detention facilities should be provided to mitigate increases to the peak flows

resulting from the proposed roadway construction. The roadside ditches will typically provide storm runoff detention. Additionally, the proposed bridges will be designed to minimize downstream impacts.

To establish the estimated 100-year Base Floodplain Elevation (BFE), the Flood Insurance Rate Map Zone A floodplain boundaries were superimposed onto a USGS topographic map and the contour elevation was interpolated. The estimated 100-year BFE for the riverine flooding typical to this study is adjusted by one-half the contour interval to account for any elevation difference between the left overbank boundaries and the right overbank boundaries.

Alternative AAC2

The project alignment conforms to the existing SR 65 alignment approximately 0.5 km (0.3 mi) south of Industrial Avenue. There is no anticipated encroachment by this project onto the floodplain at the north tributary of **Orchard Creek**.

Alternative AAC2 crosses **Ingram Slough** approximately 915 m (3,000 ft) west of the existing SR 65. Ingram Slough is not designated as a 100-year floodplain. The City of Lincoln is currently constructing a new bridge on SR 65 at Ingram Slough. The bridge on the existing highway alignment will have a length of 42 m (138 ft). Additionally, the Union Pacific Railroad is constructing a 40 m (130 ft) trestle immediately west of the existing highway alignment. The November 10, 1999 Hydraulic Evaluation for Advance Planning Study (HEAPS) by the Department's Division of Structures noted that the South Lincoln Master Drainage Plan proposes to split Ingram Slough into two reaches just west of the existing SR 65 alignment. The existing Ingram Slough channel would be abandoned.

The bridge for the south reach of the realigned Ingram Slough will be designed to clear the railroad tracks, the south reach channel and a maintenance roadway. The profile grade over the channel will be approximately 51 m (170 ft). The HEAPS estimates the 100-year BFE at 41 m (135 ft).

The north reach of the realigned Ingram Slough is at a 60-degree skew to the Lincoln Bypass alignment and would require a 91 m (300 ft) long bridge. The proposed profile grade elevation is 44 m (144 ft) compared to an estimated 100-year BFE of 42 m (137 ft).

Alignment AAC2 encroaches on the 100-year floodplain at **Auburn Ravine** in the vicinity of Moore Road for a distance of 320 m (1,050 ft). The floodplain at this location is designated Zone A with no base flood elevations determined. The HEAPS estimates a 100-year BFE of 39 m (128 ft) at the alignment AA crossing. The HEAPS for Auburn Ravine Bridge proposes bridge length of 213.4 m (700 ft). The structure would span

Auburn Ravine from bank to bank with a minimum soffit elevation of 39.9 m (131 ft). This elevation would provide 0.9 m (3 ft) of freeboard, as required by the Reclamation Board, over the estimated 100-year BFE of 39 m (128 ft).

Alignment AAC2 encroaches on the 100-year floodplain at the Lower Tributary of **Markham Ravine** in a location approximately 550 m (1,800 ft) south of Nicolaus Road for a distance of 75 m (250 ft). The floodplain at this location is designated Zone AE Floodway, base flood elevations determined. The BFE at this crossing is 38.7 m (127 ft). The designated floodway for the AAC2 crossing at the Lower Tributary of Markham Ravine encompasses the entire width of the Zone AE floodplain boundaries. Any fill encroachment within the floodway would likely result in a greater than 0.3 m (1 ft) increase to the BFE. Additional studies are required if this alignment alternative is selected.

Alignment AAC2 encroaches on the 100-year floodplain at Markham Ravine again approximately 335 m (1,100 ft) north of Nicolaus Road for a distance of 21 m (70 ft). The floodplain at this location is designated Zone AE Floodway. The 100-year BFE at this proposed AAC2 crossing is 37.9 m (124.5 ft). The HEAPS proposes a bridge length of 85.3 m (280 ft) for the alignment AAC2 crossing of Markham Ravine. The proposed soffit elevation is 0.9 m (3 ft) or greater than the 100-year BFE.

Alignment AAC2 encroaches on the **Coon Creek** floodplain approximately 550 m (1,800 ft) north of Wise Road for a distance of 640 m (2,100 ft). The floodplain at this location is designated Zone A. The estimated 100-year BFE is 32 m (105 ft) according to the HEAPS. The HEAPS proposes a bridge length of 76m (250 ft) at the C2 alignment crossing.

Additional hydraulic modeling will be required for the Coon Creek crossing to determine the revised 100-year flood zone boundaries and the need for flooding easements upstream of the proposed crossing. If the AAC2 alignment is selected a flood map revision may be required.

Alignment AAC2 encroaches on the **Yankee Slough** floodplain in the vicinity of Dowd Road for approximately 213 m (700 ft). The floodplain at this location is designated Zone A. The HEAPS for this alignment recommends a bridge length of 61 m (200 ft) and a minimum soffit elevation of 29 m (95 ft).

It is recommended that the proposed interchange for the Dowd Road / Dalby Road connections be located north of the existing County road intersection to minimize encroachments into the Yankee Slough 100-year floodplain.

Alignment AAC2 crosses an existing **irrigation aqueduct** approximately 488 m (1,60 ft) south of Riosa Road. The aqueduct is the jurisdiction of South Sutter Water

District. A review of the proposed crossing by the District Hydraulics Branch in 1994 concluded that a double 3.7 m by 2.1 m (12 x 7 ft) reinforced concrete box culvert will be required at the aqueduct crossing location.

Alternative A5C1

Alignment A5C1 crosses **Ingram Slough** at a location approximately 915 m (3,000 ft) west of the existing SR 65. Please see the description for the Alignment AAC2 crossing of Ingram Slough as all proposed alignments cross Ingram Slough in close proximity to that alignment.

Alignment A5C1 encroaches on the 100-year floodplain at **Auburn Ravine** in the vicinity of Moore Road for a distance of 305 m (1,000 ft). The floodplain at this location is designated Zone A. The HEAPS for Auburn Ravine Bridge proposes a bridge length of 213 m (700 ft). The structure would span Auburn Ravine from bank to bank with a minimum soffit elevation of 40 m (131 ft). This elevation would provide 0.9 m (3 ft) of freeboard, as required by the Reclamation Board, over the estimated 100-year BFE of 39 m (128 ft).

Alignment A5C1 encroaches on the 100-year floodplain at the **Lower Tributary of Markham Ravine** at a location approximately 490 m (1,600 ft) south of Nicolaus Road for a distance of 183 m (600 ft). The floodplain at this location is designated Zone AE, base flood elevations determined. A HEAPS bridge length estimate is not available for this location.

The designated floodway for the A5C1 crossing at the Lower Tributary of Markham Ravine encompasses the entire width of the Zone AE floodplain boundaries. Any fill encroachment within the floodway would likely result in a greater than 0.3 meter (1 ft) increase to the 100-year BFE. Additional studies are required if this alignment alternative is selected.

Alignment A5C1 encroaches on the 100-year floodplain at the **main channel of Markham Ravine** approximately 427 m (1,400 ft) north of Nicolaus Road for 122 m (400 ft). The floodplain at this location is designated Zone AE. The HEAPS proposes a bridge length of 85.3 m (280 ft) at the A5 crossing. The profile grade should be set to allow for minimum freeboard of 0.9 m (3 ft).

Alignment A5C1 encroaches on the **Coon Creek** floodplain approximately 518 m (1,700 ft) north of Wise Road for a distance of 884 m (2,900 ft). The floodplain at this location is designated Zone A. A HEAPS bridge length estimate is not available for the A5C1 crossing location. The adjacent AAC2 crossing 244 m (800 ft) upstream proposes a bridge length of 76.2 m (250 ft). The HEAPS notes that the peak discharge of 594

cubic meters per second (m^3/s) may not reach this crossing location due to upstream constriction at the existing highway and railroad crossings.

Alignment A5C1 crosses the **Yankee Slough** floodplain at two locations. The alignment encroaches on Yankee Slough approximately 914 m (3,000 ft) south of Dalby Road for a distance of 152 m (500 ft) and again approximately 213 m (700 ft) south of Dalby Road for a distance of 107 m (350 ft). The floodplain at these locations is designated Zone A. A detailed FEMA Flood Insurance Study is not available for Yankee Slough. The estimated 100-year BFE is 27 m (88 ft). A HEAPS bridge length estimate is not available for these crossing locations. The adjacent AAC2 alignment, crossing approximately 274 m (900 ft) upstream of the A5C1 alignment, proposes a bridge length of 61 m (200 ft) for the northerly third of Yankee Slough. If the A5C1 alignment is selected additional studies will be required to determine a bridge length for the southerly crossing of Yankee Slough.

Alignment A5C1 crosses an existing **irrigation aqueduct** approximately 549 m (1,800 ft) south of Riosa Road. The aqueduct is the jurisdiction of South Sutter Water District. A review of the proposed crossing by the District Hydraulics Branch in 1994 concluded that a double 3.7 m by 2.1 m (12 ft x 7 ft) reinforced concrete box culvert will be required at the aqueduct crossing location.

Alternative D1

Alignment D1 crosses **Ingram Slough** at a location approximately 915 m (3,000 ft) west of the existing SR 65.

Alignment D1 encroaches on the 100-year floodplain at **Auburn Ravine** approximately 792 m (2,600 ft) north of Moore Road for a distance of 396 m (1,300 ft). The floodplain at this location is designated Zone A. The Flood Insurance Study (FIS) for Auburn Ravine does not include this crossing location. The November 10, 1999 HEAPS does not include recommendations for the D1 alignment crossing of Auburn Ravine, however, the A5C1 and AAC2 alignments, approximately 610 m (2,000 ft) upstream of D1, call for a bridge length of 213.4 m (700 ft). The Reclamation Board will require 0.9 m (3 ft) of freeboard between the 100-year BFE and the bridge soffit. If the D1 alignment is selected additional studies will be required.

Alignment D1 encroaches on the 100-year floodplain at **Markham Ravine** in three locations. The floodplain at these locations is designated Zone A. A detailed FIS is not available for this portion of Markham Ravine. Two of the floodplain encroachments occur on the branches of a reservoir within the Markham Ravine watershed. The estimated 100-year BFE at these crossings is 35.8 m (117.5 ft). The third floodplain encroachment is located approximately 548 m (1,800 ft) south of Nicolaus Road for a

distance of 122 m (400 ft) across the main stream channel. The estimated 100-year BFE is 34.3 m (112.5 ft) at the D1 crossing of the main stream channel. The HEAPS recommendation for the adjacent D13 alignment estimates the bridge length at 129.5 m (425 ft). The HEAPS notes that additional survey data will be required to determine backwater effects.

Alignment D1 encroaches on the 100-year floodplain at **Coon Creek** in the vicinity of Wise Road for a distance of 1,128 m (3,700 ft). The floodplain at this location is designated Zone A. The estimated 100-year BFE of 32.7 m (107.3 ft) per the HEAPS is based on an estimated flow of 594.3 m^3/s (21,000 cfs). According to the Placer County Flood Control Engineer the estimated peak discharge for a 100-year event ranges from 311.3 m^3/s (11,000 cfs) to 594.3 m^3/s (21,000 cfs) for ultimate build-out of the upstream watershed area. The D1 and D13 alignments cross Coon Creek at the same location. The APS proposes a bridge length of 91.4 m (300 ft) at this crossing. The HEAPS notes that the peak discharge of 594 m^3/s may not reach the D1 crossing location due to upstream constriction at the existing highway and railroad crossings.

Alignment D1 encroaches on the 100-year floodplain at **Yankee Slough** in the vicinity of the Dalby Road / Dowd Road intersection for a distance of 213 m (700 ft). The floodplain at this location is designated Zone A. The estimated 100-year BFE is 28.0 m (92 ft). Alignments D1 and D13 cross Yankee Slough at the same location. The APS proposes a bridge length of 61.0 m (200 ft) and a minimum soffit elevation of 29.0 m (95 ft).

It is recommended that the proposed interchange for the Dowd Road / Dalby Road connections should be located north of the existing County road intersection to minimize encroachments into the Yankee Slough 100-year floodplain.

Alignment D1 crosses **Big Yankee Slough** in the vicinity of the Dalby Road Dowd Road intersection. This crossing is not within the designated floodplain boundaries. The estimated 100-year water surface elevation is 28.0 m (92 ft). Alignments D1 and D13 cross Big Yankee Slough at the same location. The HEAPS proposes a bridge length of 30.5 m (100 ft) and a minimum soffit elevation of 29 m (95 ft).

Alignment D1 crosses an existing **irrigation aqueduct** approximately 549 m (1,800 ft) south of Riosa Road. The aqueduct is the jurisdiction of South Sutter Water District. A review of the proposed crossing by the District Hydraulics Branch in 1994 concluded that a double 3.7 m by 2.1 m (12 ft x 7 ft) reinforced concrete box culvert will be required at the aqueduct crossing location.

Alternative D13

Proposed alignment D13 crosses **Ingram Slough** approximately 915 m (3000 ft) west of the existing SR 65. Please see the description for the Alternative alignment AA crossing of Ingram Slough as all proposed alignments cross Ingram Slough in close proximity to alignment AA.

Alignment D13 encroaches on the 100-year floodplain at **Auburn Ravine** in the vicinity of Moore Road for a distance of 305 m (1,000 ft). The floodplain at this location is designated Zone A. The HEAPS estimates a 100-year BFE of 39 m (128 ft) at the D13 alignment crossing. The HEAPS proposes a bridge length of 158.5 m (520 ft) and a minimum soffit elevation of 31.7 m (104 ft)

Alignment D13 encroaches on the 100-year floodplain at **Markham Ravin**e approximately 914 m (3,000 ft) south of Nicolaus Road for a distance of 91.4 m (300 ft). The floodplain at this location is designated Zone A. The estimated 100-year BFE is 30.8 m (101 ft). The HEAPS proposes a bridge length of 129.5 m (425 ft) and a minimum soffit elevation of 31.7 m (104 ft). The HEAPS advises that additional survey data will be required at Markham Ravine to determine backwater effects. The bridge length may be reduced based on additional studies.

Alignment D13 joins alignment D1 at a location approximately 2,286 m (7,500 ft) south of Wise Road. Please see the D1 alignment descriptions for floodplain encroachment and waterway crossing information north of the D1/D13 convergence.

4.8.1 Summary

Table 4-25 is a summary of the 100-year floodplain encroachment lengths. Figure 4-5 shows the location of these encroachments.

Table 4-25 Summary of 100 year Floodplain Encroachment Lengths

Alignment	Auburn Ravine	Markham Ravine	Markham Ravine Lower Tributary	Coon Creek	Yankee Slough
AAC2	320 m *(1050 ft)*	21 m *(70 ft)*	75 m *(250 ft)*	640 m *(2100 ft)*	213 m *(700 ft)*
A5C1	305 m *(1000 ft)*	122 m *(400 ft)*	183 m *(600 ft)*	884 m *(2900 ft)*	152 m *(500 ft)*
D1	396 m *(1300 ft)*	91 m, 61 m, &122m[1] *(300 ft, 200 ft & 400 ft)*	NA	1128 m *(3700 ft)*	213 m *(700 ft)*
D13	305 m *(1000 ft)*	91 m *(300 ft)*	NA	1128 m *(3700 ft)*	213 m *(700 ft)*

[1] Crosses at three locations
Source: Location Hydraulic Study Update (1999)

Figure 4-5 Flood Boundary Map

Alignment D13 appears to have the lowest potential for adverse impacts due to floodplain encroachments. The proposed crossings at Coon Creek may require submittals to FEMA for floodplain boundary revisions.

When the final alignment is selected for the Lincoln Bypass, additional drainage studies, surveys and bridge modeling will be required to finalize project plans and complete floodplain encroachment mitigation proposals.

4.9 NATURAL RESOURCES

This section discusses and compares the impacts to biological resources and wetlands that are expected to occur as a result of the proposed project. All impact determinations are based on 76 m (250 ft) wide alignments. The actual impact to some resources may be less depending on the final roadway footprint within the selected alignment.

A Park and Ride has been proposed for all the alignments as a part of this project. The park and ride facility will be located within the proposed right-of-way for the braided ramps and the existing state right-of-way adjacent to the Industrial Blvd. and Highway 65 intersection. The geometric layout of the park and ride can be designed independently from any alignment selected. It is proposed to build the first stage of the park and ride facility that will accommodate approximately 120 cars with the possibility of increasing to 1200 cars for future demand. The location of the park and ride is shown in Figure 2.3. Impacts for the Park and Ride would be the same for all the alignments and are shown in the table below.

Table 4-26 Park and Ride Resources Impacts

Resource	Impact
Northern Hardpan Vernal Pools	9.7 ha (23.9 ac)
Northern Volcanic Mudflow Vernal Pool	1.8 ha (4.5 ac)
Vernal Pool	0.3 ha (0.7 ac)
Vernal Swales	0.16 ha (0.4 ac)
Vernal Marsh	0.04 ha (0.1 ac)
Valley Freshwater Marsh	0.24 ha (0.6 ac)

Two alternatives were developed well after initial studies were completed. These alternatives; D13 North Modification and D13 South Modification were developed in response to public input in the case of D13 South and the potential for a Conservation Easement on land required for all alternatives at the north end of the project in the case of and D13 North Modification. The Study Area was expanded to allow consideration of these alternatives.

Once an alternative is selected, additional evaluation of the potential impacts to listed species will be conducted, supported by additional focused surveys where necessary. A Biological Assessment documenting these specific impacts will be prepared that will be used for Section 7 consultation with the U.S. Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS) under the Federal Endangered Species Act and coordination with California Dept. of Fish and Game (CDFG) as necessary under the California Endangered Species Act.

To initiate the current studies, an annotated list of special status plant and wildlife species potentially occurring within the project area was compiled. The list was generated by querying the California Natural Diversity Data Base (CNDDB 1998) and California Native Plant Society Electronic Inventory (CNPS) for the Sheridan, Lincoln, Pleasant Grove and Roseville quadrangles, and by obtaining a FWS list of special status species potentially occurring in the project area. Species lists generated through this process are included in Chapter 7, Comments and Coordination. Personnel from FHWA, the Department, FWS, NMFS and CDFG were contacted to discuss potential species-related issues and to review/coordinate survey efforts. Agency staff contacted and the issues discussed are listed in Chapter 7, Comments and Coordination.

4.9.1 Regulatory Requirements

This section summarizes the responsibilities of key agencies involved in the review of the Natural Environment Study Report (NESR) and related project documents. Coordination with the agencies is also discussed. Copies of correspondence with the agencies are included in Appendix D and E.

U.S. Environmental Protection Agency (EPA)

EPA has primary responsibility for administration of the Clean Water Act and has oversight authority on 404 permitting issues. EPA has concurred with the project purpose and need and the range of alternatives to be evaluated.

U.S. Army Corps of Engineers (ACOE)

The ACOE is a signatory agency under the NEPA/404 Memorandum of Understanding (MOU) and has concurred with the projects purpose and need and the range of alternatives. Under Section 404 of the Clean Water Act, the ACOE regulates the discharge of dredged or fill material into waters of the U.S. A Section 404 permit will be required authorizing the discharge of dredged or fill material associated with roadway construction into vernal pools and other wetlands and regulated waters.

The ACOE verified the original wetland delineation for the Study Area in 1991, and has provided direction on updating the delineation and re-verifying the findings. A meeting was held with ACOE personnel on March 10, 1998 (Cavanaugh, March 10,

1998) to discuss the possibility of delaying the update and re-verification of wetlands until a preferred alternative was chosen. It was agreed that that approach would be acceptable.

U.S. Fish and Wildlife Service (FWS)

Under the Fish and Wildlife Coordination Act of 1958, Federal agencies are required to coordinate during project planning stages with the FWS and with the State agency responsible for fish and wildlife resources on activities that modify any body of water. Under Section 7 of the Federal Endangered Species Act, Federal agencies are required to consult with FWS on any action that "may affect" a Federally listed threatened or endangered species or designated critical habitat. FWS is also a signatory agency to the NEPA/404 Integration MOU and has concurred with the purpose and need and the range of alternatives evaluated for the project.

FWS will continue to be involved in the project through review of environmental documents, participation in the 404 permitting process and in Section 7 consultation for potential project effects on listed species.

National Marine Fisheries Service (NMFS)

Under Section 7 of the Federal Endangered Species Act, Federal agencies are required to consult with NMFS on any action that "may affect" a Federally listed threatened or endangered species or designated critical habitat for which NMFS has responsibility. For this project, NMFS has responsibility for reviewing project effects to anadromous fish.

California Regional Water Quality Control Board (RWQCB)

A Section 401 Water Quality Certification from the Regional Water Quality Control Board is required in conjunction with the Section 404 permitting process. A 401 Certification will be required before the 404 permit is considered valid. Application to the RWQCB is generally made after the environmental document is complete.

California Department Of Fish and Game (CDFG)

Coordination with CDFG will be necessary under the Fish and Wildlife Coordination Act and under the California Endangered Species Act for potential impacts to State listed species. In addition, a Section 1601 Agreement will be required from CDFG to authorize work in streams and other waterbodies. CDFG will also be involved in the review of project environmental documents and in the 404 permitting process.

4.9.2 Impacts to Plant Communities

The potential impacts to plant communities within each alternative are presented in Table 4-27. Figure 3-14 in Chapter 3 shows the plant communities along with the project

footprint. The total area of each community type within the project Study Area is also provided for perspective. This information is presented graphically in a bar chart in Figure 4-6.

Figure 4-6 Comparison of Potential Impacts to Key Resources

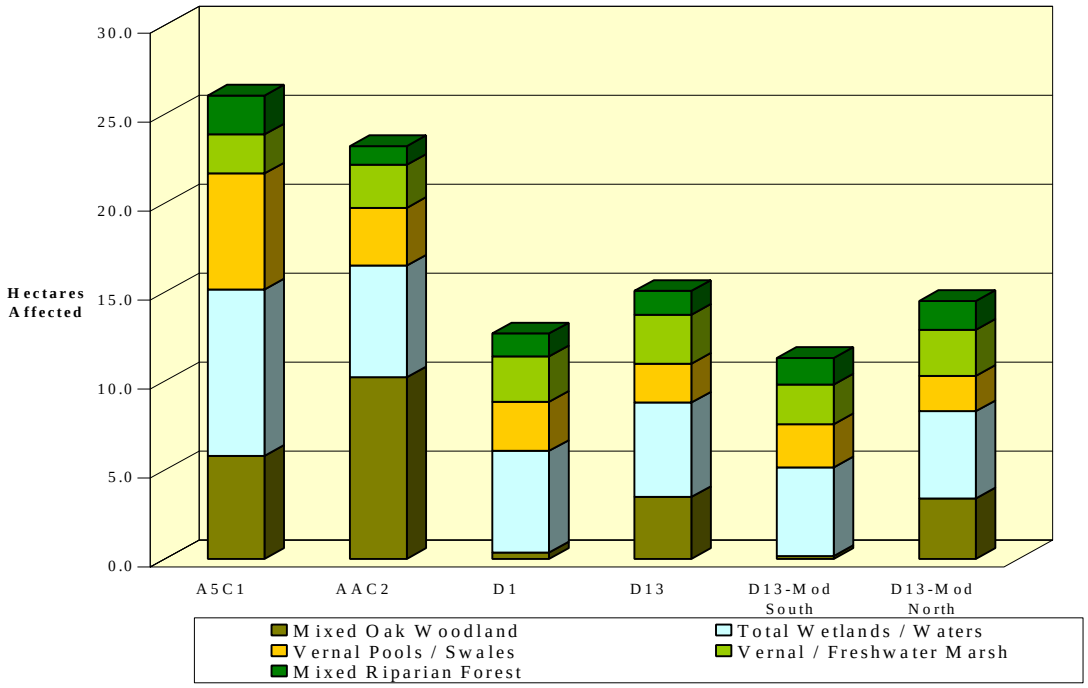


Table 4-27 Potential Impacts to Plant Communities Occurring in the Study Area

Community	Total Within Study Area	A5C1	AAC2	D1
Developed/Disturbed	177.1 ha	26.1 ha	18.5 ha	11.1 ha
	437.2 ac	*64.5 ac*	*45.7 ac*	*27.3 ac*
	8.5 %	14.0%	10.3%	6.0%
Agricultural Lands	874.6 ha	54.4 ha	51.1 ha	84.4 ha
	2159.6 ac	*134.3 ac*	*126.1 ac*	*208.5 ac*
	42.2 %	29.2%	28.5%	46.0%
Non-native Grassland	211.6 ha	14.8 ha	19.4 ha	34.9 ha
	522.4 ac	*36.6 ac*	*48.0 ac*	*86.1 ac*
	10.2 %	8.0%	10.8%	19.0%
Mixed Oak Woodland	49.4 ha	5.8 ha	10.2 ha	0.4 ha
	122.0 ac	*14.3 ac*	*25.2 ac*	*0.9 ac*
	2.4 %	3.1%	5.7%	0.2%
Mixed Riparian Forest	17.9 ha	2.2 ha	1.1 ha	1.3 ha
	44.1 ac	*5.4 ac*	*2.6 ac*	*3.2 ac*
	0.9 %	1.2%	0.6%	0.7%
Valley Freshwater Marsh	61.5 ha	1.6 ha	1.5 ha	2.4 ha
	151.9 ac	*4.0 ac*	*3.7 ac*	*5.9 ac*
	3.0 %	0.9%	0.8%	1.3%

Community	Total Within Study Area	A5C1	AAC2	D1
Great Valley Willow Scrub	1.9 ha	0.1 ha	0.1 ha	0.2 ha
	4.7 ac	*0.3 ac*	*0.3 ac*	*0.4 ac*
	0.1 %	0.1%	0.1%	0.1%
Grassland / Northern Hardpan Vernal Pool Complex	646.9 ha	79.4 ha	75.6 ha	48.3 ha
	1597.3 ac	*196.0 ac*	*186.7 ac*	*119.2 ac*
	31.2 %	42.6%	42.2%	26.3%
Grass/Northern Volcanic Mudflow Vernal Pool Complex	11.9 ha	0.7 ha	0.4 ha	0.1 ha
	29.4 ac	*1.7 ac*	*1.0 ac*	*0.2 ac*
	0.6 %	0.4%	0.2%	0.0%
Vernal Marsh	10.3 ha	0.6 ha	0.9 ha	0.2 ha
	25.5 ac	*1.4 ac*	*2.3 ac*	*0.6 ac*
	0.5 %	0.2%	0.5%	0.1%
Open Water	11.3 ha	0.5 ha	0.5 ha	0.2 ha
	28.0 ac	*1.3 ac*	*1.2 ac*	*0.6 ac*
	0.5 %	0.4%	0.3%	0.1%
Total	**2074.5 ha**	**186.2 ha**	**179.3 ha**	**183.4 ha**
	5122.1 ac	***459.8 ac***	***442.8 ac***	***452.7 ac***
	100.0 %	**100.0%**	**100.0%**	**100.0%**

Community	Total Within Study Area	D13	D13 – Modified South	D13 - Modified North
Developed/ Disturbed	177.1 ha	12.6 ha	15.1 ha	15.6 ha
	437.2 ac	*31.2 ac*	*37.2 ac*	*38.6 ac*
	8.5 %	6.3%	7.5%	7.6%
Agricultural Lands	874.6 ha	102.5 ha	95.5 ha	96.7 ha
	2159.6 ac	*253.2 ac*	*235.7 ac*	*238.8 ac*
	42.2 %	51.4%	47.5%	46.9%
Non-native Grassland	211.6 ha	26.3 ha	33.2 ha	21.7 ha
	522.4 ac	*64.9 ac*	*82.0 ac*	*53.6 ac*
	10.2 %	13.2%	16.5%	10.5%
Mixed Oak Woodland	49.4 ha	3.5 ha	0.2 ha	3.5 ha
	122.0 ac	*8.6 ac*	*0.4 ac*	*8.6 ac*
	2.4 %	1.7%	0.1%	1.7 %
Mixed Riparian Forest	17.9 ha	1.3 ha	1.2 ha	1.3 ha
	44.1 ac	*3.3 ac*	*3.0 ac*	*3.3 ac*
	0.9 %	0.7%	0.6%	0.6 %
Valley Freshwater Marsh	61.5 ha	2.5 ha	2.4 ha	2.5 ha
	151.9 ac	*6.1 ac*	*6.0 ac*	*6.1 ac*
	3.0 %	1.2%	1.2%	1.2 %
Great Valley Willow Scrub	1.9 ha	0.1 ha	0.1 ha	0.1 ha
	4.7 ac	*0.3 ac*	*0.2 ac*	*0.3 ac*
	0.1 %	0.1%	0.0%	0.1%

Community	Total Within Study Area	D13	D13 – Modified South	D13 - Modified North
Grassland / Northern Hardpan Vernal Pool Complex	646.9 ha	49.7 ha	51.8 ha	63.5 ha
	1597.3 ac	*122.6 ac*	*128.0 ac*	*156.9 ac*
	31.2 %	24.9%	25.8%	30.8 %
Grassland/Northern Volcanic .Mudflow Vernal Pool Complex	11.9 ha	0.7 ha	0.7 ha	0.7 ha
	29.4 ac	*1.7 ac*	*1.7 ac*	*1.8 ac*
	0.6 %	0.3%	0.3%	0.4 %
Vernal Marsh	10.3 ha	0.2 ha	0.3 ha	0.2 ha
	25.5 ac	*0.5 ac*	*0.8 ac*	*0.5 ac*
	0.5 %	0.1%	0.2%	0.1 %
Open Water	11.3 ha	0.2 ha	0.3 ha	0.2 ha
	28.0 ac	*0.6 ac*	*0.7 ac*	*0.6 ac*
	0.5 %	0.1%	0.1%	0.1%
Total	**2074.5 ha**	**199.7 ha**	**200.8 ha**	**206.2 ha**
	5122.1 ac	***493.2 ac***	***495.8 ac***	***509.1 ac***
	100.0 %	**100.0%**	**100.0%**	**100.0%**

The project may have adverse direct and indirect impacts on special status species and their habitats. Direct effects are defined by the Council on Environmental Quality (CEQ) as those effects that are caused by the project or action and occur at the same time and place as the project or action. Indirect effects are caused by the project or action, but occur later in time or are farther removed in distance, but still foreseeable.

Direct effects of this project may include the permanent removal of vegetation and associated wildlife within the construction footprint, as well as temporary effects resulting from construction access and staging. Indirect effects include changes in hydrology (flooding or de-watering), shading (under bridges or adjacent to large fills), increased disturbance and noise, introduction of exotic species, etc. Except for altered hydrology, the potential for indirect effects is generally limited to the area directly adjacent to the new roadway.

Provisions will be made in the project design to “pass through” all significant natural drainage features. Consequently, project effects due to altered hydrology will be minimal except, perhaps, in the direct vicinity of the project footprint.

As shown in Table 4-28 and Figure 4-6, the greatest impacts, regardless of the alternative alignment, are to agricultural lands and annual grassland, with and without vernal pools. These are the most common communities in the project area. The western alignments (D1 and D13) have a proportionately greater impact on agricultural lands, while the eastern alignments (A5C1 and AAC2) have a proportionately greater impact on vernal pool habitats. The eastern alignments also affect more developed and disturbed

acreage. Impacts to riparian forest vary from 2.2 ha (5.4 ac) for A5C1 to 1.1 ha (2.6 ac) for AAC2. Impacts to freshwater marsh habitat range from about 1.5 ha (3.7 ac) for AAC2 to 2.5 ha (6.1 ac) for Alternatives D13 and the D13 North Modification. The impacts to mixed oak woodland vary widely, from a low of 0.36 ha (0.9 ac) for the D13 North Modification to a high of 10.2 ha (25.2 ac) for the AAC2 alignment. Impacts to volcanic mudflow vernal pool/grassland complex and vernal marsh are relatively small with any alternative. Volcanic mudflow vernal pool/grassland impacts range from 0.1 ha (0.2 ac) for the D 1 to 0.7 ha (1.8 ac) for the rest.

All alternatives will impact wildlife associated with the affected plant communities. Agricultural land and non-native grasslands (both with and without vernal pools) are the most common habitats, and the extent of wildlife impacts is directly related to the acreage of these habitats affected by each alternative. While there is much less acreage of mixed oak woodland, mixed riparian forest and valley freshwater marsh within the Study Area, these communities provide higher quality wildlife habitat, generally due to the availability of water and/or greater structural diversity. Further, the more limited extent of these habitats in the Study Area amplifies the importance of project impacts to these habitats. Consequently, impacts to these high quality communities are generally considered more likely to have adverse impacts to wildlife.

Disturbance to wildlife habitat will likely disrupt intra- and inter-specific wildlife interactions, particularly to the less mobile amphibians, reptiles and small mammals. During the initial phases of construction, these less mobile wildlife species may be killed outright, while more mobile species such as birds and larger mammals will be displaced into adjacent habitat that is likely currently occupied, resulting in increased competition and predation pressures on the newly displaced individuals as well as those already present in the habitat. These interactions could lead to increased stress, which in turn could lead to reduced reproduction.

4.9.3 Wildlife Corridors

Although the riparian communities, particularly along Auburn Ravine and Coon Creek, provide relatively unobstructed wildlife corridors through the Study Area, these corridors are crossed by existing SR 65, the UPTC tracks, and a number of secondary roads and farm roads. Existing SR 65 is immediately adjacent to the UPTC tracks through most of the Study Area, and the main drainage (Auburn Ravine, Markham Ravine, Coon Creek) are conveyed through culverts beneath these features. These culverts have a combined length of up to 61 m (200 ft). Consequently, the SR 65/ UPTC tracks represent an existing hindrance to wildlife movement along the east side of the Study Area.

The new freeway corridor, which will be constructed on a raised road prism, will impede local wildlife movements for several species of amphibians, reptiles and mammals. Movement by smaller, less mobile species may be blocked by the roadway, possibly limiting the availability of resources and hindering dispersal and genetic exchange within populations. More mobile species (e.g., lizards, snakes, skunks, raccoons, ground squirrels, coyotes) may incur increased mortality by attempting to cross the freeway. Culverts will be provided at drainage locations, but are not expected to mitigate the potential impacts to wildlife movements. The western alignments (D1 and D13), which are more isolated from existing roads and developed areas, are expected to have the greatest impact to wildlife movements.

A5C1 and AAC2 Alignments

These alternatives follow the eastern corridor (on the east side of the airport). As noted previously, this corridor has a proportionately greater percentage of developed/disturbed acreage and less agricultural land than the western corridor. While the impact to non-native grassland is somewhat less with these alternatives, the impact to grassland/vernal pool complex is substantially (73%) greater than with the western alignments.

The A5C1 Alignment has the greatest potential impact to mixed riparian forest (2.2 ha [5.4 ac]) of any alternative. Much of this habitat is associated with Coon Creek. This habitat is structurally diverse and represents the highest quality wildlife habitat available in the Study Area. A number of mammal, bird, reptile and amphibian species would potentially be affected, including many special status species. Indirect impacts may also occur due to displacement of more sensitive species away from the highway corridor. The AAC2 alignment crosses Coon Creek further east, where the riparian corridor is much narrower. Consequently, the direct impact 1.05 ha (2.6 ac) and indirect impact to the riparian corridor are reduced.

D1 and D13

These alternatives follow the western alignment (west of the airport) around Lincoln. As noted previously, these alternatives impact much more agricultural land and less developed/disturbed acreage than the A5C1 and AAC2 alignments. While these alternatives would impact a somewhat greater area of non-native grassland, the impacts to grassland/vernal pool complex would be substantially (43%) less. The impacts to mixed oak woodland would also be less, the D1 alignment impacts only 0.36 ha (0.9 ac) of this community, compared with 10.2 ha (25.2 ac) AAC2 alignments. Marsh impacts are somewhat greater with these alternatives due to the crossing of extensive marsh habitat along Markham Ravine.

The D1 and D13 alternatives will adversely affect wildlife associated with agricultural lands and grasslands (with and without vernal pools) that comprise about 90% of the alignment acreage. Impacts to wildlife species associated with woodland and forest habitats would be reduced with these alternatives compared to the eastern alternatives. Marsh impacts are greater with these alignments, and the marsh habitat affected is of particularly high quality, including a high diversity of open water, emergent wetlands and willow scrub habitats. Consequently, impacts to waterfowl and wading birds will likely be greater with these alternatives.

D13 Modifications

D13 North Modification has similar impacts to most plant communities compared with D13. D13 South Modification avoids the large oak woodland at the southern end of the Study Area; consequently, the impact to oak woodland with this alignment is reduced by 95% compared with D 13 and the other D13 modifications. However, this alignment impacts more vernal pools, marsh and total wetlands than any other D alignment.

4.9.4 Special Status Plants & Animals

Plants

The proposed project will directly impact special status plants. Indirect impacts may also occur although they are not likely to extend beyond the limits of the 76 m (250 ft) wide alignments. The species most likely to be affected are Ahart's dwarf rush, Bogg's Lake hedge hyssop, dwarf downingia and legenere. Ahart's dwarf rush and Bogg's Lake hedge-hyssop have only been found in the eastern portion of the Study Area and may be limited to the eastern corridor. The downingia occurs throughout the Study Area. While the legenere has not been observed, it is likely to occur. For purposes of comparing alternatives, it is assumed that Ahart's dwarf rush and Bogg's Lake hedge hyssop are more likely to be present within the "AC" alignments, while dwarf downingia and legenere are equally likely be present in all alignments. These are all vernal pool plants; thus, the potential for impacts is directly related to the extent of vernal pool impacts within an alignment.

Impacts to these plants can be mitigated through minimization of vernal pool impacts in the final alignment routing and through preservation and re-creation of appropriate habitat.

Oak Woodland Impacts

The oak woodlands impacted by the project include valley oaks, blue oaks and interior live oaks. The average size of oak trees in the woodland areas is about 4.8 cm (19 in) dbh.

Wildlife

Mammals

The project will potentially affect a number of protected wildlife species. Several special status bat species (greater western mastiff bat, small-footed myotis, long-eared myotis, fringed myotis, long-legged myotis, Yuma myotis, pale big-eared bat and Townsend's western big-eared bat) may potentially occur in the Study Area based on the availability of suitable habitat. These bats may use trees and/or buildings and other structures (e.g., bridges) for roosting and may forage over a variety of habitats in the Study Area. Alternatives that impact large numbers of trees (e.g., AAC2) and buildings and other structures would have greater potential to impact bats. Pre-construction surveys will be required to accurately assess the potential for impacts to bats. Impacts can be mitigated through timing of construction, excluding bats from structures and minimizing impacts to potential roost sites.

The San Joaquin pocket mouse is a federal species of concern. It is not listed as threatened or endangered. This species occurs in grasslands and oak savanna habitats with friable soils. San Joaquin pocket mice were not observed in the study area. Implementation of proposed mitigation measures to minimize impacts to oak woodlands and other habitats would reduce potential impacts to this species.

Birds

A number of special status bird species are known to occur in the Study Area and may be adversely affected by the project. Forest and woodland areas provide habitat for Cooper's hawk, sharp-shinned hawk and Swainson's hawk. Habitat for northern harrier, burrowing owl, tricolored blackbird, California horned lark, grasshopper sparrow and lark sparrow occurs throughout the Study Area. Habitat for double-crested cormorant, white-faced ibis and American bittern occurs along Markham Ravine and other locations. Nests or nesting behavior have been observed for several of these species. Foraging habitat for prairie falcon, golden eagle, mountain plover and ferruginous hawk also occurs in the Study Area.

The project will directly eliminate foraging and/or nesting habitat used by these species. The AAC2 alignment, which potentially impacts 10.8 ha (26.8 ac) of mixed oak woodland, may impact nesting and/or foraging habitat for Cooper's, sharp-shinned and Swainson's hawks. The western alignments (D1 and D13 and modified D 13's) affect the largest acreage of agricultural land, grassland, riparian forest and marsh; consequently, these alternatives would potentially have greater impacts to special status bird species.

Pre-construction surveys of the selected alignment are required in order to accurately determine the potential for impacts to special status bird species. In addition to avoidance of key habitat and habitat preservation, construction timing will help mitigate potential impacts.

Swainsons' Hawk

During a two-day survey in May 1999, at least eight different Swainsons' hawks were observed within the project area and a 16.1 km (10 mi) radius. The observations included one pair of hawks constructing a nest and a second pair exchanging prey, indicating the establishment of a territory. At least three of the hawks were observed within the Study Area, including one of the pairs. The combination of extensive foraging habitat adjacent to suitable nesting sites makes the Study Area highly suitable for this species. The project may eliminate 121-162 ha (300-400 ac) of foraging habitat.

Potential impacts to this species from the proposed project include direct loss of foraging and nesting habitat and indirect effects due to disturbance along the highway corridor. Mitigation for potential impacts to Swainson's hawk in accordance with CDFG guidelines will be required.

The primary reason for the decline of this species, as with other raptors, is thought to be agricultural conversion of native habitats, primarily grassland and riparian forest.

Reptiles

Special status reptiles observed or expected to occur in the study include the northwestern pond turtle and California horned lizard. Potential impacts to pond turtles will be greatest with the western alignments that remove more aquatic habitat. The horned lizard occurs in a variety of habitat types; consequently, potential impacts to this species are generally related to the overall acreage of habitat impacted.

Amphibians

The special status amphibians potentially occurring in the Study Area are the western spadefoot toad and the California red-legged frog. Spadefoots occupy a variety of lowland habitats, and potential impacts to this species are related to the overall acreage of habitat impacted by the selected alignment.

Red-legged frogs inhabit lowlands and foothills in or near permanent sources of deep water. The frog prefers ponds or creeks with extensive shoreline vegetation but will disperse 1.6 km (1 mi) or more during or after rain events. Although suitable habitat for the California red-legged frog exists in the project area, due to the presence of non-native predators (i.e.,bullfrog, crayfish, largemouth bass etc.) this species is not expected to occur.

Fish

Fall-run chinook salmon have been observed in low numbers in Auburn Ravine, Coon Creek and Ingram Slough; Central Valley steelhead may also occur in similar habitat in the project area. Pacific lampreys have been observed and the river lamprey could potentially occur. In general, impacts to these special status fish species (and other fish), if present, should be minor. Bridges or culverts are proposed for all stream crossings. The project will not block migration or otherwise impede fish movements. Additional mitigation measures (e.g., erosion/siltation control) can be implemented to ensure that the project does not adversely affect these species.

Formal surveys were not conducted, but chinook salmon were observed, and steelhead are assumed to be present because of historic occurrences in this area.

Chinook Salmon

Juvenile fall-run/late fall-run chinook salmon have been observed in low numbers in the project area in Auburn Ravine, Coon Creek and Ingram Slough. The previous NES reported that these fish were most likely surplus fingerlings planted by CDFG. It is documented that CDFG planted surplus fingerlings in drainage within the project area in an attempt to maximize natural rearing habitat. However, it is also possible that naturally occurring fall-run/late fall-run chinook salmon could occur in the project area. The reaches of the drainage that flow through the project area do not contain suitable spawning habitat for fall-run/late fall-run salmon but upstream reaches of Auburn Ravine and Coon Creek contain potential spawning habitat. In addition, drainage and tributaries within the project area could provide non-natal rearing habitat for salmon fry in early stages of development.

No winter-run or spring-run chinook salmon have been observed in the project area, and these evolutionary significant units (ESU) are not expected to occur.

Potential project-related impacts to chinook salmon could include direct impacts to individuals during work in the drainage and degradation of habitat due to vegetation removal, siltation, etc.

Central Valley Steelhead

Although not observed in the Study Area during previous surveys, Central Valley steelhead could potentially utilize upstream reaches of Auburn Ravine and/or Coon Creek as spawning habitat. In addition, drainage and tributaries within the project area could provide non-natal rearing habitat for steelhead fry in early stages of development.

Potential project-related impacts to steelhead would be similar to those for chinook salmon.

Invertebrates

The Federally listed vernal pool fairy shrimp and vernal pool tadpole shrimp have been recorded in the project area or immediate vicinity and are assumed to be present within all alignments. Tadpole shrimp were not found in the study area, but are known to occur in vernal pools outside the study area, near the western boundary of the study area. Because of the close proximity of this species to the project site, populations of this species could become established on the project site in the future. These species are generally restricted to vernal pools; thus, alternatives with greater potential impacts to vernal pools (A5C1 and AAC2) will likely have greater impact to these invertebrates. Because all alignments impact vernal pools, it is not possible to avoid impacting these species. The primary threat to vernal pool fairy shrimp and tadpole shrimp is habitat loss associated with development. Potential project-related impacts to this species included direct filling of vernal pools, indirect impacts through changes in hydrology and degradation of pools through introduction of invasive species. Mitigation in accordance with FWS guidelines will be required.

Valley Elderberry Longhorn Beetle

The valley elderberry longhorn beetle may also occur in the Study Area, although the beetle's host plant, blue elderberry, is not common in the Study Area and no signs of beetles have been recorded in the Study Area. All alignments may potentially impact elderberry plants. Mitigation for any impacts to appropriate habitat will be required in accordance with the most recent FWS guidelines. Elderberry shrubs occur at low density in the project area near Auburn Ravine, but no evidence of beetle usage was observed.

Threats to this species consist of habitat loss, generally from development activities. Potential project-related impacts to this species consist of direct and indirect impacts to elderberry shrubs during project construction.

4.9.5 Impacts to Key Resources

Table 4-28 provides a side-by-side comparison of the impacts to key resources associated with each of the six alternatives. Figure 4-6 on page 4-77 provides a graphical presentation of this same information. As the table and figure show, none of the alternatives are obviously superior in terms of the impacts to key resources. These resources are broadly distributed throughout the project corridor and none of the alignments minimizes impacts to all resources.

In addition to project impacts on biological resources, another factor that must be considered in evaluating alternatives is the effectiveness of available mitigation measures in offsetting project-related losses. It is not possible to fully offset impacts to mixed oak woodland and mixed riparian forest, regardless of the mitigation measures employed

since many of the trees are over 100 years old, and development of mature riparian forest requires decades. Young trees can be planted and, over time, viable habitat will develop. However, the temporal loss of habitat value while the trees grow and the habitat structure develops cannot be directly offset. Vernal pool impacts may also be difficult to offset due, in part, to the high probability of special status species being present. In comparison, freshwater marsh impacts are relatively easy to offset. Consequently, impacts to oak woodlands, riparian forest and vernal pool habitats should be viewed as more significant than impacts to freshwater marsh.

Table 4-28 Comparison of Direct Impacts to Key Resources

Align-ment	Natural Communities	Wetlands / Waters	Summary
A5C1	80.1 ha (197.7 acres) grasslands containing vernal pools 2.2 ha (5.4 acres) riparian forest 5.8 ha (14.4 acres) oak woodland	9.3 ha (23.1 acres) wetlands/waters 6.5 ha (16.1 acres) vernal pools/swales 2.2 ha (5.4 acres) of marsh Two high value vernal pool complexes	Greatest total wetland, vernal pool, grassland w/ vernal pools and riparian forest impacts of any alternative
AAC2	76.0 ha (187.7 acres) grasslands containing vernal pools 1.1 ha (2.6 acres) riparian forest 10.2 ha (25.2 acres) oak woodland	6.1 ha (15.5 acres) wetlands/waters 3.2 ha (8.0 acres) vernal pools/swales 2.4 ha (6.0 acres) of marsh Two high value vernal pool complexes	Less impact to riparian forest, total wetlands and vernal pools than A5C1; large impact to oak woodlands
D1	48.8 ha (119.4 acres) grasslands containing vernal pools 1.3 ha (3.2 acres) riparian forest 0.4 ha (0.9 acre) oak woodland	5.7 ha (14.1 acres) wetlands/waters 2.8 ha (6.8 acres) vernal pools/swales 2.6 ha (6.3 acres) of marsh One high value marsh	Less impact to vernal pool grasslands, vernal pools and total wetlands than AAC2 and A5C1. Small impact to oak woodlands.
D13	50.4 ha (124.3 acres) grasslands containing vernal pools 1.3 ha (3.3 acres) riparian forest 3.5 ha (8.6 acres) oak woodland	5.3 ha (13.1 acres) wetlands/waters 2.2 ha (5.4 acres) vernal pools/swales 2.8 ha (6.8) acres of marsh One high value marsh	Comparable to D1 except for greater impact to oak woodlands, less impact to vernal pools.
D13 Mod. South	52.5 ha (129.7 acres) grasslands containing vernal pools 1.2 ha (3.0 acres) riparian forest 0.2 ha (0.4 acres) oak woodland	6.8 ha (16.8 acres) wetlands/waters 3.5 ha (8.8 acres) vernal pools/swales 2.8 ha (7.0) acres of marsh One high value marsh	Greatest impact to wetlands and vernal pools of any D alternative. Smallest impact to oak woodlands of any alternative.
D13 Mod. North	64.2 ha (158.7 acres) grasslands containing vernal pools 1.3 ha (3.3 acres) riparian forest 3.5 ha (8.6 acres) oak woodland	5.1 ha (13.8 acres) wetlands/waters 2.1 ha (5.2 acres) vernal pools/swales 3.1 ha (7.6) acres of marsh One high value marsh	Impacts comparable to D13 except for greater impact to grassland/vernal pool complex.

4.9.6 Jurisdictional Waters

Coordination with the ACOE has been on-going. A wetlands delineation was completed in 1994, and verified by the ACOE. (See Chapter 7, Comments and Coordination) However, that delineation has long since expired. After discussion with the ACOE, it was agreed that for the purposes of comparison of the alternatives, the 1994 delineation would be used (Personal communication, Cavanaugh, March 10,1998). When an alignment has been chosen, an additional wetland verification will be completed

which will be used to determine the precise impacts of the project. The project will impact wetlands and other waters subject to regulation by the ACOE and/or CDFG.

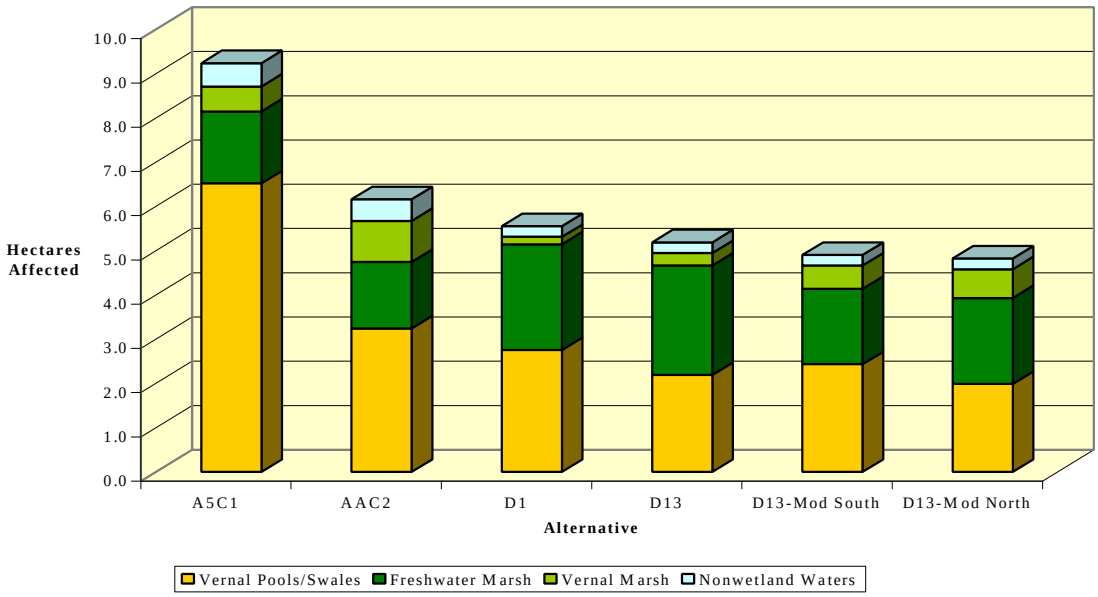
Impacts to wetlands and other jurisdictional waters within each alternative alignment are presented in Table 4-29 . The table shows acreage of each wetland type within each alternative alignment and the percentage of each type relative to the total wetland area within the alignment. The total acreage of jurisdictional waters within the project area, and the percentage of each wetland type relative to the total, is also provided for comparison.

Figure 4-7 provides a graphical presentation of the impacts to ACOE jurisdictional waters with each project alternative. Figure 3-16 in Chapter 3, shows an aerial with the wetlands marked along with an overlay of the proposed project.

Table 4-29 Impacts to Jurisdictional Waters Occurring in the Study Area

ACOE Wetlands	Total Within Study Area	A5C1	AAC2	D1	D13	D13 - Mod. South	D13 - Mod. North
Willow Scrub	1.9 ha	0.1 ha	0.1 ha	0.2 ha	0.1 ha	0.1 ha	0.1 ha
	4.7 ac	*0.3 ac*	*0.3 ac*	*0.4 ac*	*0.3 ac*	*0.3 ac*	*0.3 ac*
	1.8%	1.4%	2.1 %	3.0 %	2.4%	1.9%	2.3 %
Freshwater Marsh	61.5 ha	1.6 ha	1.5 ha	1.9 ha	2.5 ha	2.4 ha	2.5 ha
	151.9 ac	*4.0 ac*	*3.7 ac*	*2.4 ac*	*6.1 ac*	*6.0 ac*	*6.1 ac*
	58.4%	18.3%	25.9 %	43.7%	48.8%	37.3 %	46.2%
Vernal Marsh	8.9 ha	0.6 ha	0.9 ha	0.2 ha	0.3 ha	0.4 ha	0.6 ha
	21.9 ac	*1.4 ac*	*2.3 ac*	*0.4 ac*	*0.7 ac*	*1.0 ac*	*1.6 ac*
	8.4%	6.4%	16.1%	3.0%	5.6 %	6.2%	12.1%
Vernal Pool	31.0 ha	6.2 ha	3.1 ha	2.5 ha	1.9 ha	3.2 ha	1.9 ha
	76.5 ac	*15.4 ac*	*7.6 ac*	*6.1 ac*	*4.6 ac*	*8.0 ac*	*4.7 ac*
	29.4%	70.6 %	53.1 %	45.2%	36.8%	49.7%	35.6 %
Vernal Swale	2.1 ha	0.3 ha	0.2 ha	0.3 ha	0.3 ha	0.3 ha	0.2 ha
	5.2 ac	*0.7 ac*	*0.4 ac*	*0.7 ac*	*0.8 ac*	*0.8 ac*	*0.52 ac*
	2.0%	3.2%	2.8%	5.2%	6.4%	5.0%	3.8 %
Total ACOE Wetlands	105.4 ha	8.8 ha	5.8 ha	5.5 ha	5.1 ha	6.5 ha	5.3 ha
	260.2 ac	*21.8 ac*	*14.3 ac*	*13.5 ac*	*12.5 ac*	*16.1 ac*	*13.2 ac*
ACOE Waters of U.S.	11.7 ha	0.5 ha	0.5 ha	0.2 ha	0.2 ha	0.3 ha	0.2 ha
	28.9 ac	*1.3 ac*	*1.2 ac*	*0.6 ac*	*0.6 ac*	*0.7 ac*	*0.6 ac*
Total Wetland & Waters	117.1 ha	9.4 ha	6.3 ha	5.7 ha	5.3 ha	6.8 ha	5.6 ha
	289.1 ac	*23.1 ac*	*15.5 ac*	*14.1 ac*	*13.1 ac*	*16.8 ac*	*13.8 ac*
CDFG Jurisdictional Waters	92.6 ha	4.5 ha	3.2 ha	4.1 ha	4.2 ha	4.1 ha	4.2 ha
	228.7 ac	*11.0 ac*	*7.8 ac*	*10.1 ac*	*10.3 ac*	*10.0 ac*	*10.3 ac*

Figure 4-7 Potential Impacts to ACOE Jurisdictional Waters



CDFG jurisdiction excludes vernal pools and other wetland features that are not part of a stream or lake, however; riparian habitat is included in CDFG jurisdiction.

As shown in the table and figure, all alignments impact jurisdictional waters, including wetlands. The eastern corridor alternatives impact a proportionately greater area of vernal pools and swales, including the high value vernal pool complex west of the clay pits identified in the Wetland Value Assessment (Chapter 3, Wetlands/Jurisdictional Waters Assessment). The western corridor alternatives impact slightly more marsh habitat, including the high value marsh complex along the east end of Markham Ravine identified in the Wetland Value Assessment. Overall, the impacts to jurisdictional waters are greater with the eastern corridor alternatives, and particularly the A5C1 alignment, which impacts 66 percent more jurisdictional waters than the next highest impacting alternative, AAC2.

4.9.7 Indirect Impacts

This section describes potential indirect impacts to biological resources expected to occur as a result of growth enhanced or facilitated by construction of the proposed project. Because indirect impacts will be similar for all the alignments within the general corridor, conclusions have been generalized for the eastern alignment and western alignment alternatives. Growth is reasonably likely to occur along the new highway corridor, and particularly at the locations of proposed new interchanges. Given the project's proximity to the City of Lincoln, and the growth anticipated for the Lincoln

area, it is reasonable to expect that the SR 65 project may facilitate additional development at these interchange locations beyond what would be expected to occur without the bypass project. However, at this time, most of the surrounding area, especially towards the north end of the project is zoned agricultural.

Indirect Impacts for Eastern Alignments

Nicolaus Road

An interchange is proposed at Nicolaus Road, west of Joiner Parkway serving the AC alternatives. This location is near an area currently being developed with residential uses. According to the City of Lincoln General Plan, this area is all planned to be developed with residential, commercial and industrial uses, except for an open space corridor along Markham Ravine. With growth already planned in this area, growth-inducing impacts associated with the SR 65 project are not expected at this location.

Wise Road

An interchange is proposed at Wise Road serving the AC alternatives. The proposed interchange is located along the City of Lincoln Planning Area[2] boundary, partially within the Planning Area and partially within unincorporated Placer County. Within the Lincoln Planning Area, land use designations are for agriculture and industrial development. The Placer County portion is designated to remain in agriculture. This interchange is located in an area composed of northern hardpan vernal pools. Most of the pools are located just outside of the actual interchange alignment and would not be directly impacted by the project. However, development in the area could result in impacts to vernal pools at this location. Growth in areas zoned for agriculture would require a General Plan amendment and no amendments have been proposed at this time.

Riosa Road

An interchange is proposed for Alignments AAC2 and A5C1 at Riosa Road, west of Sheridan. This area is within unincorporated Placer County, in an area designated to remain in agriculture. This area is currently predominantly agricultural, but also includes some vernal pools east of the proposed interchange. A large freshwater marsh lies just to the south of the proposed interchange. A new interchange at this location could facilitate new development west of Sheridan, resulting in the possible loss of agricultural lands and some vernal pools. Depending on the magnitude of the additional growth, freshwater marsh could also be impacted. A General Plan amendment would be required in order for this additional development to occur.

[2] The City of Lincoln Planning Area includes the City limits plus the Sphere of Influence.

Indirect Impacts for Western Alignments

Nelson Lane

A new interchange is proposed at Nelson Lane, in the southern portion of the project area. Improvements are also proposed along Nelson Lane north to Nicolaus Road. This area, which is within unincorporated Placer County, includes agricultural land, non-native grassland with and without vernal pools and oak woodland. A moderate quality vernal pool complex containing a high density of pools occurs just southeast of the proposed interchange. The County General Plan land use designation for this area is agriculture. The interchange and associated street improvements would facilitate access to the Lincoln Airport area and surrounding industrial uses. Development in this area would result in the possible loss of vernal pools, oak woodland and non-native grassland. A General Plan amendment would be required in order for this additional development to occur.

Nicolaus Road

An interchange is proposed at Nicolaus Road, west of Lincoln Airport. Similar to the Nelson Lane interchange, this location is within unincorporated Placer County and designated for agricultural uses. Most of this area is currently in agricultural production. Nicolaus Road is a primary east/west artery serving the Lincoln area. The Lincoln General Plan identifies improvements to Nicolaus Road to meet future traffic demands. The new interchange would create additional demand on Nicolaus Road, and possibly facilitate additional development. Additional growth in this area would primarily result in the loss of agricultural land; some vernal pools could also be impacted. A General Plan amendment would be required in order for this additional development to occur.

Wise Road

A new interchange is proposed for Wise Road, northwest of Lincoln Airport. Like the other western alignment interchanges, this location is within unincorporated Placer County and designated for agricultural uses. This area is currently agricultural land and non-native grassland; a small oak woodland occurs to the southeast of the proposed interchange. Development at this location would primarily impact non-native grassland and agricultural land. A General Plan amendment would be required in order for this additional development to occur.

Riosa Road

The interchange proposed at this location was previously described under the Eastern Alignments.

4.9.8 Recommended Mitigation Measures for Natural Resources

The mitigation measures described below are recommended in order to offset direct and indirect impacts to biological resources resulting from the proposed project. Mitigation measures are based upon agency guidelines. Mitigation ratios were based on experience with what the Federal and State agencies have required in the past and on professional experience with what replacement ratios and preservation ratios are required to re-establish levels of habitat function and values that are equivalent to or greater than pre-project levels. Oak woodland and oak tree replacement ratios are based on requirements provided in Placer Counties Oak Tree Ordinance and Senate Concurrence Resolution No. 17.

It is likely that mitigation requirements for various biological resources can be combined. For example, preservation of suitable grassland habitat containing vernal pools may provide mitigation for vernal pools and associated special status invertebrates and plants, and for Swainson's hawk (foraging habitat). Preservation and, if appropriate, enhancement of one or more large plots of land providing a variety of biological resource values (e.g., wetlands, wildlife habitat, etc.) may mitigate for a large proportion of the total project-related impacts.

An example of potential mitigation requirements for two alternative alignments (A5C1 and D13) based on impacts to key resources is presented in Table 4-30. This example is based on project alignments, rather than actual construction footprints. Consequently, final mitigation requirements may be less than indicated in the table.

Table 4-30 Potential Mitigation Requirements for A5C1 and D13

		A5C1		D 13	
Impact Category	**Basic Mitigation Requirement**	**Resources Present**	**Mitigation Required**	**Resources Present**	**Mitigation Required**
Vernal Pools & Swales	2:1 preservation & 1:1 compensation	6.6 ha *(16.1 ac)*	13 ha *(32.2 ac)* preservation & 6.5 ha *(16.1 ac)* compensation on 217 ha *(537 ac)*	2.2 ha *(5.4 ac)*	4.4 ha *(10.8 ac)* preservation & 2.1 ha *(5.4 ac)* compensation on 73 ha *(180 ac)*
Marsh Wetlands	Minimum 1:1 replacement	2.1 ha *(5.4 ac)*	2.1 ha *(5.4 ac)*	2.8 ha *(6.8 ac)*	2.8 ha *(6.8 ac)*
Mixed Riparian Forest	3:1 replacement or enhancement of degraded habitat	2.3 ha *(5.4 ac)*	6.6 ha *(16.2 ac)* of new or enhanced habitat	1.3 ha *(3.3 ac)*	4.9 ha *(12.0 ac)* of new or enhance habitat
Mixed Oak Woodland	2:1 habitat preservation based on acreage impacted	5.8 ha *(14.3 ac)*	11.6 ha *(28.6 ac)* preservation of oak woodland	3.5 ha *(8.6 ac)*	6.8 ha *(16.8 ac)* preservation of oak woodland
Oak Trees	Tree planting at 1 sampling per 1" dbh impact	263 trees 68.58 m (2,700")	2,700 sapling oaks @ 60/ac on 18.2 ha *(45 ac)*	205 trees 43.18 m (1,700")	1,700 sapling oaks @ 60/ac on 10.5 ha *(28 ac)*
Grasslands /Ag land	1:1 preservation	149 ha *(369 ac)*	149 ha *(369 ac)* preservation	179 ha *(442.4 ac)*	179 ha *(442 ac)* preservation
Summary		**244.3 ha *(603.6 ac)* mitigation**		**197.4 ha *(487.9 ac)* mitigation**	

Mitigation for Natural Communities

1. To the maximum extent feasible, the final project alignment shall be routed to avoid or minimize impacts to high quality natural communities including oak woodland, riparian forest and grasslands with high concentrations of vernal pools.

2. Crossings of Auburn Ravine, Markham Ravine and Coon Creek shall be located where riparian resources are least extensive; crossings shall be aligned perpendicular to the riparian corridor to minimize the crossing impact.

3. Unavoidable impacts to riparian forest habitat shall be mitigated through restoration or enhancement (including expansion) of existing degraded riparian habitat at a ratio of 1.2 ha (3 ac) restoration or enhancement for every 0.4 ha (1 ac) impacted. Riparian forest mitigation areas shall be protected in perpetuity through conservation easements, deed restrictions or other equivalent measures.

4. Unavoidable impacts to oak woodland habitats shall be mitigated through preservation of 1.2 ha (3.0 ac) of existing oak woodland for every 0.4 ha (1 ac) of impact. In addition, impacts to individual oak trees shall be mitigated by planting one sapling tree or equivalent (direct seeding of acorns may also be acceptable) for every one inch of tree

diameter at breast height impacted. Oak mitigation areas shall be protected in perpetuity through conservation easement, deed restriction or other equivalent measures.

5. Prior to construction during the spring breeding season, a qualified biologist shall conduct pre-construction surveys of impact areas to check for nesting birds. If nesting activity is detected, construction activities shall avoid nest sites until the biologist determines that the young have fledged or nesting activity has ceased.

6. All significant drainage shall be passed through the roadway prism via bridge or culvert. Culverts shall be straight (without bends) to facilitate wildlife movements.

7. All significant habitats located outside of construction areas shall be designated as Environmentally Sensitive Areas (ESA) and so designated on construction plans and specifications. No encroachment into ESA shall be allowed.

Mitigation for Special Status Species

1. Once an alignment for the SR 65 Lincoln Bypass project is selected, focused surveys for special status species shall be conducted within the project impact area at the appropriate time of year. Surveys shall include 100 percent coverage of habitats likely to support special status species. Where appropriate, prescribed survey protocols shall be followed. The following species/species groups shall be emphasized:

- Bats
- Nesting birds
- Reptiles and amphibians
- Vernal pool plants

2. If special status species are located within the project impact area, appropriate mitigation measures shall be developed in coordination with the resource agencies and implemented to offset project effects. The mitigation measures shall be specific to the species affected. Where applicable, previously developed agency mitigation guidelines shall be followed.

3. A mitigation plan for project impacts to the Swainson's hawk shall be developed in accordance with CDFG guidelines. These guidelines stipulate 1) avoidance of disturbance adjacent to active nests during the breeding season and 2) provision of Habitat Management lands to compensate for loss of foraging habitat.

4. Mitigation for special status vernal pool invertebrates (fairy shrimp and tadpole shrimp) and for special status vernal pool plants (Ahart's dwarf rush, Bogg's Lake hedge hyssop, dwarf downingia and legenere) shall be accomplished through implementation of a comprehensive vernal pool mitigation plan. The mitigation plan shall offset impacts to vernal pools, and associated invertebrates and plants, through 2:1 preservation of existing, equivalent vernal pools and 1:1 creation of new vernal pools in an appropriate

setting to be selected in coordination with the resource agencies. Some or all of this mitigation may be accomplished through purchase of credits from approved mitigation banks or purchase and dedication of an appropriate mitigation bank site to be approved by the resource agencies.

5. Once an alignment for the SR 65 Lincoln Bypass project is selected, a qualified biologist shall survey the selected alignment for elderberry plants that potentially provide habitat for the Valley elderberry longhorn beetle (VELB). If suitable habitat is found, a mitigation plan shall be developed and implemented. Mitigation for VELB shall be accomplished in accordance with *Mitigation Guidelines for the Valley Elderberry Longhorn Beetle* provided by the FWS (July 9, 1999). These guidelines specify that elderberry plants shall be avoided whenever possible. If avoidance is not possible, elderberry shrubs shall be transplanted. In addition, each elderberry stem greater than 2.54 cm (1") diameter at ground level that is impacted (either by removal or transplanting) must be replaced with seedlings or cuttings at a ratio ranging from 2:1 to 5:1. Long-term maintenance and monitoring are also required.

Mitigation for Wetlands & Jurisdictional Waters

1. Once an alignment for the Lincoln Bypass project is selected, a qualified delineator shall perform a final delineation of all wetlands and non-wetland waters within the project impact area. The final delineation shall be submitted to the ACOE and/or Natural Resource Conservation Service for verification.

2. Impacts to wetlands and non-wetland waters shall be mitigated in accordance with the final ACOE Sacramento District Habitat Mitigation and Monitoring Proposal (HMMP) Guidelines. Appropriate mitigation ratios shall be established to ensure no net loss of wetland acreage or value. The HMMP shall address, at minimum, the following:

- *Project Description:* location and summary of project; jurisdictional areas to be filled; types, functions and values of impacted jurisdictional areas;
- *Goal of Mitigation:* type, functions and values of habitats to be created or enhanced; temporal losses; estimated costs;
- *Proposed Mitigation Sites:* location, size and ownership of mitigation areas; existing functions, values and jurisdictional waters; present and proposed uses and zoning;
- *Implementation Plan:* rationale for expecting success, responsibilities; schedule; site preparation; planting plan, irrigation plan; as-built plans;
- *Maintenance*: activities; schedule; responsible parties;
- *Monitoring Plan:* success and performance criteria; jurisdictional waters to be created/enhanced; monitoring methods; reports and schedule;
- *Completion of Mitigation*: agency notification and confirmation; and
- *Contingency Measures*: initiation, locations and funding.

4.9.9 Compensatory Mitigation Plan

Several potential mitigation sites have been considered and conceptually evaluated. They range from mitigation banks to participating in the Placer Legacy Project and are summarized below. These options will be explored more fully once the final mitigation requirements have been determined. A final mitigation plan will be adopted before the Final Environmental Impact Report/Statement is distributed.

The Placer Legacy Project is sponsored by Placer County and is dedicated to protecting open space in Placer County. To further this goal, Placer Legacy pursued an option to buy the Moore Ranch, located adjacent to Moore Rd. northwest of Lincoln. The Department offered to provide partial funding for the acquisition of Moore Ranch as mitigation for impacts related to the Lincoln Bypass project. The Department did a cursory evaluation of the habitat available on this site and found it suitable for mitigation. Since that time, a developer has exercised their option to buy the property and it is no longer available. However, Placer Legacy has numerous habitat restoration projects proposed in the project vicinity. Discussion with Placer Legacy about financial participation in these other efforts could be another way to achieve mitigation goals.

Mitigation banking is another option being explored by the Department. The Wildlands, Inc. Wetlands Mitigation Bank, northeast of Lincoln, has all of the habitats needed to compensate for project impacts. Discussions with Wildlands, Inc. have taken place to evaluate the feasibility of this option. Wildlands, Inc. is also looking into re-establishing a variety of habitats on an 128 ha (317 ac) parcel called Aitkens Ranch, located southwest of the project. The possibility of the Department's financial participation is being considered.

The opportunity to mitigate for seasonal and perennial wetlands and riparian habitat exists at Beach Lake, a mitigation bank created by the Department's along the banks of the Sacramento River, near the town of Freeport and adjacent to the Stone Lakes National Wildlife Refuge.

Portions of property acquired for the project may not be used for the project, yet are also unusable to the property owner. These parcels are known as "Excess Land." There are several parcels of possible excess land associated with this project which have been identified as potential mitigation opportunities.

4.10 CULTURAL RESOURCES

A cultural resources inventory resulted in the identification of fifteen archaeological resources and the evaluation of eight pre-1946 architectural resources. The Historic Architectural Survey Report (HASR) and the supplemental HASR (completed in 1989

and 1990) evaluated a total of eight properties, two of which were determined to be potentially eligible for listing in the NRHP: the Fickewirth Ranch and the Sheridan Cash Store (a.k.a. Country Store). Two additional properties in the vicinity of the project have been listed on the National Register since 1990; the Lincoln Public Library at 590 Fifth Street (listed 12/10/90) and the Women's Club of Lincoln at 499 E Street (listed 5/30/01). Both of these buildings are within the town of Lincoln and not directly affected by the project.

In the Supplemental HASR (dated August 1990), 39 properties were treated in accordance with the December 20, 1989 "Memorandum of Understanding Regarding Evaluation of Post-1945 Buildings, Moved Pre-1945 Buildings, and Altered Pre-1945 Buildings." Of the 39 properties, 21 do not predate 1957 and thus require no further study. The remaining eighteen properties predate 1957 and need to be formally evaluated. The application of "Caltrans Interim Policy for the Treatment of Buildings Constructed in 1957 or Later" will be documented in a statement of findings in the Supplemental HASR that will update the August 1990 Supplemental HASR

Four of the archaeological finds were adjacent to, but outside of, the Project Study Area and were not considered further. Eight of the remaining eleven archaeological resources were recorded as isolated finds or features and three were recorded as archaeological sites. Two of these three sites are considered potentially eligible for inclusion in the National Register of Historic Places (NRHP) until they have been evaluated for significance.

These two sites are potentially affected by the AAC2 alignment. The alignment passes through one of the sites and is in close proximity to the other. If the AAC2 alternative is selected, the first site will be tested for significance and eligibility for listing in the NRHP. An assessment of the impacts on this site cannot be made until the deposit has been evaluated.

Preliminary plans indicate that the third site will not be directly impacted by the proposed construction. As a result, the site will be designated as an environmentally sensitive area (ESA) to ensure its protection. If design plans are modified such that the site is impacted, it will be tested for significance for listing in the NRHP, and an assessment of the effects would be made at that time.

Two of the eight architectural resources were determined eligible for the NRHP by consensus of the State Historic Preservation Officer (SHPO) on October 21, 1991; the Fickewirth Ranch and the Sheridan Cash Store. Copies of the correspondence with SHPO can be found in Chapter 7, Comments and Coordination.

The Sheridan Cash Store is adjacent to A5C1, AAC2 and D1 and D13, but will not be affected by any of these alternatives. The storefront sits approximately 24 m (80 ft) from the pavement edge of SR 65. This distance will not change if the highway is relinquished to the county, nor will additional right-of-way be required for any potential road improvements near the store. Traffic and its attendant noise are likely to decrease if any of the longer build alternatives are selected.

The eligibility of the Sheridan Cash Store under Criterion A is based on its association with Sheridan's economic development and for embodying the characteristics of its time, period or method of construction. The brick false-front store was designated a Point of Historical Interest by the California Historic Resource Commission on August 3, 1990,by virtue of being the only remaining commercial brick building in Sheridan. No new elements will be introduced into the setting; thus none of the proposed alignments will alter the characteristics of the property that qualify it for the NRHP.

The Fickewirth Ranch is located at 2780 Dowd Road, approximately 4.8 km (3.0 mi) south of the town of Sheridan. The property consists of a residence, a tank house, a windmill, a long shed (originally a chicken house), a timber-framed hay barn, a one-time blacksmith shop and several smaller miscellaneous sheds. The residence and most of the outbuildings were constructed in 1901. The house was originally built as a one-story Queen Anne cottage; a second story was added about 1912. The buildings on the property have been maintained in their original form with little or no modification. Materials used to maintain the property were of the same kind as the original, thereby serving to preserve the original character and integrity of the farm complex. The house is one of the earliest intact residences remaining in the local area.

Mr. and Mrs. Fickewirth currently own the ranch. The property is approximately 1524 m by 762 m (5000 ft by 2500 ft).

The Fickewirth Ranch has been determined eligible for the NRHP at the local level under Criterion C as an embodiment of its time, period, and method of construction. All of the structures on the property, in their form and function, contribute to this determination. Furthermore, the property remains in its rural setting.

Alternatives D1 and D13 and A5C1 require a portion of the Fickewirth Ranch. The Department's and the FHWA, in applying the Criteria of Effect and Adverse Effect (36 CFR 800.9) have concluded that a "Finding of No Effect" is appropriate for each of the three alignments going through this property, and have obtained SHPO's concurrence on this determination. SHPO concurred with this determination on January 30, 1995. Copies of this correspondence can be found in Chapter 7, Comments & Coordination.

4.10.1 Application of the Criteria of Effect on the Fickewirth Ranch

Alternatives A5C1, D1 and D13 pass through the 104 ha (258 ac) agricultural parcel containing the Fickewirth Ranch. The proposed alignment for Alternative A5C1 lies approximately 457 m (1500 ft) from the ranch complex, while Alternative D1 and D13 are about 610 m (2000 ft) from the buildings. The elevation drops approximately 1.5 m (5 ft) between the building complex and each of the alignments. The proposed highway for these two alternatives will not be seen from the building complex, although vehicles on the highway will be visible. A similar condition would exist for the A5C1 alternative. Furthermore, the view of the alignments would largely be blocked from the Fickewirth residence by the surrounding outbuildings.

Projected traffic counts on this section of the proposed freeway are anticipated to be relatively low. A noise level projection model found that any increase in sound would be well below the criteria level of a significant noise impact as the minimum distance of 183 m (600 ft) from the ranch complex. The proposed alternatives are all at a much greater distance; thus the increase in noise from the new highway will be negligible. Furthermore, because it is located immediately adjacent to Dowd Road, traffic and its attendant impacts have always been a factor in the setting of the ranch complex. The addition the proposed freeway at a distance of 457 to 610 m (1500-2000 ft) will not create elements that did not previously exist.

The eligibility of the Fickewirth Ranch is based on the type and period of the building complex. As no new elements would be introduced into the setting of the property, none of the alignments would alter any characteristic of the property that qualifies it for the National Register of Historic Places. Thus, the proposed project will have no effect on the Fickewirth Ranch.

4.10.2 Mitigation Measures

The proposed project will have no effect on the two National Register eligible properties; thus no mitigation measures are proposed.

If the AAC2 alignment is chosen, the archeological sites within that alignment will be evaluated for inclusion in the NRHP and mitigation will be proposed at that time.

4.11 HAZARDOUS WASTE

The parcels listed in Table 4-31 were determined to warrant further investigation if they are adjacent to the alternative that is ultimately chosen.

Figure 4-8 shows the location of these parcels.

Table 4-31 Parcels Possibly Requiring Further Investigation

No.	Assessors Parcel Number	Problem
1	021-380-001& 002	Surface staining under some above-ground storage tanks.
2	021-380-056	Surface staining under a waste oil container.
3	021-150-076	Potential leaking underground storage tank.
4	020-150-31	Listed on the SPL[1] list.
5, 6, 7, 8, 9	021-262-11, 019-320-002,021-262-004, 021-033-007,21-035-007	Underground storage tanks located on parcels.
10, 3	021-02-005, 21-02-025	Abandoned farm equipment and vehicles covered the soil. Removal of equipment may reveal impacts that were not clearly visible during initial investigation.
12	021-262-012	Municipal Sewer Treatment Plant.
13, 14, 15	019-29-010, 019-29-019, 020-150-030	Storage and use of hazardous materials such as pesticides and fuel.
16	021-056-016	Collection of discarded batteries.
17	Adjacent to 021-002-08	Questionable disposal practices by WECO Aerospace and Infinity Aviation.

[1] The State Priority List (SPL) is the state equivalent of the Federal Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS list.)

In addition; any buildings that are to be acquired will be evaluated for the presence of asbestos. Due to the agricultural nature of the area, many of the parcels contain above ground storage tanks, which will be investigated. In addition, many of the residences are equipped with septic systems. Unknown conditions relating to the septic systems may exist.

Due to the former use of waste oil (potentially containing PCB) to control dust in railroad right-of-ways, the railroad areas within the alignment could contain PCB affected soil. Work in the Railroad right-of-way could generate hazardous waste, and will be handled accordingly.

The Department's Chapter 18 "Hazardous Waste" Article 1-Policies (PDPM) states that "if a contaminated site is encountered and avoidance is not possible, the Department should make every effort to have the owner and /or responsible party investigate and cleanup the contamination prior to acquisition. In addition, Chapter 18 "Cleanup Time Table" states; "Regardless of who is responsible for performing the cleanup, such cleanup should be completed prior to PS&E submittal for advertising."

Figure 4-8 Potential Hazardous Waste Locations

4.11.1 Mitigation Recommendations

It is recommended that soil sampling be conducted on a site specific basis after a preferred alignment has been chosen. In addition, comprehensive asbestos and lead-based paint inspections that meet the requirements of current EPA and OSHA regulations are recommended prior to any demolition activities associated with structures in the proposed alignment corridor. Any component that is planned to be impacted by demolition activities should be characterized to ensure proper handling and disposal.

4.12 VISUAL RESOURCE IMPACTS

Visual character within the Study Area is changing due to planned growth as indicated in the Lincoln General Plan, Land Use Map (refer to Chapter 3 Affected Environment; Social, Economic and Land Use Section). Eventually, as more land becomes developed in this corridor, the rural visual quality will slowly transform into urban build-out. Development diminishes visual quality and character due to soundwalls and structures built adjacent to the right-of-way.

The D 13 modifications are expected to be similar to the other D alternatives. All six alignments begin in the same general location, approximately 1.6 km (1 mi) south of the City of Lincoln. The alignments then cross over the UPTC railroad tracks and pass through west Lincoln where development is occurring. A park and ride site is planned slightly north of the overhead between the UPTC railroad tracks and existing SR 65. The large overhead (also known as an overpass) will provide expansive panoramic views from the roadway. Views from the overhead will provide a variety of visual elements, such as the City of Lincoln, pastureland, creek corridors, oak woodland, the Sierra Nevada, Sutter Buttes and Coast Range.

This overhead could provide areas for planting on its soil-covered slopes. Once plantings mature, trees will provide an important visual vertical element. Once development and build-out occurs, this overhead may become the gateway to the City of Lincoln. It is very important to have an aesthetically pleasing, architecturally interesting structure since the overhead will dominate over surrounding uses, becoming a prominent visual feature.

All of the alignments, except for D1, break up a small cluster of rural home sites at the bend in Moore Road. This disrupts the unity and harmony of such enclaves and may lead to viewer confusion. It may be necessary to screen residences from the proposed highway. Screening methods include dense plantings for screening and barriers, possible soundwalls for noise attenuation and/or fencing with wood slats. A landscape architect could suggest the most feasible and appropriate screening method.

In and around Moore Road and Auburn Ravine is predominantly oak woodland. All the alignments run through this fading piece of California heritage land, causing the removal of prime oak habitat. California white oaks, also known as valley oaks, are the predominant species. Mitigation for these heritage oak trees is of prime importance.

All of the alignments traverse Auburn Ravine. The bridge crossing Auburn Ravine should be integrated into existing landforms with a simple, clean and aesthetically pleasing design. If the channel needs to be relocated, its banks should be replanted with native species and restored to its existing conditions. This creek corridor provides a prime location for oak plantings.

The AC corridor

The **AAC2** and **A5C1** pull away from SR 65 approximately 322 km (200 ft) farther northward causing a wider bend to the west. After crossing Ingram Slough, these alignments remove part of the Aitken Ranch Turkey Farm, causing the removal of three buildings and also divide the rural home sites on Moore Road.

The AAC2 and A5C1 alignments continues northwest, requiring a second railroad overhead before tying into existing SR 65. This overhead is very similar to the first overhead where the Lincoln Bypass pulls away from existing SR 65. However, northbound views now show the rural nature of the foothills, the Sierra Nevada, Sutter Buttes, Coon Creek and nearby agriculture along with the rural community of Sheridan. Just before the Lincoln Bypass ends, the four-lane expressway narrows down into a two-lane highway and ties into existing SR 65. The Joiner Ranch Project Area to the east of the AC corridor, is rapidly developing.

Figure 4-9 illustrates the typical height, size, color and location of a soundwall which may occur along the Lincoln Bypass. From this key view, the height of the soundwall will obliterate most views of existing oaks in the background. However, through appropriate mitigation, oak tree replacement may occur adjacent to freeway soundwalls. This simulation shows mature oak trees. However, one must also remember that in the future, this area will be completely developed to the soundwall.

The **A5C1 and AAC2** alignments begin approximately one-half mile north of Nicolaus Road with a wide gradual northwest curve. Both alignments follow the same route for approximately two miles before breaking apart south of Coon Creek, passing through vernal pools for approximately 4.8 km (3 mi) between Nicolaus and Dowd Roads.

Alignment **AAC2** connects into the AA alignment north of the Nicolaus Road interchange and Markham Ravine, near the powerlines on the Foskett property, following the same route as A5C1 until the Nader Ranch. After the Nader Ranch, AAC2 curves

northward in a wide, gradual curve and crosses Coon Creek approximately 243 m (800 ft) upstream from the A5C1 alignment. By going between oak clusters, this alignment promotes more of the feeling of crossing from one area and entering another area.

After crossing Coon Creek, **A5C1** curves widely through agricultural lands, with an overcrossing at Dowd Road. Rural ranches and meandering creek corridors are visible to the east while traveling through the relatively flat terrain. Two bridges are needed for Yankee slough and Dalby Road will be realigned. A5C1 gradually rises into the unique mile-wide foothill that was described in Chapter 3. An interchange is planned for Riosa Road.

The D corridor

The **D1 and D13** alignments veer west of the Lincoln Municipal Airport. Both D1 and D13 present negative views for residents of the rural subdivision on Rockwell Lane. These residents now have panoramic rural views of Markham Ravine and agricultural areas to the south. Once the bypass is built, head and taillights will be the most dominant visual intrusion to the south.

After curving to the northwest, crossing Ingram Slough and cutting through the corner of Aitken Farms, the **D13** alignment breaks up the small rural cluster of home sites at the bend in Moore Road. After crossing Auburn Ravine, it then curves gradually to the west. This section of the proposed alignment provides exceptional views of sunrises and sunsets.

The Nelson Road interchange provides changes in topography while also allowing oak restoration areas. D13 parallels the rural Rockwell Lane subdivision. The closest structures within this rural subdivision are a minimum of 457 m (1500 ft) away from the D13 alignment. Even though this rural subdivision diminishes the integrity of the natural visual setting, it provides a middle ground focal point. This 457 m (1500 ft) distance retains the visual quality of this rural subdivision, both from the residents' viewpoint and for users of the Lincoln Bypass.

Alignment D13 then widely curves to the north, crossing Markham Ravine. The bridge should be simple; complimenting existing landscapes through color, size, form, texture and an aesthetically pleasing architectural design as previously discussed. In addition, a small triangular portion of land adjacent to the creek crossing could be used for oak mitigation. Additional plantings along the creek corridor could provide areas for oak replacement while also augmenting receding oak populations. This wide curving alignment straightens out near Nicolaus Road where a future overcrossing is planned. D13 then continues northward through agricultural areas until it combines with the D1 alignment.

Figure 4-9 Visual Simulation

The major difference between the D alignments is that D1 is slightly further northward, disrupting the rural Rockwell Lane subdivision. Two home sites would be demolished and other homes may be as close as 30.5 to 76 m (100 to 250 ft) away from the proposed alignment.

The pooling, tributary area of Markham Ravine on the south side of the proposed D1 alignment allows attractive views for Lincoln Bypass travelers during the wet months. In addition, this alignment cuts through the southern tip of a long eucalyptus wind break, adding an immediate vertical visual element directly adjacent to the right-of-way.

D1 has the same overall visual qualities of D13 except for the area near Auburn Ravine. The rural neighborhood at the bend in Moore Road is now entirely on the north side of the proposed route. Visually and socially, it is wise to not break up this neighborhood. By leaving the enclave of homes intact, the foreground views of rustic home sites tucked inside an oak woodland provides visual integrity and promotes the rural quality of this region. Once development occurs, the rural home sites may disappear, leaving mixed-use development. D1 joins with D13 just past Nicolaus Road.

All of the longer alignments **(A5C1, AAC2, D1 and D13**) generally cross the same area from Wise Road on to where they join with existing SR 65. These alignments either cross over or weave through small hills north of Coon Creek. These low-lying foothills exaggerate the feeling of traveling and passing through an area due to their vertical relief upon otherwise horizontal fields. The alignments cross extensive vernal pools, agriculture and non-native grasslands for over 2.4 km (1.5 mi) before arriving at the unique, mile-wide rolling foothill between Dalby and Riosa Rds.

Even though these alignments tie into existing SR 65 at different locations before reaching the Bear River, they are within 457 m (1,500 ft) of each other. The D1 and D13 alignments go through existing fruit and nut orchards whereas A5C1 and AAC2 do not. Disturbing the existing orchards and their geometric plant spacing will cause the visual quality and character to be altered. However, orchards normally create interesting, geometric views from the roadway.

4.12.1 Mitigation

Mitigation encompasses the enhancement of positive effects as well as the reduction or elimination of negative effects. The mitigation goal for Lincoln Bypass is to restore the indigenous appearance to areas affected by construction and to form the highway so it blends into adjacent terrain. In achieving this goal, the highway should appear to be a part of the natural landscape. The most effective mitigation is to design the project with as little disturbance to the land as possible.

Oak Regulations

The California Senate passed a resolution effective September 1, 1990 protecting heritage oak stands. State agencies shall “assess and determine the effects of their land use decisions or actions within any oak woodlands.” State agencies should "preserve and protect native oak woodlands to the maximum extent feasible... or provide for replacement plantings" according to SCR17. There are eight stands of oaks meeting the criteria as heritage trees within the Study Area. In addition, Placer County adopted a tree preservation ordinance in October of 1991. This ordinance was established to preserve and protect the remaining native oak and other species of trees within Placer County. Within the project area, landmark trees and trees within a riparian zone provide the majority of trees affected by this ordinance.

Oak Removal

Tree removal should be kept to a minimum. Because of the loss in change of spatial enclosure and the number of heritage oak stands, it is particularly important to leave existing trees as close to the highway as safety will allow. Prior to clearing operations, trees needing to be removed should be individually marked for cutting and all other trees should be protected from damage.

Determination of the final alignment is not an easy task due to many constraints, some of which include oak preservation, wetland habitats, potential endangered species and scenic quality considerations. All proposed alignments remove portions of existing mature oak woodlands. The total diameter at breast height (dbh) varies between the alignments but D1 has the least oaks being removed and AAC2 has the most oaks being removed. Below is an approximation of total oak removal for each alignment:

D1 alignment	17.8 m (700") of oaks to be removed
D13 alignment	43.2 m (1,700") of oaks to be removed
A5C1 alignment	68.6 m (2,700") of oaks to be removed
AAC2 alignment	85.1 m (3,350") of oaks to be removed

Oak Replacement

Mitigation of oak woodland habitat will be necessary for the Lincoln Bypass. It is best to locate replacement trees in areas where existing oaks have been removed. Creek corridors also provide an exceptional location to augment existing oak woodlands with additional replacement oaks. In addition, wider right-of-ways allow naturalistic arrangement of replacement oaks while also enhancing visual quality and character. Landscape architects can provide re-vegetation plans, which will further enhance the Lincoln Bypass. More information on oak woodland replacement can be found in Section 4.9.8.

Vegetation Preservation

The natural vegetative layers of tree canopy, understory vegetation of small trees and shrubs, groundcovers, native grasses and natural mulches should be reestablished.

4.12.2 Erosion Control

Potential damage from erosion and runoff can be severe. Sedimentation barriers such as simple hay bales or soil filter fabrics attached to fences (silt fences) can help prevent erosion. To establish effective re-vegetation on slopes, topsoil can be collected from the project site prior to construction, stockpiled, and later applied to the completed slopes. Erosion control plans can be custom-tailored to specific sites by a landscape architect. Erosion control is discussed in depth in the Water Quality Section of this chapter.

If re-vegetation is not accomplished, roadside scars will become prominent on cut and fill slopes. The magnitude of these visual impacts depend upon how the slopes are treated. All slope treatments should blend with existing features, simulating natural forms. This consists of rounding the top and edges of the cuts and fills to present a softer transition line between constructed and existing slopes. Particularly where a significant tree or group of trees can be saved, slopes could be cut steeper to preserve them. In addition, slopes should be designed to be flat enough to readily re-vegetate them. A 4:1 slope is recommended. This means that for every four feet of horizontal length the slope will rise vertically one foot.

Contour grading may increase the overall size and length of graded areas, requiring adequate right-of-way to be wider than the 70 m (230 ft) as proposed. The unique, mile-wide foothill near Dalby and Riosa Roads is a prime example where contour grading principles should be employed along with establishing wider right-of-way, smoothing the natural to standard transition edge along the roadway.

Bridges and Other Structures

Special attention should be given to structures since they have a strong impact on the visual quality of a highway. All structures should be aesthetically pleasing when viewed from the road and other viewpoints. Landforms should blend into bridge abutments to maintain visual continuity for the motorist. Structures should complement the natural landscape in color and not dominate existing landforms.

Soundwalls

Soundwalls are an important element in highway design where homes and other noise-sensitive properties are close to the right-of-way. The compatibility between highways and residential areas is significantly improved by the provision of attractively designed soundwalls. Planting is effective in complementing and softening the

appearance of soundwalls. Visual impacts must be considered once final locations of soundwalls are determined.

4.13 CUMULATIVE IMPACTS

Evidence is increasing that the most disturbing environmental effects may result not from the direct effects of individual projects, but from the cumulative effects of individually minor projects over time. The Council on Environmental Quality (CEQ) guidance define cumulative effects as "the impact on the environment which results from the incremental impact of the action when added to other past, present and reasonable foreseeable future actions, regardless of what agency or person undertakes such other actions" (40 CFR § 1508.7). Environmental cumulative effects accumulate when the environment does not have enough time to recover to its original condition before another outside action takes place to affect the environment.

Cumulative effects analysis necessarily involves uncertainties and assumptions, but useful information can be presented now to facilitate better decision making. This section will investigate the cumulative effects of this and other projects in the Lincoln area.

Identifying the major cumulative effects involves defining the direct and indirect effects of the proposed action and other projects in the area, which resources, ecosystems and human communities are affected and which effects on these resources are important from a cumulative effects perspective. The resources primarily affected by this project are air quality, wildlife habitat and wetlands and agricultural land. These resources are described in detail in the "Affected Environment" chapter, so this chapter will focus just on the cumulative effects to these resources.

The geographic scope of cumulative impacts varies by technical area; for example the scope of cumulative impacts for water quality would be the Sacramento River watershed, for air quality; the Sacramento Valley Air Basin. The evaluation area for biological resources includes the Central Sacramento Valley, but also includes portions of the lower Sierra foothills on the east and bottomlands to the west. Natural communities within the cumulative impacts evaluation area are similar to those occurring within the project Study Area.

Temporally, the scope of this cumulative impact chapter is the existing condition and all reasonably foreseeable projects in the future, both development activities and transportation projects.

When considered with other reasonably foreseeable projects, such as described in Table 1-9 in Chapter 1, cumulative impacts to some resources will be more severe than impacts caused by the highway project alone. The EIR for the Placer County General

Plan Update concluded that development in eight major areas[3], taken as a whole, will result in potentially significant adverse impacts to land conversion and habitat quality reduction, and cause an increase in air pollutant emissions and traffic noise.

4.13.1 Socioeconomic Impacts / Farmland Impacts

Growth within the Cumulative Impacts Study Area (CISA) is expected to continue to be concentrated, for the most part, around existing developed communities. (See Figure 4-10) Based on the planning documents reviewed, it appears that the areas closest to Lincoln will exhibit the most growth in the foreseeable future.

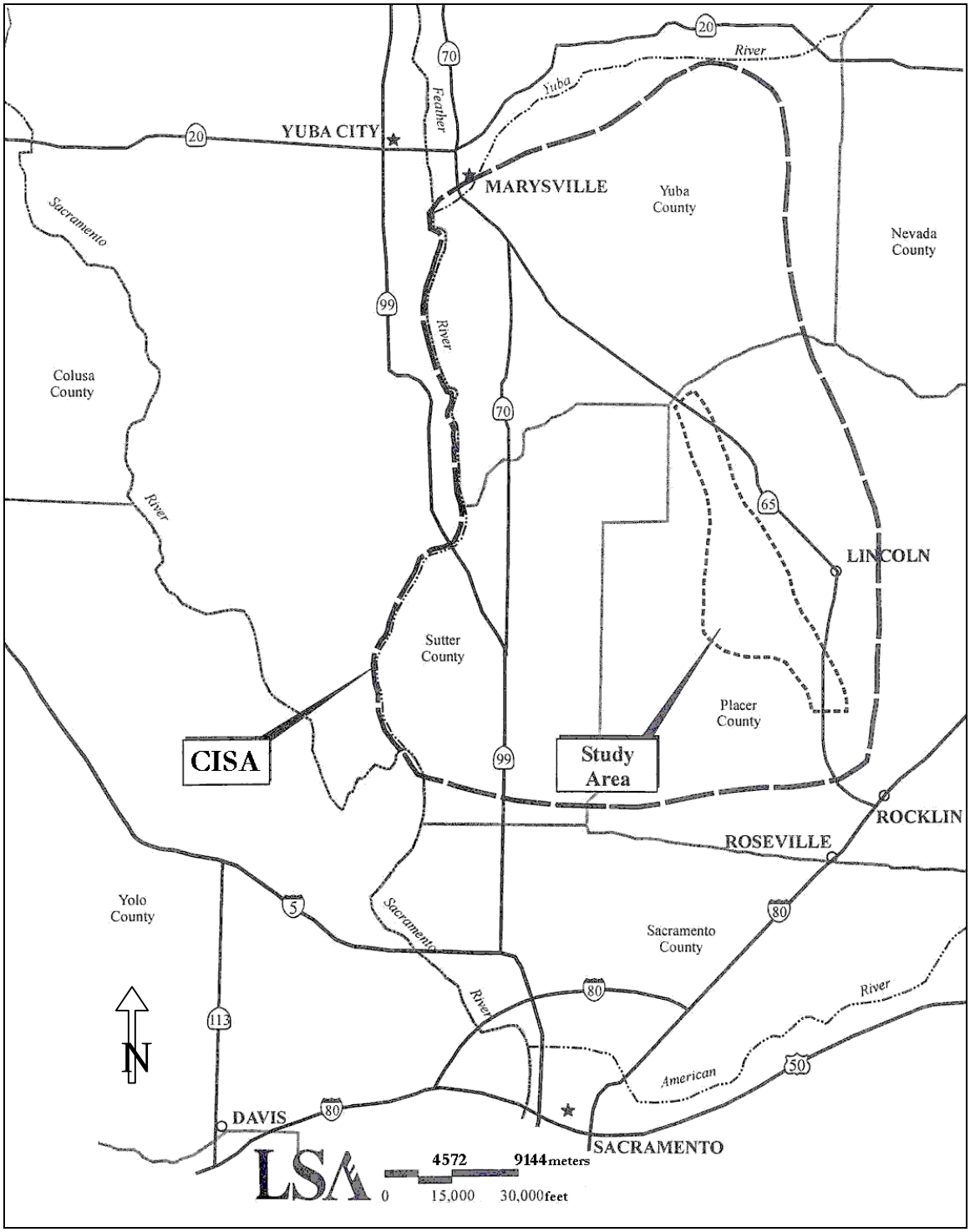
Preservation of agricultural lands is one of the primary planning goals within the CISA, as emphasized by City and County planning policies. It appears that, at least for the foreseeable future, agricultural uses will continue to dominate. However, loss of farmland continues as housing tracts replace small farms. Table 4-32 illustrates the loss of farmland in Placer County.

Table 4-32 Loss of Farmland in Placer County

	Total Acreage Inventoried		**1994-1996 Acreage Changes**			
Land Use Category	**1994**	**1996**	**Acres Lost**	**Acres Gained**	**Total Acreage Changed**	**Net Acreage Changed**
Prime Farmland	4232 ha *10,458 ac*	3993 ha *9,867 ac*	255 ha *630 ac*	16 ha *39 ac*	271 ha *669 ac*	-239 ha *-591 ac*
Farmland of Statewide importance	2269 ha *5,608 ac*	2244 ha *5,546 ac*	71 ha *176 ac*	6 ha *14 ac*	117 ha *290 ac*	-25 ha *-62 ac*
Unique Farmland	9651 ha *23,848 ac*	931 ha *2,300 ac*	415 ha 1,025 ac	193 ha 477 ac	608 ha *1,502 ac*	-222 ha *-548 ac*
Farmland of Local Importance	45 934 ha *113,505 ac*	46 244 ha *114,271 ac*	253 ha *624 ac*	563 ha *1,390 ac*	815 ha *2,014 ac*	310 ha *766 ac*
Important Farmland subtotal	**62 086 ha** ***153,419 ac***	**53 412** ***131,983 ac***	**994 ha** ***2,455 ac***	**817 ha** ***2,020 ac***	**1811 ha** ***4,475 ac***	**-176 ha** ***-435 ac***
Grazing Land	14 509 ha *35,853 ac*	13 632 ha *33,686 ac*	877 ha *2,167 ac*	0	877 ha *2,167 ac*	-877 ha *-2,167 ac*
Agricultural Land Total	**76 595 ha** ***189,272 ac***	**67 044 ha** ***165,668 ac***	**1 871 ha** ***4,622 ac***	**817 ha** ***2,020 ac***	**2 688 ha** ***6,642 ac***	**-1 053 ha** ***-2,602 ac***
Urban and built-up land	13 178 ha *32,563 ac*	14 162 ha *34,994 ac*	0	984 ha *2,431 ac*	984 ha *2,431 ac*	984 ha *2,431 ac*
Other Land	74 696 ha *184,577 ac*	74 766 ha *184,748 ac*	147 ha *364 ac*	217 ha *535 ac*	364 ha *899 ac*	69 ha *171 ac*
Water Area	2071 ha *5,118 ac*	2071 ha *5,118 ac*	0	0	0	0
Total Area Inventoried	**166 540 ha** ***411,525 ac***	**158 043 ha** ***390,529 ac***	**2 018 ha** ***4,986 ac***	**2796 ha** ***6908 ac***	**4036 ha** ***9,972 ac***	**0**

[3] These 8 areas include: land use, traffic congestion, cultural resources, loss of farmland, loss of agricultural production, habitat conversion and habitat qualtity reduction, increase in air pollutant emissions and traffic noise (Placer County Planing Dept., 1994).

Figure 4-10 Cumulative Impacts Study Area



A number of highway improvement projects are proposed within the CISA to address existing congestion and safety concerns and provide for the inter-regional transportation needs. While possibly facilitating development in some areas, it is not expected that the proposed highway improvements will result in accelerated conversion of agricultural and other open space lands to developed uses except where this conversion is already occurring (e.g., Lincoln). Rather, the proposed road improvements are needed to keep pace with developing conditions and prevent further deterioration in level of service. These projects are described in Chapter 1, "Other Transportation Projects in the Area." Briefly, they are:

Table 4-33 Transportation Projects in the Lincoln Area

Project	County	Year Constructed
SR 65 Improvement from Roseville to Industrial Blvd.	Placer	1997
Blue Oaks Interchange	Placer	1998
SR 193 improvements.	Placer	1999
Future Improvements to the State Highway System include:		**Year Proposed**
Wheatland Bypass	Sutter/Yuba	2006
SR 70, McGowen to Striplin widening	Sutter/Yuba	2005
SR 99 Improvements	Sutter	2003
Third River Crossing	Yuba	2004
Marysville Bypass	Yuba	2005
Placer Parkway*	Placer	Not determined

*Not part of the State Highway System.

Environmental documentation either has been or is being prepared for all of these highway projects. The highway improvement projects are consistent with their respective County General Plans. These projects are in response to the growing population and the subsequent development of previously undeveloped areas in southern Sacramento Valley. A detailed discussion of the socioeconomic pressures this region is experiencing can be found in Chapter 1. To summarize Table 1-12; eleven residential development projects have been approved within the Lincoln sphere of influence. These projects encompass over 3000 ha (7,410 ac) and will involve the building of over 15,453 new homes.

Senate Bill (SB) 45 redistributed STIP monies so that the Regional Transportation Planning Agencies (RTPA) and Metropolitan Planning Organizations (MPO) get 75% for regional use and the Department gets 25% for inter-regional use. In addition, SB 45 dictates how the Department prioritizes its funds on the inter-regional transportation system by amending Section 167 of the Streets & Highways Code to read:

167. (a) Funds in the State Highway Account in the State Transportation Fund shall be programmed, budgeted subject to Section 163, and expended to maximize the use of Federal funds <u>and shall be based on the following sequence of priorities</u>:

- Operation, maintenance, and rehabilitation of the state highway system.
- Safety improvements where physical changes, other than adding additional lanes, would reduce fatalities and the number and severity of injuries.
- Transportation capital improvements that expand capacity or reduce congestion, or do both.
- Environmental enhancement and mitigation programs.

As a result of SB 45, the authority over how transportation dollars are spent is put back into the hands of the local agencies. It is the Department's mission to respond to a clearly demonstrated need, safety, highway maintenance or congestion relief, in that order. This legislation has made it clear that the Department's responsibility is to the inter-regional transportation system and the locals will maintain responsibility for local transportation systems. In addition, the responsibility of determining land use lies in local governments' hands.

4.13.2 Cumulative Growth Inducement

Growth inducement is difficult to measure since the impacts are generally indirect and occur over an extended period of time after the project is completed. The relationship is generally evaluated as either facilitating planned growth or inducing unplanned growth. A new roadway may create additional market pressure for growth because one constraint for development has been lifted. However, whether or not the project will induce unplanned growth depends on political, physical and socioeconomic factors as well. The proposed project is intended to meet the existing and/or projected traffic demand based upon the local land use plans. Growth inducement is discussed at greater length in Section 4.2.2.

4.13.3 Cumulative Traffic Impacts

Traffic congestion will be alleviated within the Lincoln city limits by removing inter-regional travelers. However, congestion in the town of Wheatland will become worse. By making SR 65 an expressway; removing cross traffic and driveways and increasing speeds, it will become more appealing to those traveling between Marysville and Roseville, thus increasing congestion in the town of Wheatland, where the bypass ends. Pressure from the raceway and amphitheater traffic will further exacerbate the problem. Operational improvements of the existing highway through Wheatland are currently being pursued, but are not likely to solve the problem.

A highway project to bypass the town of Wheatland has been proposed. The California Transportation Commission has not funded this project at this time, however, it is tentatively scheduled for construction in 2006.

4.13.4 Cumulative Impacts to Natural Resources

Except for those impacts directly associated with construction, most impacts to biological resources are permanent. The ecosystem will generally not absorb, or adapt to, the loss of these resources. Mitigation may help offset a portion of the impacts over time. However, as growth continues to occur, it is expected that biological resources will continue to be lost. The following potential impacts to natural resources will be evaluated in this section:

- Regional habitat loss from the cumulative effects of multiple land conversion activities.
- Habitat fragmentation associated with regional habitat loss.
- Impacts to special status species and loss and degradation of sensitive habitats from the cumulative effects of multiple land conversion activities.
- Loss of fish and wildlife populations due to the creation of multiple barriers to migration.

Habitat Conversion in Placer County

The Placer County General Plan (Placer County, 1994) identifies the predictable effects of planned growth within the county. Development under the Land Use Element described in the General Plan could result in a population increase of 45,000 over the 1990 baseline population. Most of this increase takes place in southern Placer County. The following table illustrates the conversion of natural habitat to urban development for the entire county based on the predicted 2010 scenario.

Table 4-34 Habitat Conversion for Placer County (2010 Scenario)

	Approximate extent of intact vegetation		**Habitat Conversion**		**Habitat conversion or reduced habitat value**		**Limited habitat impacts**	
Vegetation Communities ▼	Vegetation communities in unincorporated areas (1991)		Planned urban development in unincorporated areas		Planned urban, suburban and rural residential development in unincorporated areas		Existing and planned recreational, agricultural and forestry land uses in unincorporated areas	
Urban, agricultural rangeland	61 901 ha *152,960 ac*	100%	2916 ha *7,200 ac*	4.7%	17 143 ha *42,360 ac*	27.7%	41 845 ha *103,400 ac*	67.6%
Grassland	11 736 ha *29,000 ac*	100%	1214 ha *3000 ac*	10.3%	809 ha *2,000 ac*	6.9%	9713 ha *24,000 ac*	82.8%
Oak woodland	11 736 ha *29,000 ac*	100%	0	0.0%	1619 ha *4,000 ac*	13.8%	10 117 ha *25,000 ac*	86.2%
Conifer forest	186 967 ha *462,000 ac*	100%	0	0.0%	19 020 ha *47,000 ac*	10.2%	167 946 ha *415,000 ac*	89.8%
Hardwood forest	4168 ha *10,300 ac*	100%	0	0.0%	2833 ha *7,000 ac*	6.8%	38 850 ha *96,000 ac*	93.2%
Chaparral and shrub	22 663 ha *56,000 ac*	100%	0	0.0%	1214 ha *3,000 ac*	5.4%	21 449 ha *53,000 ac*	94.6%

Preservation as a condition of development

Subsequent to the preparation of the City of Lincoln General Plan in 1988, new development, listed in Chapter 1, Table 1-12, has occurred consistent with Plan designations. These projects generally include open space dedications to preserve areas of vernal pools, riparian corridors or other high quality resources and compensatory mitigation measures to offset unavoidable impacts to wetlands. The Lincoln General Plan recognizes Auburn and Markham Ravines as important open space resources, and both corridors are designated for preservation.

Cumulative Impacts on Natural Communities and Wildlife Habitats

Agricultural lands are abundant in the CISA, representing about 91 530 ha (226,079 ac), or 69 percent of the total area. Natural lands, most of which are grasslands that are used for grazing, represent an additional 34 411 ha (85,030 ac). Together, these "natural communities" account for about 95 percent of the total area within the CISA. The remaining five percent is developed. Despite the trend towards growth and development within portions of the CISA, large areas of agricultural lands and grasslands, particularly in unincorporated County areas, will be preserved for the foreseeable future.

Vernal Pool Impacts

Due to fewer environmental restrictions, development will likely be maximized on grasslands without vernal pools. However, due to the wide distribution of vernal pools in portions of the CISA, it is unlikely that this resource can be totally avoided by future development, and additional losses will likely occur. Vernal pools are a unique wetland resource, limited to suitable soil types, and generally restricted to the eastern portion of the CISA. Given the likelihood of additional impacts to this valuable resource as development continues, the Lincoln Bypass project represents a substantial contribution to the cumulative loss of this resource in the CISA.

It is expected that all wetland impacts would be compensated within the region resulting in a "no-net-loss" of wetland habitat. It is anticipated that habitat mitigation plans will preserve and create natural habitats within the region collectively and would facilitate habitat continuity and sustainability within the region.

Riparian Habitat Impacts

Riparian corridors such as Auburn Ravine and Coon Creek are recognized as valuable resources and designated in local planning documents as open space areas, generally protected from encroachment. Although impacts to these resources will likely be restricted to transportation and utility crossings (bridged to help minimize impacts and

allow wildlife movements), impacts are still likely to occur and are difficult to offset through conventional mitigation measures.

Oak Woodlands

Oak woodlands are considered prime residential development areas due to their aesthetic quality. Development is often planned around the individual trees, and measures are generally taken to protect trees during construction. While individual oak trees may persist in developed settings, there is still a risk of tree loss due to over-watering, disease or compaction of soil within the root zone. Further, in a developed setting, the woodland no longer functions as an ecosystem, but as isolated trees often separated by homes, ornamental landscaping or other related uses.

Marsh Habitat

Marsh habitat is the most common wetland type in the CISA. Similar to vernal pools, marsh habitats are regulated under Section 404, and this additional regulation may discourage development in these wetland areas. Freshwater marsh provides important habitat for resident and migratory waterfowl.

It is expected that all wetland impacts would be compensated within the region resulting in a “no-net-loss” of wetland habitat. It is anticipated that habitat mitigation plans will preserve and create natural habitats within the region collectively and would facilitate habitat continuity and sustainability within the region.

Wildlife Habitat

Continued growth and development within the CISA will cause the fragmentation of continuous large tracts of wildlife habitat into smaller, more isolated blocks. This habitat fragmentation may lead to reduced movements and impaired dispersal of young, and may ultimately result in small, isolated populations of some species. Over time, this may even lead to elimination of some species from the CISA.

Special Status Species

All of the Special status plants occurring in the CISA are associated with vernal pools, thus, the potential for impacts is directly related to the extent of vernal pool impacts. Similarly, potential impacts to special status vernal pool invertebrates are directly related to the extent of vernal pool impacts.

Of the special status bird species occurring in the CISA, the State-listed Swainson’s hawk is of primary concern. The combination of extensive foraging habitat adjacent to suitable nesting sites makes the area around Lincoln highly suitable for this species. The abundance of rice fields throughout much of the cumulative impacts CISA, which do not

provide foraging opportunities for Swainson's hawks, makes the suitable habitat around Lincoln even more important for this species. Development in the cumulative impacts CISA will cause the direct loss of foraging habitat and possibly nesting habitat as well.

Wetlands

Wetland areas within the CISA include vernal pools, vernal and freshwater marsh, and riparian scrub and forest. The major development projects currently proposed, or under construction, in the Lincoln Planning Area (Lincoln Crossing, Twelve Bridges) have substantial wetland impacts, as does the proposed aggregate mining project in Placer County. The Lincoln Bypass is expected to result in the loss of approximately 65 ha (160 ac) of wetlands, including vernal pools and vernal marsh. It is expected that all wetland impacts would be compensated within the region resulting in a "no-net-loss" of wetland habitat. It is anticipated that habitat mitigation plans will preserve and create natural habitats within the region collectively and would facilitate habitat continuity and sustainability within the region.

4.13.5 Cumulative Impacts to Air Quality

The Sacramento Valley Air Basin is designated as a severe non-attainment area for the Federal and State ozone standard and also experiences localized violations of the CO and PM_{10} standards. Vehicles and other mobile sources cause about 70 percent of this region's air pollution problem. The Federal Clean Air Act as amended in 1990 requires a comprehensive attainment plan from every ozone non-attainment area classified as serious, severe or extreme. The 1994 State Implementation Plan (SIP) was developed by the California Air Resources Board (CARB) and the Sacramento Metropolitan Air Quality Management District (SMAQMD) as a strategy for achieving attainment by the Clean Air Act deadline of 2005 for the Sacramento Region.

Improved technology in the form of Low Emission Vehicles (LEV) is the cornerstone of the CARB and SMAQMD strategy for improving air quality affected by mobile sources such as automobiles and trucks. Transportation control measures aimed at reducing vehicle miles traveled would be pursued jointly by the CARB, the local air pollution control districts and other local agencies. However, it is not within either CARB or SMAQMD jurisdiction to regulate transportation issues; that authority lies with the local governments.

Individually, this project wouldn't have an impact on the overall air quality. However, as a necessary element of the many development activities happening in the region, this project could contribute to the poor air quality of the air basin. There are 13 residential and commercial developments either being constructed or in the planning stage within the Lincoln Sphere of Influence, including more than 15,000 homes.

Collectively, this will bring over 46,000 additional people to the area. Since no alternative modes of transportation are being seriously pursued, the automobile will be the *de facto* transportation mode of choice.

4.13.6 Cumulative Impacts to Water Resources

The residential growth planned for the CISA will cause an increase in impermeable surfaces and the subsequent runoff associated with roads and the urban environment. This could result in warmer water temperatures of storm water runoff. The wastewater facility could result in increased turbidity and water temperature to Auburn Ravine during low water flows.

Urban runoff generally consists of dry weather runoff, stormwater discharges and irrigation return water containing substances washed from land and streets. Nutrients and pesticides from home use, large-scale urban landscaping projects, parks and golf courses are often present in urban runoff. Storm drains may collect industrial chemicals dumped legally and illegally, oil and antifreeze from home mechanics, refuse from domestic and municipal maintenance and sediments from construction-related erosion (Jones & Stokes 1999). Urban and stormwater runoff and wastewater discharges may have the potential to result in exceedances of adopted water quality criteria.

Detention basins will remove a large portion of pollutants, but not all. They may also increase the temperature of the runoff while the water is exposed to sunlight. It is not possible to predict the total load of pollutants in the receiving waters or the possible water temperature increase from existing data for the City of Lincoln's proposed expansion to a population base of about 10,000 today to between 18,000 and 28,000 by 2010. However, it is reasonable to assume that increased pollution loading and increased water temperature will be a result of the urban expansion regardless of the bypass alternative.

4.14 SECTION 4 (f) EVALUATION

4.14.1 Purpose Of Section 4(f) Evaluation

The Department is proposing to bypass the city of Lincoln with a freeway. The project is described in detail in Chapter 2 of this document. Five of the six alignments being considered require the acquisition of portions of a property that has been determined to be eligible for the National Register of Historic Places (NRHP) by the State Historic Preservation Officer (SHPO).

Alternative D13, D13 North Modified, D13 South Modified, A5C1 and D1 would cross portions of the Fickewirth Ranch, which has been determined eligible for the NRHP by the consensus of SHPO. This section identifies the Fickewirth property as Section

4(f) property affected, describes the nature and extent of the use of the property and evaluates alternatives that would avoid or minimize the use of this property.

In addition, one archaeological site located along the AAC2 alignment is potentially eligible for inclusion in the NRHP. Currently, the D 13 North Modified has been identified as the Preferred Alternative in accordance with the process agreed to in the NEPA/404 MOU. In the event that AAC2 is chosen as the preferred alternative, further evaluation will be required. If it appears that the site is eligible for inclusion and warrants preservation in place, then the Section 4(f) would apply to this site as well and a Section 4(f) Evaluation would be completed for this site. This process is consistent with the current SHPO policy.

Section 4(f) of the U.S. Department of Transportation Act of 1966 (49 USC 303) declares that a "special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites." Section 4(f) applies when a proposed action uses land from a significant national, state, or local historic site. For the purposes of Section 4(f), a historic site is significant only if it is on or eligible for the NRHP, unless the federal agency determines otherwise (23 CFR 771.135[c]).

Under Section 4(f), "use" of a historic property may involve one or more of the following kinds of actions:

- Fee-simple taking.
- Temporary or Permanent easement.
- Constructive Use. A constructive use is an action which does not directly infringe on a property or involve its occupants, but which substantially impairs the historic integrity. For historic sites, a finding of adverse effect under Section 106 of the National Historic Preservation Act (NHPA) would constitute a constructive use.

The objective of this legislation is to preserve parklands, wildlife refuges and historical properties that could be affected by federal transportation projects. Section 4(f) permits the Secretary of Transportation to approve a project that requires the use of Section 4(f) lands only if:

- there is no feasible and prudent alternative to the use of the land from the property; and
- the action includes all possible planning to minimize harm to the property resulting from such use.

4.14.2 Proposed Action

A detailed project description can be found in Chapter 2 of this Draft Environmental Impact Statement /Report. Briefly, the Department proposes to construct

a freeway around the city of Lincoln, beginning near Industrial Boulevard and ending just before the Bear River, a total of 18.6 km (11.6 mi). Initially, a four-lane freeway will be constructed up to Nelson Road or Nicolaus Road, depending on the alternative selected, and a two-lane access controlled freeway will continue up to Riosa Road and SR 65. As traffic demand increases, the lanes from Nelson/Nicolaus to the end of the project will be widened to four lanes and at-grade intersections will be replaced with interchanges.

4.14.3 Purpose Of Project

The purpose of this project is to relieve congestion and improve safety on existing SR 65 in the vicinity of the city of Lincoln and provide for a regional traffic solution to accommodate projected traffic volumes for the year 2020.

4.14.4 Need For Project

The following sections are summarized from Chapter 1 Purpose and Need for the project. For more details, please refer to that chapter.

Safety

Accident rates on existing SR 65 within the City of Lincoln are consistently higher than the average for a similar type of highway.

Traffic

Within the study limits, SR 65 is a “Main Street” highway that will not serve the ultimate interregional and local travel demand. Proposed development in and around the City of Lincoln will significantly add to the congestion on SR 65. Operating at level of Service (LOS) D in 1994, SR 65 through the study limits is anticipated to decline to LOS F by the year 2005. Traffic volumes are expected to increase approximately 55% over the next 20 years. Cross traffic resulting from numerous driveways, signalized intersections and proposed future connections will contribute substantially to the deterioration of the level of service in the downtown area.

Growth Forecasts

Lincoln is a fast growing community. Although the project area is predominantly rural, it is located near communities in the greater Sacramento region where population growth has occurred at high rates in recent years. The need to provide increased capacity on SR 65 is related to this pattern of growth.

Specific plans for eleven proposals for residential development are currently in various stages of approval, including the Planned Developments of Twelve Bridges to the southeast and Lincoln Crossing and Three D to the southwest. These projects encompass over 3000 ha (7,410 ac) and will involve the building of over 15,453 new homes.

Figure 4-11 Location of Fickewirth Ranch

4.14.5 Section 4(f) Properties

The Section 4(f) property potentially affected by the proposed project is the Fickewirth Ranch, shown in Figure 4-11. The Fickewirth Ranch is located at 2780 Dowd Road, approximately 4.8 km (3.0 mi) south of the town of Sheridan. The property consists of a residence, tank house, windmill, long shed (originally a chicken house), timber-framed hay barn, a one-time blacksmith shop and several smaller miscellaneous sheds. The residence and most of the outbuildings were constructed in 1901. The house was originally built as a one-story Queen Anne cottage; a second story was added about 1912. The buildings on the property have been maintained in their original form with little or no modification. Materials used to maintain the property were of the same kind as the original, thereby serving to preserve the original character and integrity of the farm complex. The house is one of the earliest intact residences remaining in the local area. Mr. and Mrs. Fickewirth currently own the ranch. The property is approximately 1524 m by 762 m (5000 ft by 2500 ft).

The elevation drops approximately 1.5 m (5 ft) between the building complex and each of the alignments. The actual roadway will not be seen from the building complex, although vehicles on the highway will still be visible.

The Fickewirth Ranch has been determined eligible for the NRHP at the local level under Criterion C as an embodiment of its time, period and method of construction. All of the structures on the property, in their form and function, contribute to this determination. Furthermore, the property remains in its rural setting. The SHPO has agreed to a “Finding of No Effect” for the project (November 1994).

In addition, one archaeological site located along the AAC2 alignment is potentially eligible for inclusion in the NRHP. Further evaluation will be required if the AAC2 alignment is chosen as the preferred alignment. If it appears that the site is eligible for inclusion and warrants preservation in place, then the Section 4(f) would apply to this site as well and a Section 4(f) Evaluation would be completed for this site. Section 4(f) does not apply if FHWA, after consultation with SHPO and the ACHP, determines that the archeological resource is important chiefly because of what can be learned by data recovery (even if it is agreed not to recover the resources) and has minimal value for preservation in place.

4.14.6 Use of Section 4(f) Properties

Acquisition of portions of the Fickewirth Property

Alternatives A5C1, D1, D13, D13 South Modification and D13 North Modification pass through the 104 ha (258 ac) agricultural parcel containing the Fickewirth Ranch. The proposed alignment for A5C1 lies approximately 457 m (1500 ft) from the ranch

complex. D1 and D13 and its modifications are approximately 610 m (2000 ft) from the buildings. (See Figure 4-11, showing the location of the property, ranch complex and the alternatives.) The D corridor alternatives will remove approximately 10.7 ha (26.5 ac) of walnuts from production and 1.5 ha (3.7 ac) of walnut orchard will be removed for the A5C1 alternative. The area required runs along the eastern edge of the property. In addition, the southeast corner of the property would be required for the interchange. The total acreage of the property is 104 ha (258 ac).

Acquisition of the Archeological Site

Alternative AAC2 does not affect the Fickewirth property; however, there is still the potential for Section 4(f) involvement. Two archaeological sites were identified in the initial review and one of them is potentially eligible for inclusion on the NRHP. The potentially eligible site is located within the APE (Area of Potential Effect) of Alternative AAC2. If the AAC2 alternative were chosen, this site would be evaluated for inclusion in the NRHP. If it were determined eligible for inclusion and warranted preservation in place, Section 4(f) would apply to this site as well.

4.14.7 Avoidance Alternatives

There were several alignments that would avoid the Section 4(f) properties. Alternatives T, E, A3, AA and A5 and the No Build do not affect either the Fickewirth property or the archeological site mentioned above. These alignments were considered, but rejected and confirmed by consensus of the NEPA/404 MOU participants when all agreed on the Purpose and Need and the Range of Alternatives. See Chapter 2, "Alternatives Withdrawn from Further Consideration" for more information on these alignments.

Since the AA, A3 and A5 alternatives were first developed, numerous housing developments have been constructed in the path of these alternatives. Consequently, the A alternatives impact quite a few more residents than the D corridor. The A alignments also cross through areas of high quality vernal pools between Nicolaus Road and the Union Pacific Transit Company (UPTC) railroad tracks. In addition, the shorter alignments would not alleviate congestion within the City of Lincoln. Because of higher social impacts, natural resource impacts and the fact that the alignments will not relieve congestion within the city of Lincoln, these alternatives were not considered further.

The T alternative upgrades the existing SR 65 alignment to four lanes. This alternative would eliminate parking from the downtown area to accommodate the additional lanes.

The primary disadvantage of this alternative is that it fails to satisfy the regional need for an adequate freeway system in the area. It does not alleviate the problems of

numerous cross streets and driveways. Initially, widening to four lanes may reduce the accident rate at the numerous intersections in town. As Lincoln grows, traffic through the central business district will become more congested and it is anticipated the intersection accident rate will increase.

4.14.8 Measures to Minimize Harm

Three design modifications were considered to minimize harm: 1) realigning Wise Road to allow room for an interchange on the adjacent property, 2) realigning the D 13 alignment just around the interchange area and 3) realigning the alignment from the beginning of the curve located parallel to Nicolas Rd.

Figure 4-12 shows the first design modification. In order to construct the interchange while avoiding the Fickewirth property, Wise Road would be curved southward, impacting the adjacent properties to a greater extent and putting a kink in an otherwise straight rural road. This modification is considered less desirable for engineering and safety reasons. This modification was not explored in depth because of the safety issues associated with putting a sudden curve in an otherwise straight rural road.

The second modification investigated was to curve the D 13 alternative east around the Wise Road interchange area. (See Figure 4-13) This modification is also less desirable due to the sudden curve in an otherwise relatively straight road. The geometric design of these modifications are acceptable and would comply with minimum highway design standards, however it is the Department's desire to design roads to the highest standards, and not simply to minimum standards. These alternatives, while complying with minimum standards, would not represent the best possible design.

Figure 4-14 shows the third modification of D13 that avoids the Section 4(f) property. The D-13 alignment is shifted east beginning before the curve at Nicolaus, and then gently curves back into the original D-13 after passing the Fickewirth property. This modification was examined in some detail as shown on the table below. There would be 11 properties affected by this modification. Four additional properties are affected, but 3 properties that would have been affected by D-13 are not affected by the D-13 4(f) modification. An additional $3,000,000 would be required for right of way acquisition because of so many properties being landlocked by this alternative.

There would be an additional 2.6 ha (6.5 ac) of wetlands/waters of the U.S. affected by this alternative, including 0.8 ha (2 ac) of vernal pools. An additional 1.9 ha (4.7 ac) of oak woodlands would also be affected by this alternative.

This alternative meets good engineering standards, however, it affects more wetlands and oak habitat than the D 13 North Modified, therefore probably would not be

the "Least Environmentally Damaging Practicable Alternative" (LEDPA), as defined under the 404 (b)(1) guidelines used by the ACOE and EPA.

Table -4-35 Summary of Impacts; A5C1, D13 North Modified and D13 4(f)

	D13 Alignment	**D13 North Modified**	**D13 South Modified**	**D13 4(f)**
Wetlands/ Nonwetland Waters	5.3 ha (13.1 ac) wetlands/waters 2.2 ha (5.4 ac) vernal pools/swales 2.8 ha (6.8) ac of marsh one high value marsh	5.6 ha (13.8 ac) wetlands/waters 2.1 ha (5.2 ac) vernal pools/swales 3.1 ha (7.6) ac of marsh	6.8 ha (16.8 ac) wetlands/waters 2.4 ha (6.0 ac) vernal pool/swales 2.2 ha (5.5 ac) marsh	8.2 ha (20.3 ac) wetlands/waters 2.9 ha (7.2 ac) vernal pools/swales 3.6 ha (9.0 ac) of marsh
Special Status Species	Vernal pool fairy shrimp Raptor foraging and potential nesting habitat one high value marsh	Vernal pool fairy shrimp Raptor foraging and potential nesting habitat	Vernal pool fairy shrimp Raptor foraging and potential nesting habitat	Vernal pool fairy shrimp Raptor foraging and potential nesting habitat
Natural Communities Wildlife, Fisheries	50.4 ha (123.3 ac) grassland/ vernal pool 1.3 ha (3.3 ac) riparian forest 3.5 ha (8.6 ac) oak woodlan	64.2 ha (158.7 ac) grassland/ vernal pool 1.3 ha (3.3 ac) riparian forest 3.5 ha (8.6 ac) oak woodland	52.5 ha (129.7 ac) grassland/ vernal pool 1.2 ha (3.0 ac) riparian forest 0.2 ha (0.4 ac) oak woodland	86.8 ha (214.5 ac) grassland/ vernal pool 1.5 ha (3.6 ac) riparian forest 5.4 ha (13.3 ac) oak woodland
Water Quality	198.9 ha (491.5 ac) footprint with 9 stream crossings	172.6 ha (426.6 ac) footprint with 8 stream crossings	196.3 ha (485.2 ac) footprint with 9 stream crossings	221.3 ha (546.7 ac) footprint with 8 stream crossings
Cultural Resources	Requires small amount of right-of-way from property eligible for National Register.	Requires small amount of right-of-way from property eligible for National Register.	Requires small amount of right-of-way from property eligible for National Register.	None
Agricultural Land	102.5 ha 253.2 ac	96.7 ha (238.8 ac)	95.5 ha 235.7 ac	87.9 ha (217.1 ac)
4(f) Involvement	Yes 10.7 ha (26.5 ac)	Yes 10.7 ha (26.5 ac)	Yes 10.7 ha (26.5 ac)	No
Land Use/ Socio-economics	Residences: 10 Businesses: 2	Residences: 10 Businesses: 1	Residences: 14 Businesses: 2	Residences: 11 Businesses: 1
Right of Way Costs	$20,000,000	$22,500,000	$20,500,000	$25,500,000
Cost	$161 million (min) $192 million (max)	$162 million (minimum) $193 million (maximum)	$160 million (minimum) $191 million (maximum)	$165 million (minimum) $196 million (maximum)

Table 4-36 Summary of Impacts A5C1, AAC2 and D1

	AAC2 Alignment	A5C1 Alignment	D1 Alignment
Wetlands/ Nonwetland Waters	6.3 ha (15.5 ac) wetlands/waters 3.3 ha (8.0 ac) vernal pool/swales 2.4 ha (6.0 ac) of marsh two high value vernal pool complexes	9.4 ha (23.1 ac) wetlands/waters 6.5 ha (16.1 ac) vernal pool/swales 2.2 ha (5.4 ac) of marsh two high value vernal pool complexes	5.7 ha (14.1 ac) wetlands/waters 2.8 ha (6.8 ac) vernal pool/swales 2.6 ha (6.3 ac) of marsh one high value marsh
Special Status Species	Vernal pool fairy shrimp Ahart's dwarf rush Raptor foraging and potential nesting habitat two high value vernal pool complexes	Vernal pool fairy shrimp Ahart's dwarf rush Raptor foraging and potential nesting habitat two high value vernal pool complexes	Vernal pool fairy shrimp Raptor foraging and potential nesting habitat one high value marsh
Natural Communities Wildlife, Fisheries	76.0 ha (187.7 ac) grassland/ vernal pool 1.1 ha (2.6 ac) riparian forest 10.2 ha (25.2 ac) oak woodland	80.1 ha (197.7 ac) grassland/ vernal pool 2.2 ha (5.4 ac) riparian forest 5.8 ha (14.3 ac) oak woodland	48.4 ha (119.4 ac) grassland/vernal pool 1.3 ha (3.2 ac) riparian forest 0.4 ha (0.9 acre) oak woodland
Water Quality	178.3 ha (440.6 ac) footprint with 11 stream crossings	185.8 ha (59.0 ac) footprint with 11 stream crossings	182.8 ha (451.7 ac) footprint with 9 stream crossings
Cultural Resources	Requires small amount of right of way from property eligible for National Register. Impacts to recorded archeological site.	Requires small amount of right-of-way from property eligible for National Register.	Requires small amount of right of way from property eligible for National Register.
Agricultural Land	51.1 ha 126.1 ac	54.4 ha (134.3 ac)	84.4 ha 208.5 ac
Section 4(f) Use	Possibly[1]	Yes 1.5 ha (3.7 ac)	Yes 10.7 ha (26.5 ac)
Land Use/ Socio-economics	Residences: 20 Businesses: 2	Residences: 78 Businesses: 5	Residences: 20 Businesses: 2
Right of Way Costs	$34,000,000	$56,000,000	$22,000,000
Cost	$163 million (min) $195 million (max)	$155 million (minimum) $196 million (maximum)	$170 million (minimum) $201 million (maximum)

[1]If the archaeological site were determined to warrant preservation in place, then this alternative would affect a Section 4(f) property.

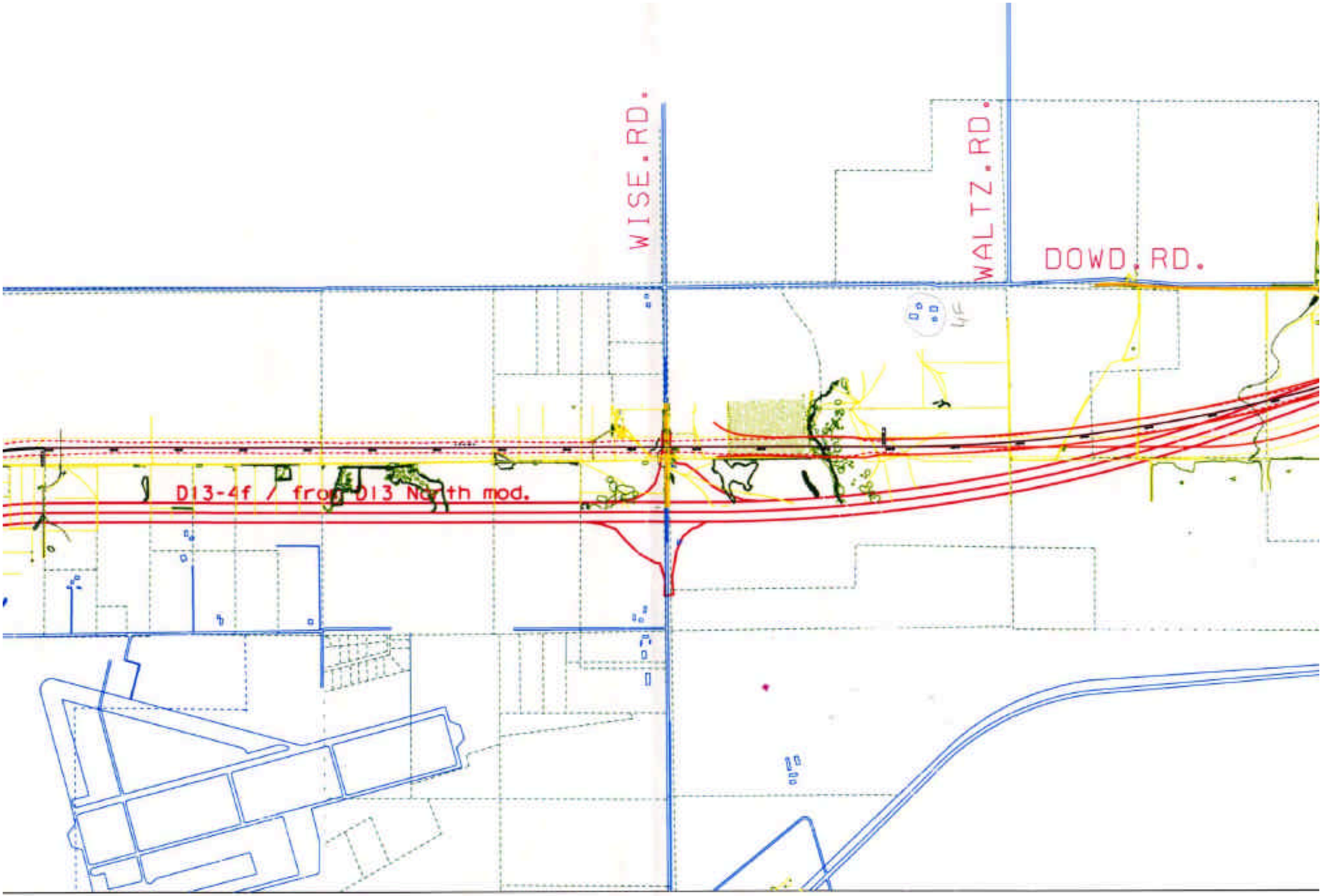
Other measures to minimize harm include eliminating or minimizing the ramps in the northeast quadrant, eliminating the ramps altogether and narrowing the median.

The current ramp configuration, the L-9, is the most efficient ramp configuration available, not only from an operations standpoint, but also from a safety point of view. It is the most often used configuration, which increases safety because the driver knows what to expect. It is the most efficient ramp configuration, also increasing safety and minimizing potential conflicts.

Eventually, Airport Road will be extended to meet Wise Road, which will make the Wise Road interchange appealing to those accessing the airport. An interchange is necessary at this location due to the long distance between the interchanges at Nelson and Riosa Roads, approximately 12.1 km (7.5 mi).

Narrowing the median to the minimum standard would save 0.1ha (0.04 ac) of the Fickewirth's property. However, it would eliminate the possibility of locating a Light Rail facility within the median in the future.

Figure 4-12
Realigning Wise Road


WISE.RD.
WALTZ.RD.
DOWD.RD.
D13-4f / from D13 North mod.