

# CHAPTER 4

## ENVIRONMENTAL CONSEQUENCES



Cobble Weir, Cache Creek Settling Basin in 1958.

## CHAPTER 4.0

### ENVIRONMENTAL CONSEQUENCES

#### 4.1 Introduction

This chapter discusses the potential effects of the various plans on the significant environmental resources described in Chapter 3. The existing, or future without-project, conditions described in Chapter 3 are compared with future conditions with the project plans in place. The existing and with-project comparisons show the probable consequences of each plan on significant environmental resources. Both beneficial and adverse effects are considered. The effects discussed in this chapter are organized by resource category. The resources are presented in the same sequence as Chapter 3. The basis of significance (criteria) for each resource is identified to evaluate the significance of any adverse effects, and measures are proposed to avoid, minimize, or mitigate any significant adverse effects for each resource.

A project or action can cause direct, indirect, and cumulative effects on the environment. Direct effects occur at the same time and place as the action and include effects from construction of the project, both on a short-term and long-term basis. Indirect effects are caused by the action but occur later in time or are farther removed in distance, but are reasonably foreseeable. Indirect effects may include growth-inducing effects and related effects on natural systems. Cumulative effects are those which result from the incremental effect of the action when added to other past, present, and reasonable foreseeable future actions. This chapter discusses both direct and indirect project effects. Cumulative effects are described in Chapter 5.

The bases of significance are founded on NEPA and CEQA requirements. The Corps has integrated NEPA requirements into its regulations and policies. Engineering Regulation 1105-2-100, "Planning Guidance Notebook," April 2000, establishes the following significance criteria:

- Significance based on institutional recognition means that the importance of the effect is acknowledged in the laws, adopted plans, and other policy statements of public agencies and private groups. Institutional recognition is often in the form of specific criteria.
- Significance based on public recognition means that some segment of the general public recognized the importance of the effect. Public recognition may take the form of controversy, support, conflict, or opposition expressed formally or informally.
- Significance based on technical recognition means that the importance of an effect is based on the technical or scientific criteria related to critical resource characteristics.

For this Draft EIS/EIR, these three NEPA criteria apply to all resources and are not repeated under each resource. CEQA requirements are more specific to the resource and are listed in Appendix G of the CEQA Guidelines. Relevant CEQA criteria, as well as other agency criteria and thresholds of significance that apply to each resource, are identified under the appropriate resource.

## **4.2 Potential Effects on Social and Economic Resources**

This section evaluates the effects of the three plans on the social and economic resources in the project area. The discussion includes effects on population, housing, employment, economic conditions, and minorities and low-income populations. An effect would be considered significant if it would:

- Displace existing housing, especially affordable housing, without providing appropriate compensation and/or relocation assistance.
- Impede the economic development of the city of Woodland.
- Result in an inconsistency with the residential, commercial, industrial, and agricultural developments as outlined by the city and county General Plans.
- Cause changes in the ways members of the surrounding community live, work, relate to one another, or otherwise function as members of society.
- Cause substantial environmental, human health, or economic effects on minority and low-income populations.

### **4.2.1 No-Action Plan**

On a short-term basis, floods that have a greater flow than one having a 1 in 10 to 1 in 20 chance of occurring in any given year could significantly disrupt economic activity in Woodland, Yolo, and the unincorporated community in the project area, depending on floodflow and duration.

On a more permanent basis, landowners with a Federally insured mortgage and some businesses/facilities would be required to purchase flood insurance. New development in the FEMA 1 in 100 chance flood plain would be possible (limited to that which would not increase the 1 in 100 chance floodplain water surface elevation more than one foot) but only with flood proofing measures and added insurance costs. Woodland's industrial sector could be less competitive due to potential risk and insurance costs. The city may not attract as many new businesses for the same reasons. The loss of businesses in the city would cost Woodland revenue. Existing utility systems (wells, sewer, storm drainage and the wastewater treatment plant) would have to be protected from flood impacts.

The unincorporated community members in the county would also be required to pay for flood insurance since their lands would remain within the flood plain.

#### **4.2.2 Lower Cache Creek Flood Barrier Plan**

The proposed LCCFB Plan would physically define the existing urban limit line, consistent with City and County General Plans. Both city and county residents north of the barrier would benefit from protection of the basic public services (school, medical, fire protection, and shopping). Portions of the unincorporated community could lose some agricultural value due to the potential for extended flood duration. Implementation of the mitigation measures listed in Section 4.2.4 would reduce this potentially significant effect to less than significant.

The flood barrier would convert 102 acres of farmland for flood damage reduction purposes. This could result in some decrease in revenue for the county and business to the suppliers by means of taking farmland out of production. However, the overall percentage of farmland removed from production as compared with the remainder of farmland in Yolo county is extremely small, less than one tenth of one percent. Additionally, the loss of acreage is small to each individual farm. Since the amount of farmland removed from production is low, a decrease in labor would not be expected. Without a labor decrease or risk of unemployment, there would not be significant economic effects to minority or low-income populations.

If the flood barrier is constructed, Woodland would be able to complete its General Plan goals to develop up to the urban limit line. This would include development of the land in the eastern part of the city zoned for industrial use but currently vacant. These new businesses would bring increased revenue for the city and the county. Furthermore, city residents would save money since they would no longer need to buy flood insurance.

Flood insurance requirements would not change for landowners north of the flood barrier. The value of land in the vicinity of the settling basin, 1,816 acres, may decrease since loans may only be available for row crops. The more profitable tree crops could not survive long-term inundation and could be too risky for banks to finance. Implementation of the mitigation measures listed in Section 4.2.4 would reduce this potentially significant effect to less than significant.

One home (not considered part of an affordable housing unit) would be relocated. No businesses north or south of the flood barrier would be displaced.

The construction of the flood barrier would have a less-than-significant effect on current and/or planned population and housing growth patterns within the city of Woodland; the flood barrier would make easier the development already planned for in the City of Woodland General Plan. The flood barrier would not increase future population growth and need for housing beyond what has already been projected.

Construction of the flood barrier could include removal, modification, and/or protection of existing gas, water, sewer, power, and communication lines. Disruptions would be temporary, lasting approximately 4 hours, during these activities.

With the mitigation measures described in Section 4.2.4, the flood barrier would cause a less-than-significant effect on social and economic resources.

### **4.2.3 Modified Wide Setback Levee Plan**

The Modified Wide Setback Levee Plan would remove a significant amount of unincorporated land south of Cache Creek and the city of Woodland from the FEMA 100-year flood plain. Additionally, land north of the creek and east of CR 97B, including the town of Yolo, would be protected from flooding. Basic public services (school, medical, fire protection, and shopping) would be protected. The City would be able to complete its General Plan goals to develop up to the urban limit line. This would include development of the land zoned for industrial use but currently vacant in the eastern part of the city. These new businesses would bring increased revenue for the city and county. Landowners would not have the additional cost of flood insurance.

The setback levees would remove at least 158 acres, and potentially up to an additional 1,254 acres, of farmland from production (depending on uneconomic remnant determination). This could result in some decrease in revenue for the county and business to the suppliers by taking farmland out of production. However, the overall percentage of farmland removed from production as compared with the remainder of farmland in Yolo county is extremely small, 0.03 percent to 0.2 percent. Since the amount of farmland removed from production is low, a decrease in labor would not be expected. Without a labor decrease or risk of unemployment, there would not be significant economic effects to minority or low-income populations.

There would also be a displacement of people living within the proposed levee alignment; 32 residences (none of which are considered affordable housing units) and 182 farm support structures would need to be relocated. The residences and farm structures that would need to be relocated are currently within the FEMA 1 in 100 chance flood plain. However, under the Modified Wide Setback Levee Plan, the existing levees would be notched, resulting in flooding between the levees from greater flows than one having a 1 in 5 chance of occurring in any given year. Structures confined by the levees would receive significant damage; relocation would ensure protection against loss of property and life.

The construction of the Modified Wide Setback Levee Plan would have a less than significant effect on current and/or planned population and housing growth patterns within Yolo County; the Modified Wide Setback Levee Plan would not affect the population and housing goals as outlined in the County General Plan.

Construction of the Modified Wide Setback Levee Plan would include removal, modification, relocation, and/or protection of existing gas, water, sewer, power, and communication lines. Disruption would be temporary, lasting approximately 4 hours, during these activities.

With the mitigation described in Section 4.2.4, the Modified Wide Setback Levee Plan would cause a less-than-significant effect on social and economic resources.

#### **4.2.4 Mitigation**

##### **Lower Cache Creek Flood Barrier Plan**

Residential, commercial, industrial, and agricultural development would continue according to the City and County General Plans. Depending on the significance of changes in flooding, homes and farm support structures would be raised, flood proofed, or given a flowage easement. Fair market value would be paid for the one home that would need to be relocated. Agricultural land with diminished value due to potential for project-induced flooding would be compensated through easement fees or direct purchase to the extent required by law.

##### **Modified Wide Setback Levee Plan**

Residential, commercial, industrial, and agricultural development would continue according to the City and County General Plans. Owners of homes and farm support structures that would be taken due to their placement within the levee alignment would be paid fair market value for their structures and land to the extent required by law.

#### **4.3 Potential Effects on Land Use**

This section evaluates the consistency of the proposed plans with the types and intensities of existing and planned land uses in the project area. These land uses are identified by the Yolo County and City of Woodland General Plans. An effect would be considered significant if it would:

- result in an inconsistency with land use designations or goals;
- result in land uses that are incompatible with existing or proposed land uses in the area; and
- physically divide an established community.

##### **4.3.1 No-Action Plan**

Without a flood damage reduction project, new developments would need to be in accordance with the National Flood Insurance Program. Increased costs associated with flood damage reduction may adversely affect the number of residents and businesses that move to or remain in Woodland.

The land north of city limits is zoned by Yolo County for agriculture. Unless zoning laws are altered, no significant change is expected for this land. The City of Woodland has development plans for much of the eastern and northern portions of the city bordering the settling basin and unincorporated Yolo County. However, with these portions of land within the FEMA 1 in 100 chance flood plain, added flood damage reduction costs necessary for development may encourage developers to look elsewhere.

### **4.3.2 Lower Cache Creek Flood Barrier Plan**

The flood barrier would extend along 6 miles of Woodland’s urban limit line. The flood barrier would convert land currently designated for agricultural uses. The flood barrier footprint covers approximately 100 acres of row crops, 2 acres of orchards, and 2 acres of farmland support structures. Other land uses affected by the project include agricultural fields (easements, staging, and borrow areas) and undeveloped farmland/riparian habitat (easements and training levee removal).

#### **Consistency with General Plan**

Because county lands would be used to construct the flood barrier, the greatest land use effect is to the county. The County General Plan aims to “...vigorously conserve and preserve the agricultural land in Yolo County” (Yolo County General Plan, p. 14); however, it also aims to “control flooding and avoid the effects of flooding” (Yolo County General Plan, p. 8). Although the LCCFB Plan would cause the conversion of agricultural land, it would do so for the purpose of public safety. This does not represent an inconsistency with the County General Plan and is therefore a less-than-significant effect.

#### **Land Use Compatibility**

The flood barrier would create an incompatible land use with farming. Therefore, it would represent a significant, but unavoidable effect.

#### **Divisiveness**

The flood barrier physically defines the existing urban limit line. The city of Woodland would no longer be in the FEMA 1 in 100 chance flood plain. All land south of the flood barrier would be developed as is currently planned by the City of Woodland. Land north of the flood barrier currently is, and would continue to be, in the FEMA 100-year flood plain. All land uses north of the barrier would continue consistent with the County General Plan. There would be no division of community based on project-related effects, and is therefore a less-than-significant effect.

The overall effect of the flood barrier on land use would be significant.

### **4.3.3 Modified Wide Setback Levee Plan**

The modified wide setback levees would be constructed along both sides of Cache Creek in the project area. The Modified Wide Setback Levee Plan would also include channel armoring, bridge replacement, and the isolation of farmland. The setback levee would convert land currently designated for agricultural uses. The plan would convert 123 acres of row cropped agricultural land, 35 acres of orchard, 11 acres of undeveloped farmland/riparian habitat, and 47 acres of other land. Land confined between the levees would include 932 acres of row cropped agricultural land, 322 acres of orchards, 441 acres of undeveloped farmland/riparian habitat, and 440 acres of other lands. Included in the 440 acres of other lands are 32 homes and 182 farm support structures.

### **General Plan Consistency**

Because County lands would be used to construct the setback levees, the greatest land use effect is to the County. The County General Plan aims to “vigorously conserve and preserve the agricultural land in Yolo County” (Yolo County General Plan, p. 14); however, it also aims to “control flooding and avoid the effects of flooding” (Yolo County General Plan, p. 8). Although the Modified Wide Setback Levee Plan would cause the conversion of agricultural land, it would do so for the purpose of public safety. This does not represent an inconsistency with the County General Plan and is therefore a less-than-significant effect.

### **Land Use Compatibility**

The setback levee would create an incompatible land use for farming. Therefore, it would represent a significant, but unavoidable effect.

The setback levees would isolate sections of farmland on the creekside of the levee as well as fragments of parcels on the landside of the levee. According to the California Code of Regulations (CCR), an “uneconomic remnant” is “a parcel of real property in which the owner retains an interest after partial acquisition of his property and which has little or no utility or value to such owner.” At the time of this document, an analysis of what parcels would be considered an uneconomic remnant has not been undertaken (a determination of uneconomic remnants would be made only if the setback levee plan was chosen). Depending on the size of the remnant, accessibility, and other factors, the land could either be leased back to farmers and remain farmed, or bought and used for mitigation.

### **Divisiveness**

The setback levees would not divide an existing community. All residences within the setback alignment would be relocated. This represents a less-than-significant effect.

The overall effect of the setback levees on land use would be significant.

## **4.3.4 Mitigation**

### **Lower Cache Creek Flood Barrier Plan**

Mitigation, if required, would be based on effects to the following three significance criteria:

1. Inconsistency with the General Plan;

The LCCFB Plan is consistent with the General Plan, which aims to protect farmland and provide flood damage reduction. This effect is less-than-significant, and no mitigation is required.

2. Incompatibility with existing land uses;

The LCCFB Plan is incompatible with existing land uses. This is a significant effect; however, the loss of farmland cannot be mitigated.

3. Division of a community.

The LCCFB Plan does not divide a community; the footprint would physically define the existing urban limit line. This effect is less-than-significant, and no mitigation is required.

The overall effect of the LCCFB Plan on land use would be significant even after the implementation of mitigation.

### **Modified Wide Setback Levee Plan**

Mitigation, if required, would be based on affects to the following three significance criteria:

1. Inconsistency with the General Plan;

The Modified Wide Setback Levee Plan is consistent with the General Plan, which aims to protect farmland, and provide flood damage reduction. This effect is less-than-significant, and no mitigation is required.

2. Incompatibility with existing land uses;

The Modified Wide Setback Levee Plan is incompatible with existing land uses. This is a significant effect; however, the loss of farmland cannot be mitigated.

3. Division of a community.

The Modified Wide Setback Levee Plan would not divide a community; all residences within the alignment would be relocated. This effect is less-than-significant, and no mitigation is required.

The overall effect of the modified wide setback levee on land use would be significant even after the implementation of mitigation.

### **4.4 Potential Effects on Agriculture, Prime and Unique Farmlands**

This section identifies potential project-related effects on prime and unique farmlands. Project effects would be considered significant if:

- the project would convert prime farmland, unique farmland, or farmland of statewide importance to nonagricultural uses.

A Farmland Conversion Impact Rating form was evaluated by the National Resource Conservation Service (NRCS) to determine the percentage of prime and locally

important farmland affected by the alternative plans. A copy of data received from the NRCS is supplied in Appendix D. Originally, the Narrow Setback Levee Plan and the Flood Barrier Plan were sent to the NRCS for farmland determination. These are Site A and B respectively on the Impact Rating form. Upon the development of the Wide Setback Plan, the alignment was sent to the NRCS as Site C. Given the similar alignments of the Wide and Modified Wide Setback Levee Plans (the significant difference occurs at the bridges and on the north side of the creek between I-5 and SH 113), the percentage of land found to be prime farmland for the Wide Setback Levee Plan was applied to the Modified Wide Setback Levee Plan.

#### **4.4.1 No-Action Plan**

Under the No-Action Plan, the potential for flooding during major storm events would remain. Temporary flooding would have little to no adverse effects on prime and unique farmlands. The possibility of future rezoning of prime and unique farmlands for development would decrease with no flood damage reduction project due to flood proofing costs for developers.

#### **4.4.2 Lower Cache Creek Flood Barrier Plan**

Close to 100 percent of the farmland in this project area is considered prime farmland. The flood barrier would result in a direct loss of 100 acres of prime farmland and 2 acres of statewide important/locally important farmland. This conversion includes the flood barrier footprint and permanent maintenance easements.

Flooding would not have any direct or indirect effects on the classification of prime and statewide important farmland. These designations are based on the physical properties of the soils; short-term inundation would not alter the properties of the soils.

The conversion of prime and statewide-important farmland represents a significant effect.

#### **4.4.3 Modified Wide Setback Levee Plan**

Most of the farmland in this project area is considered prime farmland. The Modified Wide Setback Levee Plan would result in the loss of 158 acres of prime farmland from direct effects from the levee footprint and permanent easements. An additional 1,254 acres confined between the levees has the potential of conversion due to indirect effects. Acres indirectly affected are those that are confined between the levees and the creek and are not suitable for farming due to size or irregular shape. The determination of what would be considered an uneconomic remnant, and therefore not farmable, has not yet been undertaken by the Corps. This determination would be made after a plan is selected. If lands are deemed uneconomic remnants, the land would most likely be used for habitat areas as mitigation. Prime farmlands would lose their designation as such if they remained unfarmed for more than 3 years.

Flooding would not have an effect on the classification of prime and statewide important farmland. These designations are based on the physical properties of the soils; short-term inundation would not alter the properties of the soils.

The conversion of prime and statewide-important farmland represents a significant effect.

#### **4.4.4 Mitigation**

##### **Lower Cache Creek Flood Barrier Plan**

The acreage of prime farmland converted cannot be mitigated since the qualities that distinguish prime farmland cannot be re-created. The conversion of prime and statewide-important farmland represents a significant effect.

##### **Modified Wide Setback Levee Plan**

The acreage of prime farmland converted cannot be mitigated since the qualities that distinguish prime farmland cannot be re-created. The conversion of prime and statewide-important farmland represents a significant effect.

#### **4.5 Potential Effects on Transportation**

This section identifies potential adverse project-related effects on transportation in the project area. The evaluation includes direct effects such as increased traffic due to haul trucks traveling to/from construction areas and indirect effects such as road closures due to project-related induced flooding. The project-related effects on transportation would be considered significant if they cause any of the following:

- An increase in traffic, which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections).
- Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways.
- Substantially increase hazards to a design feature (i.e., sharp curves or dangerous intersections) or incompatible uses.
- Result in inadequate emergency access.
- Result in inadequate parking capacity.
- Conflict with adopted policies supporting alternative transportation.

There would be no direct adverse effects to parking availability since there are no parking lots located in the project area. Additionally, there would be no hazards due to a design feature since roadways would maintain their basic footprint, but would be widened and/or raised.

#### **4.5.1 No-Action Plan**

Under the No-Action Plan, the potential remains for flooding during major storm events. Transportation would be affected during a severe storm due to the disruption and potential damage to the California Northern Railroad and to I-5. The portion of I-5 east of the city would be particularly subject to disruption and damage because the floodflows would pond against the Yolo Bypass levees. County roads within the project would also be flooded during flood events.

#### **4.5.2 Lower Cache Creek Flood Barrier Plan**

##### **Construction**

Haul routes would be on a construction easement along the north side of the proposed flood barrier embankment. For construction west of I-5, borrow material would come from the drainage channel excavation so no truck trips would be necessary to bring additional material from a distant borrow pit. For construction east of I-5, trucks would be traveling from the borrow areas just north and east of the alignment along the easement to construct the levee.

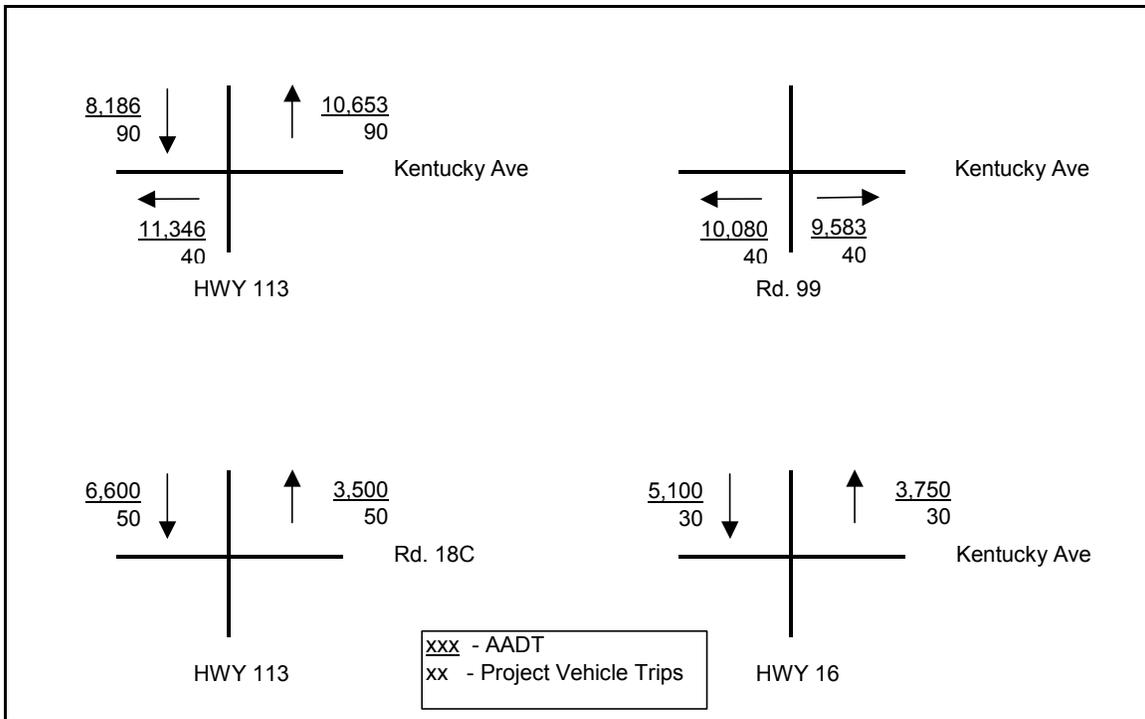
Trucks bringing concrete and aggregate materials would travel from the source (located on CR 20) to SH 16 and along the construction easement for levee work west of I-5. Trucks carrying concrete and aggregate materials would travel on CR 20 to Kentucky Avenue to SH 113 and along the construction easement for levee work east of I-5.

Riprap would be brought in from Yuba City. For construction east of I-5, trucks would travel down SH 113 and along the easement to distribute the riprap. The trucks would need to continue from SH 113 to Kentucky Avenue and then to CR 99 to access the construction easement on the west side of I-5.

The flood barrier would be constructed during the dry season over the course of 2 years. During this time there would be an increase in traffic volume on roads used as haul routes and roads accessed by construction workers. During peak construction periods, an additional 90 truck trips and 50 construction worker vehicles per day would be on different roads throughout the project area. (Appendix E includes the project-related numbers of trucks, truck trips, vehicle miles traveled, and construction worker vehicle trips necessary for project completion.) Figure 4-1 shows existing versus project-related Average Annual Daily Traffic (AADT) at key intersections. In all cases, the additional project-related traffic volume would be 1 percent or less of the existing traffic volumes. This small percentage would not be considered a substantial increase in traffic and would therefore be a less-than-significant effect.

The environmental analysis was prepared for a range of levee crown widths between 12 and 20 feet. Construction of a 20-foot levee crown width would require additional truck trips to haul materials. Trucks used to transport soil for levee construction would travel from the borrow areas along construction easements; these truck trips would not add additional trucks onto public roadways. Trucks required to haul the remainder of the materials on public roadways would increase the truck trips per day by less than 4 percent as compared to the total trips produced during construction of the 12-foot levee crown. Under the 12-foot levee crown width, direct transportation effects were less than significant. The 20-foot levee crown width would produce a slight increase in truck trips, but overall the effects on transportation would remain less than significant.

**Figure 4-1. Projected Increase in Traffic Volume – Lower Cache Creek Flood Barrier Plan**



For the Lower Cache Creek Flood Barrier Plan, CR 19B, CR 97A, CR 99, CR 101, and Frontage Road, as well as SH 16, would need to be raised to go over the top of the flood barrier. Churchill Downs would also need to be modified to meet CR 101. CR 102 would be raised slightly and go through the flood barrier, not over the top of the flood barrier. In each of these cases, traffic patterns would be temporarily altered. As the roads are being raised, the northbound and southbound lanes would be closed alternately, letting traffic flow through one lane as construction proceeds on the other. CR 102 would require approximately 2 months to construct. Each of the other roads that would need to be raised would require less construction time than CR 102.

There would be no modification to the railroad; however, construction would occur surrounding the tracks. There is the potential for short-term disruption in service while construction equipment is in close proximity to the tracks.

The only bike lane in the project area, along CR 102, would be affected in the same manner as the roadway. One lane would be closed at a time, allowing for traffic to pass in the open lane.

Implementation of the mitigation measures described in Section 4.5.4 would reduce these potentially significant transportation effects to less than significant.

Given the small increase in project-related traffic volume, the level of service (LOS) on roadways in the project area is not expected to change. The roadways used by construction vehicles in the project area are mainly rural in nature, without stoplights, pedestrian crossings, and large intersections. These features are a key source in the delay in travel time (major component of LOS) when additional vehicles travel through them. Without these features on most roadways, it is unlikely that the additional truck trips would cause substantial delays in travel time; therefore, the LOS standard would not be exceeded. This effect on transportation would be less than significant.

### **Flooding**

Indirect transportation effects of the flood barrier would include increased depth and duration of flooding on some roadways traversing the project area. A flood warning system would be in place to warn residents to evacuate, and alternate evacuation routes would be made available.

The project effects on transportation have the potential to affect residential, commercial, and agricultural travel. During a flood with a greater flow than one having a 1 in 40 chance of occurring in any given year, changes in depth and duration of flooding would increase moving west to east across the project area. Overbank flow or levee overtopping/failure on Cache Creek would result in sheet flow and would result in flooding and closure of I-5 for approximately 12 hours. SH 113 and CR 101 would be flooded and closed for a few days. CR 102 would see the most significant effect – flooding and closure would last approximately 3 weeks. Figure 2-4 shows the sections of the roadways that would be affected by the flooding from Cache Creek. Under existing conditions, the levee height perpendicular to CR 102 is approximately 5 feet. The flood barrier would increase this levee height to 18 feet, thus increasing the depth and duration of flooding at CR 102.

Residential traffic between the city of Woodland and the unincorporated community to the north would be affected during a flood that has a greater flow than one having a 1 in 40 chance of occurring within any given year, during which CR 101, 102 and SH 113 would be closed. CR 101 and SH 113 may be closed for a few days, and CR 102 may be closed for approximately 3 weeks. During the period that all three of these roads are closed, rerouted traffic could affect traffic/congestion on typically less-traveled, smaller roads.

A flood warning system would give residents more time to evacuate. Once the emergency was over, alternate routes would be available to enable residents to travel between their homes and/or businesses while CR 102 remained flooded.

Commercial traffic such as trucks carrying goods to/from a warehouse or a retail store would not be significantly affected. I-5 would only be temporarily closed and would reopen within hours after the storm event. Under existing conditions, I-5 would be closed in several locations both north and south of the project area as well, affecting traffic flow. Therefore, the project effects as compared to existing conditions would not be significant.

During the flood (winter) season, farmers would be transporting fewer goods/supplies than during the summer, resulting in an easier rerouting of traffic. The closure of I-5, and for a greater period of time, CR 102 would be an inconvenience; however, due to the infrequency of this event as well as the reopening of I-5 within a couple of days and the use of SH 113 as a detour, the effects would not be considered significant.

During flooding and road closures, the amount of time required for emergency vehicles to respond could be greater. Within a few days, all access ways would be open except for CR 102. CR 102 is a major access road for emergency vehicles traveling north from Woodland. However, there are several County roads in close proximity to CR 102. The use of detours to circumvent the flooding would reduce this impact significant, however, not to a less-than-significant level.

#### **4.5.3 Modified Wide Setback Levee Plan**

##### **Construction**

Haul routes would be on construction easements on the waterside of the proposed modified wide setback levee alignment. Access to these easements would be along CR 102, CR 101, SH 113, SH 16, and CR 99.

Trucks bringing concrete and aggregate materials would travel from the source (located on CR 20) to Kentucky Avenue to SH 113 and along the construction easements for reaches east of I-5. For reaches west of I-5, trucks would use SH 16 to access the construction site.

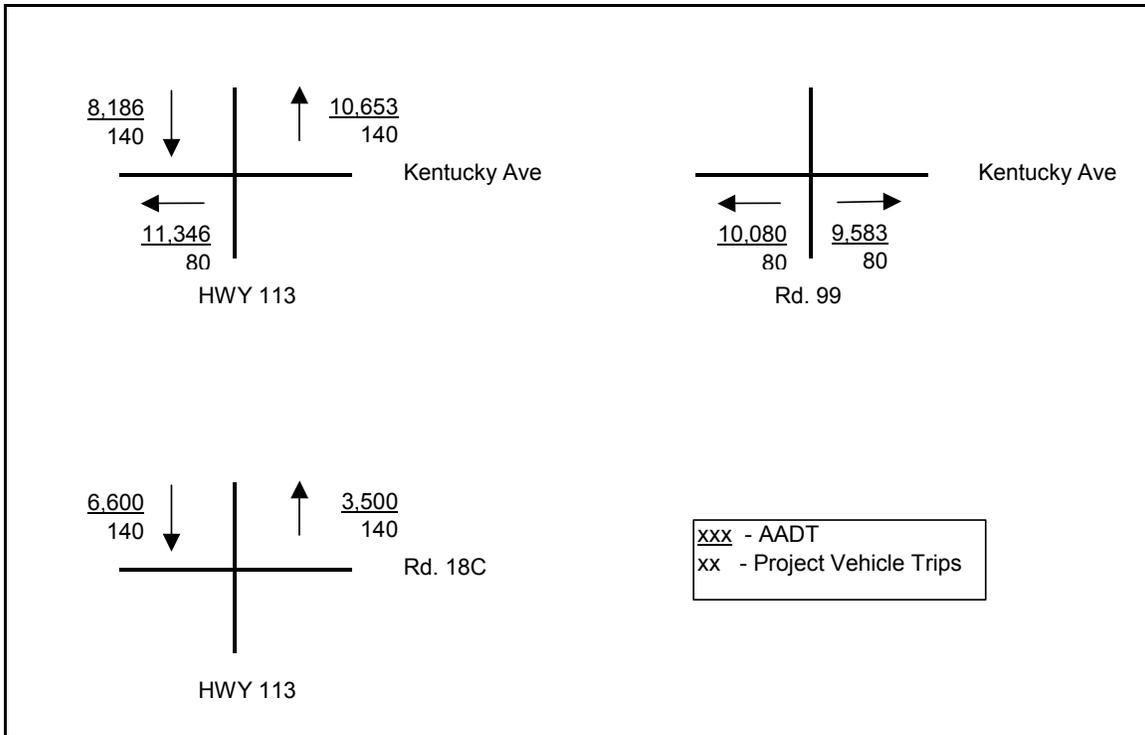
Riprap would be brought from Yuba City. For reaches east of I-5, trucks would travel down SH 113 and along the easements to distribute the riprap. The trucks would need to continue from SH 113 to Kentucky Avenue, and then to SH 16 to access the construction easements on the west side of I-5.

The setback levees would be constructed over the course of 3 years. The construction would be scheduled during the dry season from mid-April to mid-November (except in areas of potential giant garter snake habitat where construction would be limited to May through September). During this time, there would be an increase in traffic volume on roads used as haul routes and roads accessed by construction workers. During construction year 1, an average of approximately 80 additional round trip truck

trips per day would be required as well as an additional 60 worker vehicle round trips. During construction years 2 and 3, an average of approximately 50 additional round trip truck trips per day would be required as well as an additional 35 worker vehicle round trips. At peak construction periods, 100 additional roundtrip truck trips per day and 70 worker vehicle roundtrips would be required (Appendix E shows the project-related numbers of trucks, truck trips, vehicle miles traveled, and construction worker vehicle trips necessary for project completion). Figure 4-2 shows existing AADT versus project-related increases in AADT (year 1 average) at key intersections. The additional project-related traffic volume would range from approximately less than 1 percent to at most 4 percent for vehicles traveling north on SH113 north of CR 18C.

The environmental analysis was prepared for a range of levee crown widths between 12 and 20 feet. Construction of a 20-foot levee crown width would require additional truck trips to haul materials. Scrapers would be used to transport soil for levee construction and would therefore not add additional trucks onto public roadways. Trucks required to haul the remainder of the materials on public roadways would increase the truck trips per day by 8 percent as compared to the total trips produced during construction of the 12-foot levee crown. Under the 12-foot levee crown width, direct transportation effects were less than significant. The 20-foot levee crown width would produce an increase in truck trips, but overall the effects on transportation would remain less than significant.

**Figure 4-2. Project Increase in Traffic Volume – Modified Wide Setback Levee Plan**



CR 97A, CR 18B, CR 17, and CR 18A would need to be realigned. Viaducts would need to be built at CR 102 and SH 113 as well as I-5, the railroad, and CR 99W. The only bike lane in the project area, along CR 102, would be affected in the same manner as the roadway.

The bridge at CR 102 would be closed, demolished, and rebuilt. During this time, traffic over the CR 102 bridge would be detoured to the SH 113 bridge. South of Cache Creek, the detour would use CR 18C. North of Cache Creek, the detour would be over to CR 17. The detour would be in place approximately 6 months. The SH 113 bridge would be replaced during the following year. During closure of the SH 113 bridge, the CR 102 bridge would be used as a detour.

Construction of the new viaduct at CR 99W would require closure of CR 99W in both directions over the bridge. A detour would route traffic onto I-5. South of Cache Creek, traffic would be routed onto/off of I-5 at the Junction of CR 16 and CR 18. North of Cache Creek, traffic would exit/enter I-5 at the Yolo Interchange/CR 17. Local traffic heading south on CR 99W needing to access the town of Yolo would be permitted to continue past the CR 17/I-5 junction on CR 99W. Local traffic heading north on CR 99W needing to access the town of Yolo would be required to detour onto I-5, exit at CR 17, and head south on CR 99W.

The railroad bridge crossing Cache Creek would need to be replaced. The existing railroad bridge would remain open while a second bridge would be built next to it. Upon completion of the new bridge, tracks would be laid just north and south of the old bridge to connect the tracks over to the new bridge. The switch to the new bridge would be completed in 1 day.

The I-5 viaducts, northbound and southbound lanes, would be completed for one direction at a time. During construction for the northbound bridge, traffic would be detoured onto the southbound bridge and then back onto the northbound lanes just north of the bridge. A temporary road would be built to connect the northbound and southbound lanes just north and south of the bridges. The southbound bridge lanes would be converted from two lanes flowing south to one lane in each direction to accommodate the northbound traffic. The traffic patterns would be reversed during construction for the southbound bridge.

With the mitigation measures described in Section 4.5.4, transportation effects due to lane closures during bridge/road replacement would be considered less than significant.

Given the small increase in project-related traffic volume, the level of service (LOS) on roadways in the project area is not expected to change. The roadways used by construction vehicles in the project area are mainly rural in nature, without stop lights, pedestrian crossings, and large intersections. These features are a key source in the delay in travel time (major component of LOS) when additional vehicles travel through them. Without these features on most roadways, it is unlikely that the additional truck trips

would cause substantial delays in travel time; therefore, the LOS standard would not be exceeded. This transportation effect is considered less than significant.

### **Flooding**

After the completion of the Modified Wide Setback Levee Plan, all bridges would reliably be protected from floods that have a 1 in 100 chance of occurring in any given year. This represents a significant increase in protection compared to the No-Action Plan under which the bridges would be closed during flood events.

The overall effect on transportation would be less than significant with mitigation.

#### **4.5.4 Mitigation**

There would be no adverse effects on parking since construction equipment would be based at staging areas constructed specifically for the project. The following best management practices would be implemented to reduce the direct construction effects associated with project activities.

- Trucks would use construction easements as much as possible when hauling materials to the construction site.
- Traffic would be rerouted when necessary to avoid construction areas.
- Flaggers would be stationed to slow or stop approaching vehicles to avoid conflicts with construction vehicles or equipment.

Additionally, all proposed activities involving encroachments within, under, or over county or city road rights-of-way must be covered by an encroachment permit. Appropriate local agencies would be consulted by the non-Federal sponsor as necessary to obtain encroachment permits. Encroachment permits would also be required for State highways and railroads.

#### **Lower Cache Creek Flood Barrier Plan**

Keeping only one lane open during road raising would be of greatest concern on the heavier traveled roadways such as CR 102 and SH 16. Implementation of the above BMP's would facilitate safe passage of bicycles, automobiles, trucks, and agricultural equipment traveling the roadways. Construction of each roadway would take approximately 2 months; therefore, this would only be a temporary effect.

Emergency vehicles would be made aware of construction ahead of time in order to incorporate any new detours into their response paths.

A flood warning system giving residents extra time to evacuate would be in place. This would allow time for residents to clear the area before the roads become flooded. After the emergency is over, alternate routes would be identified for the time that the few roads would remain flooded.

Mitigation would reduce the effects, but not to a less-than-significant level.

### **Modified Wide Setback Levee Plan**

During the realignment of CR 97A, CR 18B, CR 17, and CR 18A, traffic controls would be in effect. One lane would be kept open while construction proceeds in the other lane. Flaggers would be stationed to aid traffic flow through the one open lane.

During the construction of the new viaducts on CR 102 and SH 113, reduced speed signs would be placed on detour CR 18C and CR 17 to allow trucks traveling in opposite directions to pass safely. Caution signs would also be placed on CR 102 and SH 113 to warn traffic of slow vehicles entering from CR 18C and CR 17. Signs would be placed on CR 102 and SH 113 noting the dates of the detour.

Signs indicating reduced speed would be placed along the detour over the I-5 bridges to allow traffic traveling in opposite directions to pass safely. Caution and merge signs would be placed prior to the detour to warn northbound motorists of the upcoming lane shift onto the southbound bridge. Merge and caution signs would also be placed prior to the southbound bridge to allow motorists time to reduce speed and merge into one lane.

During construction of the southbound bridge, the similar traffic controls would also be in place.

Emergency vehicles would be made aware of construction ahead of time in order to incorporate any new detours into their response paths.

With mitigation, overall effects due to construction of the modified wide setback levee are less than significant.

### **4.6 Potential Effects on Noise**

This section evaluates the effects of the plans on noise levels in the project area. Under the Federal Noise Control Act, the EPA identified outdoor limits of 55 decibels as desirable to protect against speech interference and sleep disturbance for residential, educational, and healthcare areas. The U.S. Department of Housing and Urban Development considers noise levels above 65 decibels as “normally unacceptable.” For the purpose of this analysis, the project-related noise would be considered significant if:

- the noise exceeds 60 decibels at sensitive receptor locations.

As the distance from the noise source increases, the decibel level decreases such that for every doubling of distance, the decibel level is reduced by 6 dB. Assuming that average levee construction noise is 88 dB unmitigated at 50 feet, a radius of approximately 1,600 feet would be affected with noise above 60 dB.

#### **4.6.1 No-Action Plan**

If no flood protection project is built, existing noise levels would remain constant. Future development and predicted increased population may result in a slight increase in ambient noise levels.

#### **4.6.2 Lower Cache Creek Flood Barrier Plan**

Project construction noise would result from engine exhaust, fans, transmissions, and other mechanical equipment. Construction noise would be more heavily concentrated at the staging areas located at the intersections of the flood barrier with CR 97A, CR 99, CR 102, CR 101, and SH 113 and SH 16.

Adjacent land uses to the construction area include industrial, agricultural, commercial, and residential. The following sensitive noise receptors are located near the project area:

1. Residence and Valley Oaks Inn – Churchill Downs and SH 113
- 1A. Dubach Park – SH 113 and I-5
2. Residence – I-5 and CR 99
3. Residence – SH 16
4. Residence – CR 19A
5. Residences – CR 96B and CR 19B
6. Residence – South of CR 19B
7. Residence – Between CR 19B and CR 20
8. Residence – Kentucky Avenue and SH 16
9. Residence – SH 16 north of Kentucky Avenue
10. Residences – SH 16 about one-half mile north of Kentucky Avenue
11. Residences – Cherry Lane
12. Residences – CR 98B north of Kentucky Avenue
13. Residences and Traynham Park - CR 98B north of Kentucky Avenue
14. Residence – CR 99 about one-half mile north of Kentucky Avenue
15. Residence – CR 99 and Kentucky Avenue
16. Residence – Kentucky Avenue between N. College St. and SH 113
17. Best Western – SH 113 and I-5

Figure 4-3 shows the location of the sensitive receptors within the project-related noise contours.

The significance of project-related noise would be less if the sensitive receptors are already located near and exposed to existing noise sources such as Interstate 5. Table 4-1 lists the sensitive receptors indicated above as well as bordering land uses.

Figure 4-4 shows the sensitive receptors and existing noise sources from roadways and railroads. Sensitive receptors located at points 1, 1A, 2, 5, 6, 10, and 14 are the closest to construction and would be subjected to decibels ranging in the low to mid 70's. Half of these receptors are currently subject to significant noise levels due to existing conditions. Existing conditions at these receptors include noise from the railroads that can produce levels of approximately 75 decibels at 100 feet (Sutter County, 2001). The freeway and SH 113 produce a more constant noise source and average 70 decibels at 100 feet. Kentucky Avenue, which according to the Woodland General Plan is a truck route, and SH 16 can produce approximately 62 decibels 100 feet from the roadways (Yolo County, 1996). Agricultural fields, while in production, create noise during farming, primarily from tractors, and can produce noise levels of 78 dBA at 100 feet (Sutter County, 2001). Even with all of these existing noise sources and the mitigation measures described below, the construction of the flood barrier would produce decibel levels above the significance threshold for some sensitive receptors temporarily during construction. This represents a temporary significant effect.

**Table 4-1. Land Uses Bordering Sensitive Receptors  
(Including With-Project Noise Levels)**

<b>Sensitive Receptors</b>	<b>dBA<sup>1</sup> Range With Project</b>	<b>Bordering Land Uses</b>
1	73-76	SH 113, I-5
1A	73-76	SH 113, I-5
2	68-71	SH 113, Railroad, Ag
3	<58	SH 16, Ag
4	57-60	County roads, Ag
5	68-72	County roads, Ag
6	68-72	County roads, Ag
7	58-61	County roads, Ag
8	<58	Kentucky Avenue, SH 16, Ag
9	68-71	SH 16, Ag
10	74-77	Ag
11	57-60	SH 16, Ag
12	63-66	Ag
13	<58	Kentucky Avenue
14	65-69	Ag
15	<58	Kentucky Avenue
16	<58	Kentucky Avenue
17	56-59	SH 113, I-5

<sup>1</sup> dBA: A weighted decibel scale.

Kentucky Avenue would be a haul route used in the construction of the flood barrier. Given that sensitive receptors occur on either side of the roadway, noise levels due to project-related truck traffic were evaluated. Noise levels increase about 3-dBA for each doubling of roadway traffic volume, given that the speed and vehicle types remain constant (City of Los Angeles, 1998). Since Kentucky Avenue is a haul route already

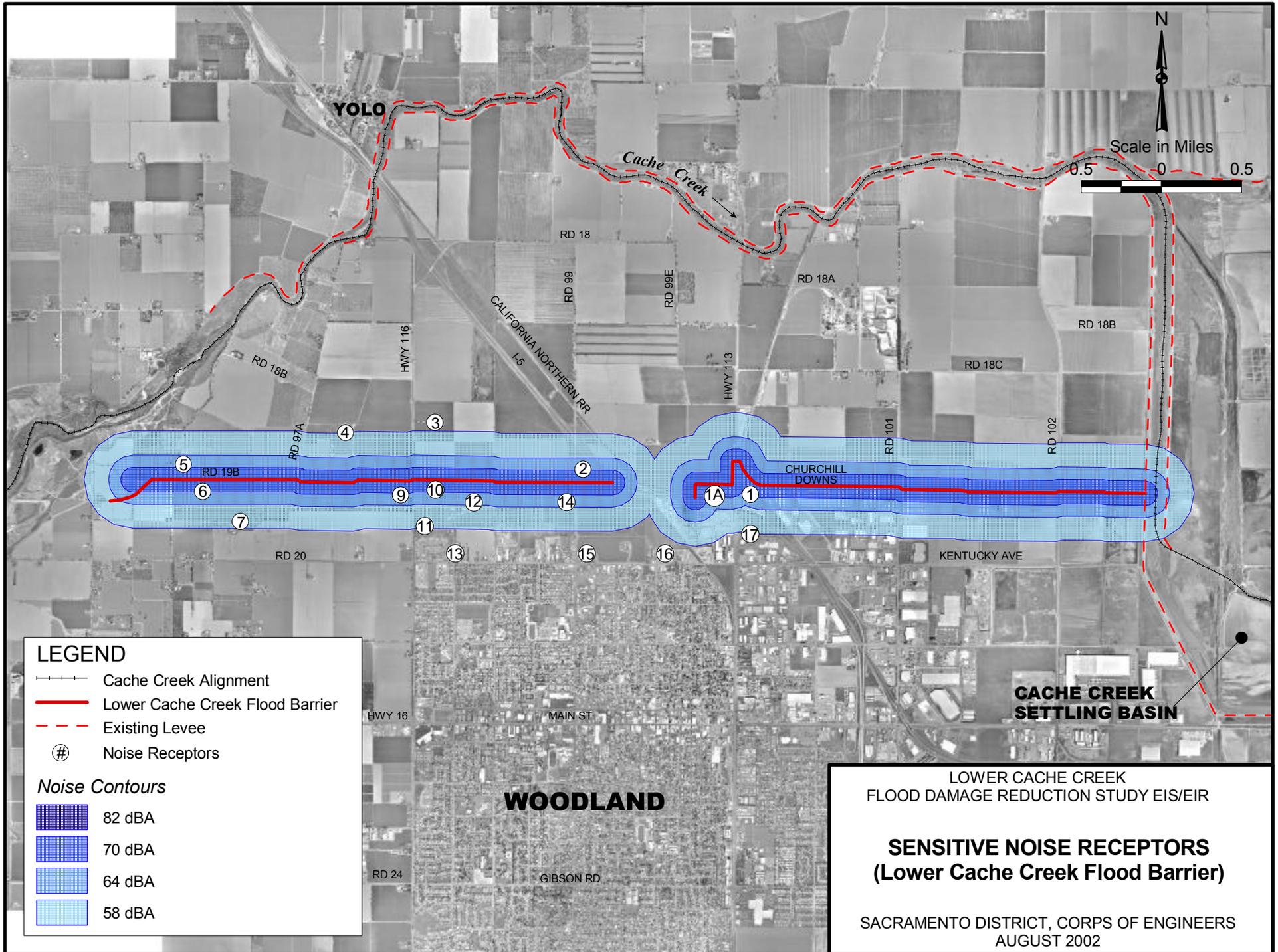


Figure 4-3



traveled by trucks, additional project-related truck volume would not alter the vehicle type on the roadway. The project would also not add enough truck trips to double the existing traffic. Therefore, mobile noise effects would result in less than a 3-dBA increase surrounding Kentucky Avenue. Traffic-related noise would not result in a significant noise effect.

The overall noise effect would be significant.

#### **4.6.3 Modified Wide Setback Levee Plan**

Project construction noise would result from engine exhaust, fans, transmissions and other mechanical equipment during the demolition and construction of the setback levees.

The noise contours from levee construction and the sensitive noise receptors were mapped to identify where they overlapped (Figure 4-5). The majority of the sensitive receptors would be located far enough from the construction sites that the decibel range at their property would be in the mid-50's. West of I-5, a few homes close to the proposed setback levee alignment would have decibel ranges in the low to mid-70's. Within the town of Yolo, homes that currently border the levee would be exposed to decibel ranges in the 70's during modifications of the existing levee. East of I-5, there are fewer sensitive receptors than on the west side; however, they are closer to the construction site and would therefore experience a louder noise effect.

Most of the sensitive receptors in the project area are homes that border agricultural land. The exception is the entire town of Yolo, which also borders I-5 and the railroad and includes additional sensitive receptors such as a school and church. Figure 4-6 shows the sensitive receptors and existing noise sources from roadways and railroads. A portion of the town of Yolo is currently subject to significant noise levels due to existing conditions. Existing conditions at these receptors include noise from the railroads that can produce levels of approximately 75 decibels at 100 feet (Sutter County, 2001). Additionally, receptors that border State highways and county roads are also subject to traffic noise. I-5 and SH 113 produce more constant noise sources and average 70 decibels at 100 feet. Agricultural fields, while in production, create noise during farming, primarily from tractors, and can produce noise levels of 78 dBA at 100 feet (Sutter County, 2001). Additional noise sources include crop dusters; pumps; diesel haul trucks; and during peak harvesting, farm equipment that creates noise 24 hours a day.

Even with all of these existing noise sources and the mitigation measures described below, the construction of the setback levee would produce decibel levels above the significance threshold for some sensitive receptors temporarily during construction. This represents a temporary significant effect.

The overall noise effect would be significant.

#### **4.6.4 Mitigation**

##### **Lower Cache Creek Flood Barrier Plan**

Construction equipment would be outfitted and maintained with noise-reduction devices such as mufflers to minimize construction noise. Use of noise-reduction devices would reduce noise by an average of 5 to 10 dBA at 50 feet. Wherever possible, noise-generating construction equipment would be shielded by the use of buffers such as structures or truck trailers.

Construction would be limited to daytime hours to minimize noise effects on nearby residents, workers, and the general public during noise-sensitive periods.

Mitigation would reduce the effects, but not to a less-than-significant level.

##### **Modified Wide Setback Levee Plan**

Construction equipment would be outfitted and maintained with noise-reduction devices such as mufflers to minimize construction noise. Use of noise-reduction devices would reduce noise by an average of 5 to 10 dBA at 50 feet. Wherever possible, noise-generating construction equipment would be shielded by the use of buffers such as structures or truck trailers.

Construction would be limited to daytime hours to minimize noise effects on nearby residents, workers, and the general public during noise-sensitive periods.

Mitigation would reduce the effects, but not to a less-than-significant level.

#### **4.7 Potential Effects on Air Quality**

Effects on air quality are considered significant if the project would:

- Conflict with or obstruct implementation of the applicable air quality plan.
- Violate any air quality standard or contribute to an existing or projected air quality violation.
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable Federal or State ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors).
- Expose the public (especially schools, day care centers, hospitals, retirement homes, convalescence facilities, and residences) located within one-fourth mile of the construction area to substantial pollutant concentrations.
- Create objectionable odors affecting a substantial number of people.

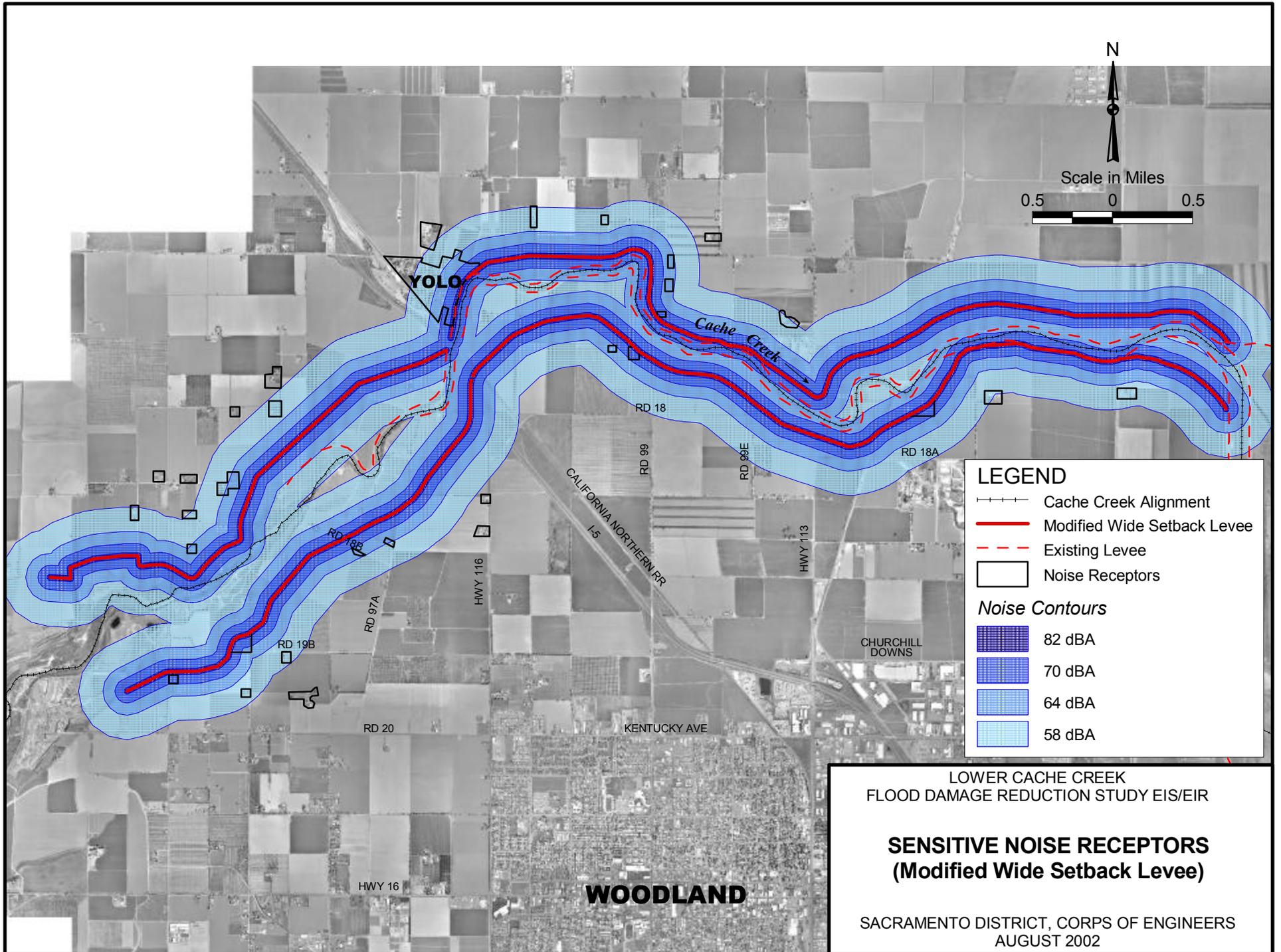
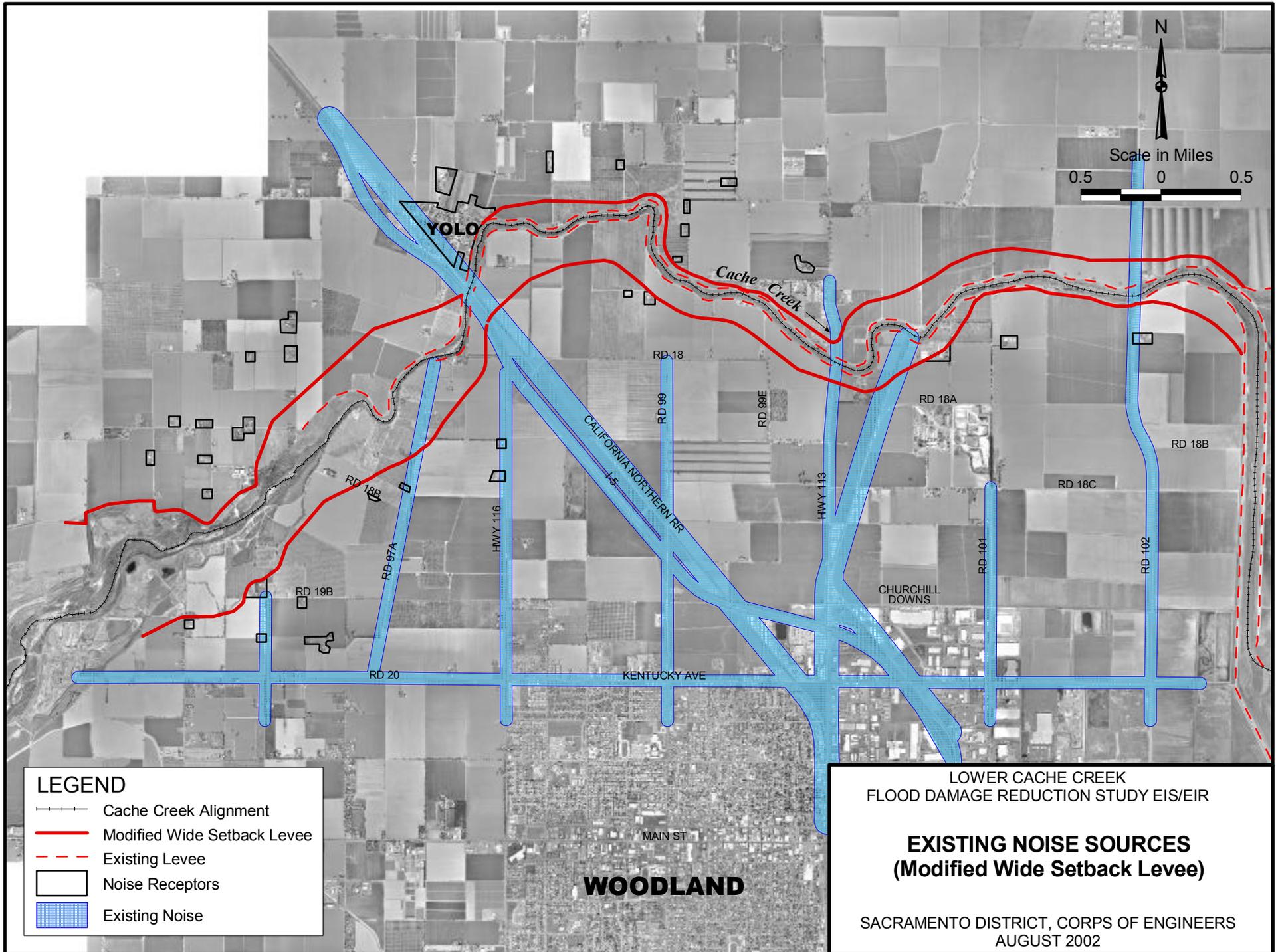


Figure 4-5



**LEGEND**

- Cache Creek Alignment
- Modified Wide Setback Levee
- - - Existing Levee
- Noise Receptors
- Existing Noise

LOWER CACHE CREEK  
 FLOOD DAMAGE REDUCTION STUDY EIS/EIR

**EXISTING NOISE SOURCES  
 (Modified Wide Setback Levee)**

SACRAMENTO DISTRICT, CORPS OF ENGINEERS  
 AUGUST 2002

Figure 4-6

Significance criteria developed by the Yolo-Solano Air Quality Management District (YSAQMD) and conformity thresholds established by the EPA were used to determine the significance of project-related air quality effects. Project-related emissions were considered significant if NO<sub>x</sub>, ROG, or PM<sub>10</sub> exceeded 82 lbs/day. Additionally, project-related emissions were considered significant if they exceeded the EPA's general conformity thresholds. Yolo County is considered a severe nonattainment area for ozone. The threshold for ozone precursors, NO<sub>x</sub> and ROG, is set at 25 tons/yr. Conformity thresholds are not set for other pollutants since Yolo County is considered in attainment for those pollutants.

Emissions associated with each plan would be primarily direct effects from construction. Emissions include exhaust from construction equipment, fugitive dust from construction activities, exhaust from worker vehicle trips to and from the sites, and exhaust from construction vehicles traveling to and from borrow sites. Emissions for each of these activities were estimated as follows.

#### **4.7.1 Methodology**

The first step involved estimating exhaust emissions related to off road construction equipment. Off road construction equipment was inventoried. For each type of equipment, total hours necessary for project completion were estimated. The total hours were then multiplied by the average horsepower and the load and emission factors to determine the total pollutants per year (ARB, 2001).

The second step involved estimating the dust associated with construction activities generated at the borrow sites, staging areas, and construction areas. The acreage of these sites was estimated and multiplied by an emission factor (MRI, 1996) to obtain PM<sub>10</sub> dust emissions.

The third step involved estimating on road vehicle emissions, including employee vehicle trips and haul trips to/from borrow sites. Employee vehicle trip and borrow site trip haul emissions were estimated by multiplying total miles traveled by an emission factor. The emission factors were obtained by running the EMFAC2000 Model for Yolo County (ARB, 2001).

The fourth step involved estimating fugitive dust emissions from trucks and employee vehicles traveling on paved roads. Road surface silt loading and an average vehicle weight were estimated and entered into an equation to determine pounds/VMT (Vehicle Miles Traveled). This number was multiplied by the total VMT of trucks traveling to/from borrow sites and employees traveling to/from the construction site to determine the fugitive dust emissions (EPA, 2001; Gaffney and Shimp, 1997).

The final step was to sum the emissions calculated in each step. Project-related emissions were compared to the YSAQMD's significance criteria and the conformity thresholds to determine the significance of the effects. The results for each plan are described below. Calculations for each step listed above can be found in Appendix F.

#### 4.7.2 No-Action Plan

The No-Action Plan would not generate any construction-related emissions. Air quality in the project area would continue to be affected by local emissions and would experience a potential increase in emissions as the population grows. However, stricter air quality standards implemented by the YSAQMD and the California Air Resources Board may aid in improving current conditions and may help in avoiding future rises in emissions.

#### 4.7.3 Lower Cache Creek Flood Barrier Plan

This plan is not expected to have any long-term effects on air quality. However, construction would result in two types of short-term effects on air quality. These direct effects are combustion emissions and dust emissions. Table 4-2 summarizes the estimated emissions in lbs/day and tons/yr for 1 year. The total emissions for the 2-year project were calculated and halved to obtain the yearly results.

**Table 4-2. Estimated Combustion and Dust Emissions  
(Lower Cache Creek Flood Barrier Plan – Unmitigated)**

Pollutant	Emissions (tons/yr)			Total	EPA Threshold
	Offroad Construction Vehicles	Onroad Construction Vehicles	Worker Vehicle Trips		
Combustion Emissions					
ROG	0.86	0.31	0.09	1.26	25.00
CO	2.93	1.15	1.83	5.91	N/A
NO <sub>x</sub>	7.28	6.51	0.18	13.97	25.00
PM <sub>10</sub>	26.00	0.89	0.03	26.92	N/A
Pollutant	Emissions (lbs/day)			Total	YSAQMD Threshold
	Offroad Construction Vehicles	Onroad Construction Vehicles	Worker Vehicle Trips		
Combustion Emissions					
ROG	9.48	3.44	1.00	13.92	82.00
CO	32.61	12.78	20.33	65.72	550.00
NO <sub>x</sub>	80.91	72.33	2.00	155.24	82.00
PM <sub>10</sub>	288.92	9.84	0.30	299.06	82.00

Short-term construction-related emissions for NO<sub>x</sub> of 155 lbs/day and PM<sub>10</sub> emissions (combustion and fugitive dust) of approximately 300 lbs/day would exceed the 82 lbs/day significance threshold established by the YSAQMD. ROG emissions of 14 lbs/day would not exceed the 82 lbs/day threshold. CO emissions of 65 lbs/day would not exceed the 550 lbs/day significance threshold established by the YSAQMD.

The environmental analysis was prepared for a range of levee crown widths between 12 and 20 feet. Construction of the 20-foot levee crown would produce an increase in combustion emissions from construction equipment. Combustion emissions, specifically ROG, CO, NO<sub>x</sub>, and PM<sub>10</sub> would increase by 4 percent as compared to the total emissions produced during construction of the 12-foot levee crown. PM<sub>10</sub> and NO<sub>x</sub>

emissions were above the Yolo-Solano Air Quality Management District's (YSAQMD) threshold, and considered a short-term significant impact, under the 12-foot levee crown width. These pollutants would also be considered a short-term significant impact under the 20-foot crown width. ROG and CO emissions did not exceed YSAQMD thresholds. The emissions for ROG and CO would be increased slightly under the 20-foot crown width, but the emissions would continue to be less than the threshold.

The sensitive receptors located within one-fourth mile of the construction area are shown in Figure 4-7. These receptors would be affected most by the dust generated from construction. A dust suppression plan as outlined under Section 4.7.5 would reduce dust emissions, but not to a less-than-significant level. This would represent a significant but unavoidable effect.

Implementing the mitigation measures identified under Section 4.7.5 would reduce these air quality effects; however, the NO<sub>x</sub> and PM<sub>10</sub> emissions would still exceed the significance thresholds established by the YSAQMD. These exceedences would only occur during the 2-year construction period. Although temporary, the exceedences would represent a significant and unavoidable effect.

Construction of the setback levees would not produce any changes or increases in odors compared to existing conditions for the surrounding sensitive receptors.

Under EPA's conformity guidelines, the project would have to produce less than 25 tons/year of NO<sub>x</sub>. The project would produce 13.9 tons/year, which is less than this threshold. The emission levels for the year would also have to be less than 10 percent of the nonattainment area's emission inventory. For Yolo County, the emission inventory is 24.6 tons/day for NO<sub>x</sub>; 10 percent would equal 2.46 tons/day. The 155 lbs/day of NO<sub>x</sub> emitted from the project would be less than the 2.46 tons/day significance threshold.

According to the conformity review process, the project-related emissions would not be high enough to trigger a conformity determination.

The overall effect on air quality, due to construction of the LCCFB Plan, would be significant.

#### **4.7.4 Modified Wide Setback Levee Plan**

This plan is not expected to have any long-term effects on air quality. However, construction would result in two types of short-term effects on air quality. These direct effects are combustion emissions and dust emissions. Table 4-3 summarizes the estimated emissions in lbs/day and tons/yr for 1 year. The total emissions for the 3-year project were calculated and divided by three to obtain the yearly results.

**Table 4-3. Estimated Combustion and Dust Emissions  
(Modified Wide Setback Levee Plan – Unmitigated)**

Pollutant	Emissions (tons/yr)			Total	EPA Threshold
	Offroad Construction Vehicles	Onroad Construction Vehicles	Worker Vehicle Trips		
<b>Combustion Emissions</b>					
ROG	1.27	0.22	0.07	1.56	25.00
CO	3.97	0.81	1.42	6.20	N/A
NO <sub>x</sub>	15.88	4.56	0.14	20.58	25.00
PM <sub>10</sub>	46.98	1.02	0.02	48.02	N/A

Pollutant	Emissions (lbs/day)			Total	YSAQMD Threshold
	Offroad Construction Vehicles	Onroad Construction Vehicles	Worker Vehicle Trips		
<b>Combustion Emissions</b>					
ROG	14.08	2.44	0.78	17.31	82.00
CO	44.16	9.00	15.78	68.94	550.00
NO <sub>x</sub>	176.47	50.67	1.56	228.69	82.00
PM <sub>10</sub>	522.07	21.38	0.35	543.80	82.00

Short-term construction-related emissions for NO<sub>x</sub> of 229 lbs/day and PM<sub>10</sub> emissions (combustion and fugitive dust) of 523 lbs/day would exceed the 82 lbs/day significance threshold established by the YSAQMD. ROG emissions of 17 lbs/day would not exceed the 82 lbs/day threshold. CO emissions of 69 lbs/day would not exceed the 550 lbs/day significance threshold established by the YSAQMD.

The environmental analysis was prepared for a range of levee crown widths between 12 and 20 feet. Construction of the 20-foot levee crown would produce an increase in combustion emissions from construction equipment. Combustion emissions, specifically ROG, CO, NO<sub>x</sub>, and PM<sub>10</sub> would increase by 10 percent as compared to the total emissions produced during construction of the 12-foot levee crown. PM<sub>10</sub> and NO<sub>x</sub> emissions were above the Yolo-Solano Air Quality Management District's (YSAQMD) threshold, and considered a short-term significant impact, under the 12-foot levee crown width. These pollutants would also be considered a short-term significant impact under the 20-foot crown width. ROG and CO emissions did not exceed YSAQMD thresholds as analyzed under the 12-foot crown width. The emissions for ROG and CO would be increased under the 20-foot crown width, but the emissions would continue to be less than the threshold.

The sensitive receptors located within one-fourth mile of the construction area are shown on Figure 4-8. These receptors would be affected most by the dust generated from construction. A dust suppression plan as outlined under Section 4.7.5 would reduce dust emissions, but not to a less-than-significant level. This would represent a significant but unavoidable effect.

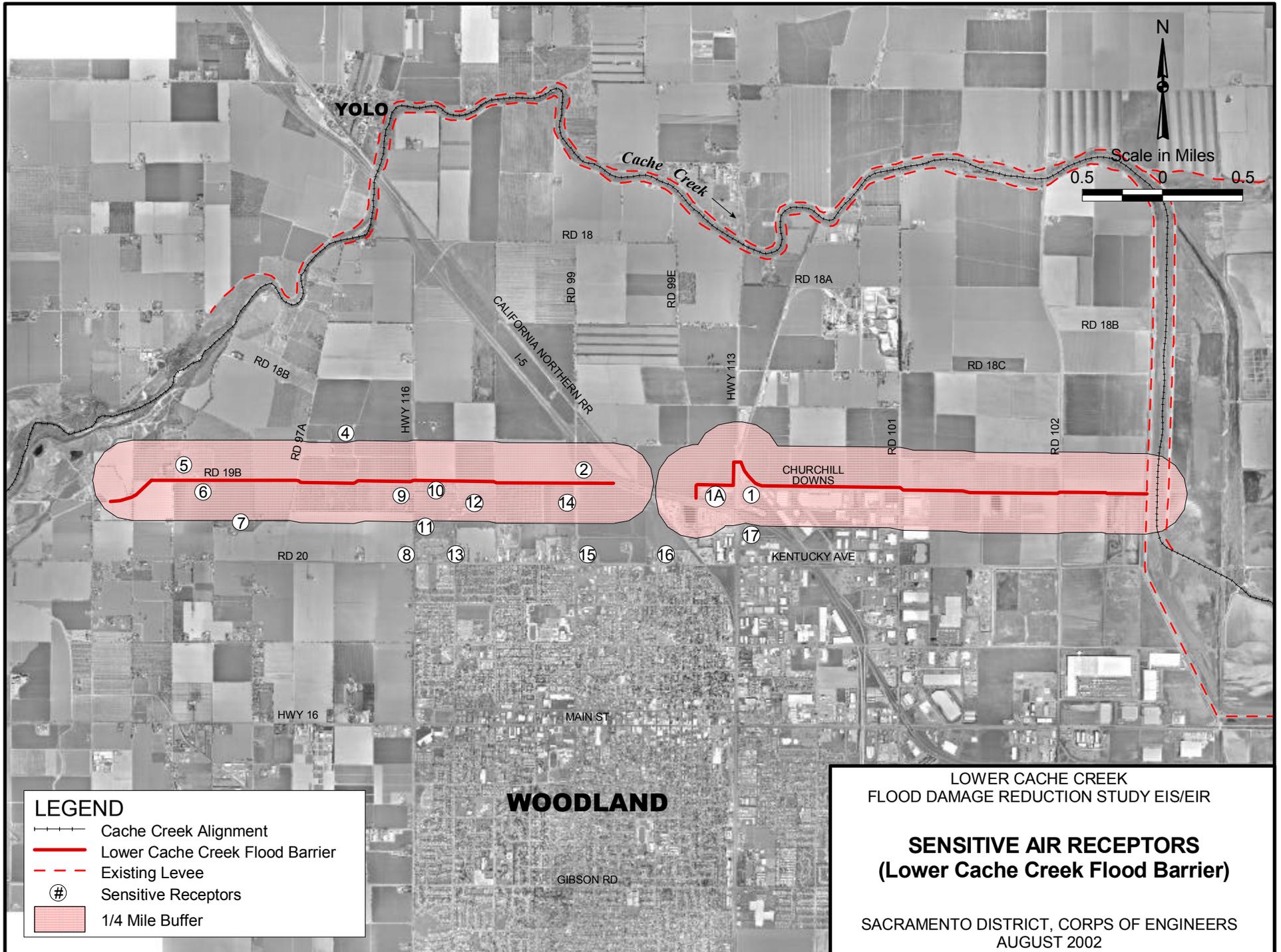
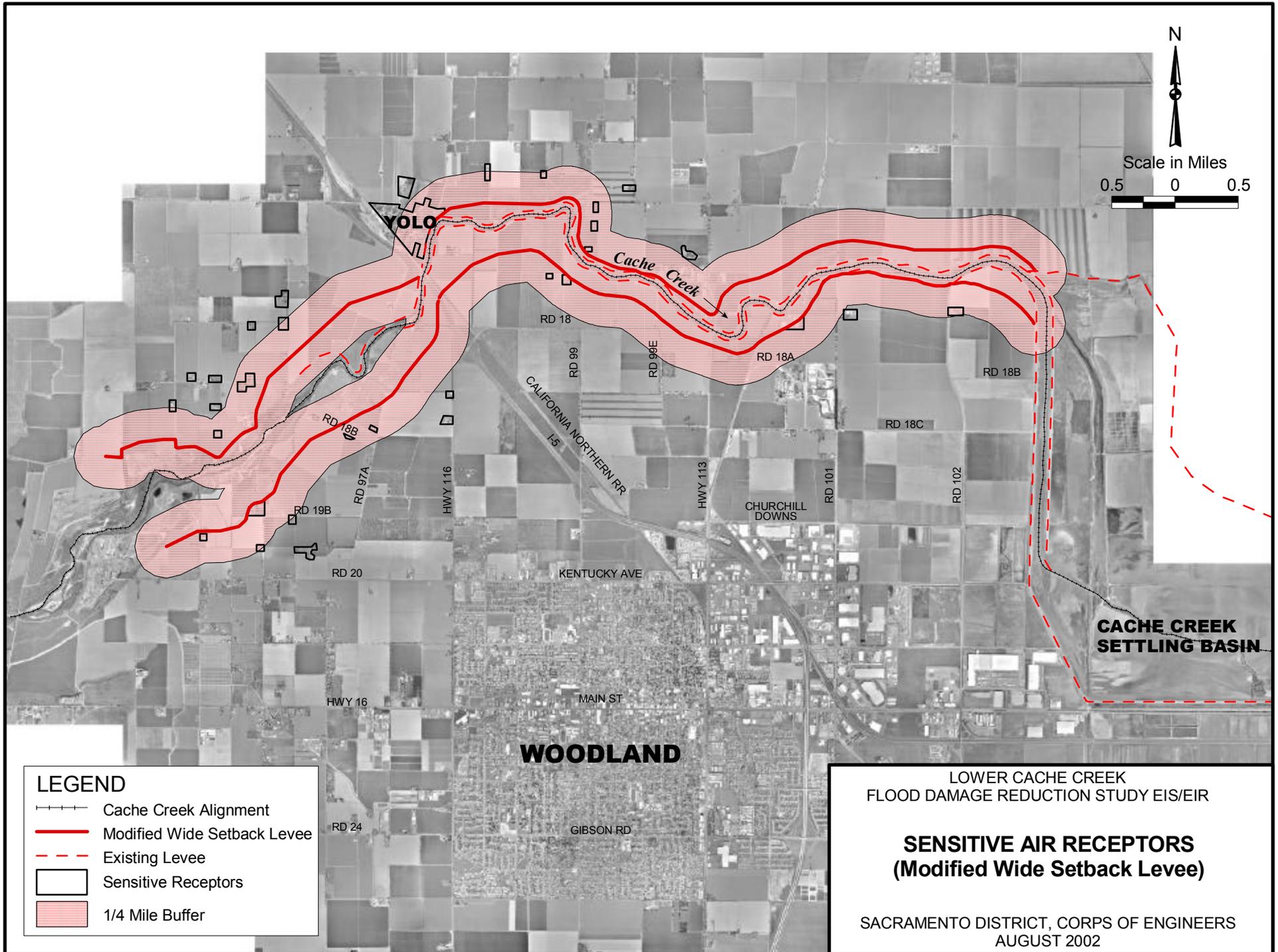


Figure 4-7



**LEGEND**

- Cache Creek Alignment
- Modified Wide Setback Levee
- - - Existing Levee
- Sensitive Receptors
- 1/4 Mile Buffer

LOWER CACHE CREEK  
FLOOD DAMAGE REDUCTION STUDY EIS/EIR

**SENSITIVE AIR RECEPTORS  
(Modified Wide Setback Levee)**

SACRAMENTO DISTRICT, CORPS OF ENGINEERS  
AUGUST 2002

Figure 4-8

Implementing the mitigation measures identified in Section 4.7.5 would reduce these air quality effects; however, the NO<sub>x</sub> and PM<sub>10</sub> emissions would still exceed the significance thresholds established by the YSAQMD. These exceedences would only occur during the 3-year construction period. Although temporary, the exceedences represent a significant but unavoidable effect.

Construction of the setback levees would not produce any changes or increases in odors compared to existing conditions for the surrounding sensitive receptors.

Under EPA's conformity guidelines, the project would have to produce less than 25 tons/year of NO<sub>x</sub>. The project would produce 21 tons/year, which is less than this threshold. The emission levels for the year would also have to be less than 10 percent of the emission inventory for the nonattainment area. For Yolo County, the emission inventory is 24.6 tons/day for NO<sub>x</sub>; 10 percent would equal 2.46 tons/day. The 229 lbs/day of NO<sub>x</sub> emitted from the project would be less than the 2.46 tons/day significance threshold. According to the conformity review process, the project-related emissions would not be high enough to trigger a conformity determination.

The overall effect on air quality, due to construction of the modified wide setback levee, would be significant.

#### **4.7.5 Mitigation**

##### **Lower Cache Creek Flood Barrier Plan**

The following mitigation measures would be used to reduce the construction-related air quality effects:

- Prepare and implement a dust suppression plan.
- Incorporate NO<sub>x</sub> mitigation measures into construction plans and specifications.

##### **Prepare and Implement a Dust Suppression Plan**

A dust suppression plan would be submitted to the YSAQMD for review before initiating construction activities. The plan would include as many of the following mitigation measures as are applicable to each project site:

- All construction areas, unpaved access roads, and staging areas would be watered as needed during dry soil conditions, or soil stabilizers would be applied.
- All trucks hauling soil or other loose material would be covered or have at least 2 feet of freeboard. Wherever possible, construction vehicles would use paved roads to access the construction site.

- Vehicle speeds would be limited to 15 mph on unpaved roads and construction areas, or as required to control dust.
- Streets would be cleaned daily if visible soil material is carried onto adjacent public streets.
- Soil stabilizers would be applied daily to inactive construction areas as needed.
- Exposed stockpiles of soil and other excavated materials would be enclosed, covered, watered twice daily, or applied with soil binders as needed.
- Vegetation would be replanted in disturbed areas as quickly as possible following the completion of construction.

#### Incorporate NO<sub>x</sub> Mitigation Measures into Construction Plans

Construction contractors would limit NO<sub>x</sub> emissions by implementing the following measures:

- Use Caterpillar prechamber diesel engines (or equivalent) together with proper maintenance and operation.
- Use electric equipment, where feasible.
- Maintain equipment in tune with manufacturers' specifications.
- Use gasoline-powered equipment installed with catalytic converters.
- Substitute gasoline-powered for diesel-powered equipment, where feasible.
- Use compressed natural gas or onsite propane mobile equipment instead of diesel-powered equipment, where feasible.

If the mitigation measures are implemented, dust-related PM<sub>10</sub> emissions would be reduced by 60 percent (SCAQMD, 1992), and NO<sub>x</sub> emissions would be reduced by 5 percent. Even with these mitigation measures, the project would still exceed YSAQMD significance thresholds for both NO<sub>x</sub> and PM<sub>10</sub>. However, the exceedences would only occur during the 7-month construction year for 2 years.

Mitigation would reduce air quality effects, but not to a less-than-significant level.

#### **Modified Wide Setback Levee Plan**

The mitigation measures for this alternative plan would be the same as the mitigation measures listed above for the LCCFB Plan. Mitigation would reduce air quality effects, but not to a less-than-significant level.

## **4.8 Potential Effects on Sedimentation and the Settling Basin**

This section identifies potential adverse project-related effects on the settling basin. The evaluation includes effects such as changes in sediment loading and structural alterations to the basin. The effects would be considered significant if:

- The service life of the settling basin is reduced to less than 50 years.

### **4.8.1 No-Action Plan**

The existing Cache Creek levee system and settling basin were designed to contain flows of up to 30,000 cfs. Flows exceeding this level could potentially result in short-term overbank flow and risk of a levee failure on the creek that would cause flooding to the surrounding area. A portion of the sediment load would be deposited on the surrounding flood plain during these events.

Consequently, the amount of sediment that reaches the settling basin is reduced during these high flows, and the settling basin is not exposed to loading rates that exceed its design capacity and alter the projected 50-year lifespan of the basin.

### **4.8.2 Lower Cache Creek Flood Barrier Plan**

The LCCFB Plan requires a 3,000-foot section of the west levee of the settling basin to be lowered for installation of a 3,000-foot inlet weir. This would allow water to drain from the flood plain west of the settling basin into the settling basin following storms with spills from Cache Creek. In addition, three box culverts would be installed in the west levee to provide additional drainage for impounded floodwaters contained below the weir crest elevation of 45 feet msl (NAVD88). When ponding is greater than 45 feet msl (NAVD88) in elevation in the southwest portion of the flood plain, water would be overtopping the inlet weir and flowing through the box culverts – in addition to water entering the settling basin from Cache Creek directly. This may change the flow pattern within the basin.

The sediment load entering the basin during large flow events would not be significantly greater than for normal flows because some of the sediment would be deposited on the flood plain prior to flowing into the settling basin. Only a fraction of the remaining suspended sediment would enter the settling basin, either over the inlet weir or through the box culverts.

A 5,250-foot section of the training levee within the settling basin would also be removed as part of the LCCFB Plan. The removal of this training levee section could alter the sediment distribution within the basin, potentially causing a greater degree of sedimentation in the northern portion of the settling basin. A hydraulic study conducted by Northwest Hydraulic Consultants, Inc. (See Feasibility Report), investigated whether increase in flow velocities would alter the deposition of sediments and initiate scour in the settling basin. It was concluded that the alteration of settling basin flows would not induce significant scour (sediment transport) in the settling basin. The removal of the training levee is a component of the settling basin maintenance plan. According to the

initial design plans in 1991, the levee is planned to be removed in increments. The first 500 feet is to be removed when the settling basin is operating at less than 30 percent trapping efficiency or in 2017.

The lifespan of the settling basin would not be affected by flood barrier construction.

#### **4.8.3 Modified Wide Setback Levee Plan**

Under the existing levee system, storms that exceed the design limit of 30,000 cfs may result in short-term overbank flow and risk of levee failure. A portion of the sediment-laden creek would flow onto adjacent farmland. In contrast, the setback levees would contain the creek up to the new design flow. These higher flows would be conveyed directly into the settling basin, resulting in a potential for higher sediment loading during infrequent flood events. Due to the infrequent occurrence of high flows (once every 20 years), the increased sedimentation is not expected to significantly alter the life span (50 years) of the settling basin.

For example, a flow of approximately 53,000 cfs would temporarily increase the sediment loading to the basin, but statistically it occurs only once every 50 years. Thus, large flooding events are likely not to be frequent enough to significantly affect the lifespan of the settling basin.

A hydraulic study conducted by Northwest Hydraulic Consultants, Inc. (See Feasibility Report), investigated whether the increase in flow velocities during high flow events for the setback levee plans would significantly alter the deposition of sediments and initiate scour in the settling basin. Results indicated that a flood event of 70,000 cfs (flood that has, at a minimum, a 1 in 200 chance of occurring in any given year) would increase the velocities within most of the settling basin by only zero to 1.5 feet per second. It was concluded that this would not induce significant scour within the basin (Northwest Hydraulic Consultants, Inc. 2001).

The Modified Wide Setback Levee Plan also requires the removal of the training levee, increasing the flow capacity at the inlet of the settling basin to reduce backwater in the lower portion of Cache Creek during high flows. According to the initial design plans in 1991, the levee is planned to be removed in increments with the first 500 feet to be removed when the settling basin is operating at less than 30 percent trapping efficiency or in 2017. This is intended to encourage a broad distribution of sediments over the project's lifespan. The removal of the entire levee under the Modified Wide Setback Levee Plan could influence the distribution of deposition, but is not expected to affect the sediment trapping efficiency of the settling basin.

The lifespan of the settling basin would not be affected by modified wide setback levee construction.

#### **4.8.4 Mitigation**

##### **Lower Cache Creek Flood Barrier Plan**

Since there would be no adverse effects on the life span of the settling basin, no mitigation would be required.

##### **Modified Wide Setback Levee Plan**

Since there would be no adverse effects on the life span of the settling basin, no mitigation would be required.

#### **4.9 Potential Effects on Water Quality**

This section is intended to identify any potential adverse project-related effects on water quality. The effects would be considered significant if the flood damage reduction plan would:

- Result in an increase of mercury contamination into the Sacramento and Delta River systems.
- Substantially degrade surface-water or groundwater quality such that it would violate criteria or objectives identified in the Central Valley RWQCB basin plan, or otherwise substantially degrade water quality to the detriment of beneficial uses.
- Substantially deplete groundwater supplies or interfere with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level.
- Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems.

##### **4.9.1 No-Action Plan**

Water quality would likely remain generally the same as under current conditions, assuming no significant changes in land use upstream from the project area. The current source of impairment, mercury, and high concentrations of boron would persist unless mitigated.

##### **4.9.2 Lower Cache Creek Flood Barrier Plan**

Under the LCCFB Plan, the existing Cache Creek levee system is expected to continue, although it is not a part of the LCCFB Plan. All creek flow below the design capacity (30,000 cfs) would be contained within the levees for discharge into the settling basin. After 30,000 cfs, there is an increase in the risk of levee failure and overflow onto farmland. This overflow would result in some sediment deposition onto the farmland, whereas the remaining sediment in the channel would be conveyed directly to the settling

basin. Currently, there are no data regarding the sediment distribution in relation to water depth during flood events, and it is not possible to quantify the amount of mercury-laden sediment that could be deposited on agricultural land.

The main contaminants of note are boron and mercury. The accumulation of boron can be harmful to certain agricultural plants. Initially, this may appear to be an environmental concern. However, the flooding of the agricultural land would be relatively infrequent. (Floods that have greater flows than a flow with a 1 in 10 to 1 in 20 chance of occurring in any given year.) Also, mercury concentrations within the water column are typically not very high (0.2 to 0.5 ppm dry weight sediment), and the primary environmental concern is the bioaccumulation of mercury in wetlands, not farmland. The infrequency of flooding and relatively low concentrations in the floodwaters would not be an environmental/human health hazard for agricultural purposes. The LCCFB Plan would not produce an increase in contamination to the system.

Yolo County is underlain by a considerable amount of groundwater. To date, County water demands have not caused a significant depletion or lowering of the groundwater basin. However, groundwater pumping by Davis, Woodland, and the surrounding agricultural areas has reversed the historic west to east gradient. Groundwater recharge occurs through rainfall percolation, applied irrigation water, and water flowing from Cache and Putah Creeks. Recharge also occurs from the east Yolo Bypass area due to pumping depressions created by the cities of Woodland and Davis. This project would not utilize groundwater, nor would it contribute to any changes in groundwater recharge. Therefore, there would be no long-term effects from this project on groundwater.

The LCCFB Plan would include a drainage canal on the waterside of the levee that would direct agricultural and stormwater runoff north of the barrier eastward toward the settling basin. Water would drain through culverts into the settling basin, minimizing the amount of water that flowed through the City's drainage system. The effect of the LCCFB Plan on the existing drainage system would be beneficial.

Construction of the LCCFB Plan would require a temporary haul route across the low-flow channel of Cache Creek in order to allow removal of the training levee material. The haul route would be 30 feet wide, 400 feet long, and located at the southern or downstream end of the existing west levee and training levee. Typically the channel in this area is shallow with a soft, muddy bottom and patches of emergent vegetation. Surface water may not be present by late summer or early fall. Approximately 1500 cubic yards of clean rock/cobble would be placed in the channel around three 24 inch CMP culverts. The rock would be capped by 2 feet of earth fill (1000 cubic yards) and 6 inches of aggregate base. A layer of geotextile fabric would be placed between the culverts and the earth material. The haul route would result in the placement of 0.28 acre of fill into waters under the jurisdiction of the United States for one construction season only (May through October). Once the training levee material is removed, the haul route would also be removed and the stream channel restored to its previous condition.

For the haul route, conditions of the Corps of Engineers Nationwide Permit 33 *Temporary Construction, Access, or Dewatering*, would be met since construction and use are both temporary, they would occur during the dry season, and a minimum amount of fill would be required. No migratory fish would be affected, and the warmwater fish and other aquatic animals would have access up or downstream through the culverts. No special status species or cultural resources would be affected by the haul route. Best management practices would include development of an erosion and sediment control plan by the contractor.

Other construction practices that also have the potential to degrade water quality. The following activities that could occur on the construction site have the potential to disturb soil and affect surface water quality: levee removal; paving of the levees; material delivery, storage and material use; vehicle/equipment cleaning; vehicle/equipment fueling; and vehicle/equipment maintenance.

The overall affect to water quality is potentially significant. Implementation of the mitigation measures listed in Section 4.9.4 would reduce this potentially significant effect to a less-than-significant level.

#### **4.9.3 Modified Wide Setback Levee Plan**

In comparison to the flood barrier, the setback levee system would convey larger flows directly through the settling basin into the Yolo Bypass. Consequently, a potential exists to increase the amount of suspended mercury-laden sediments to be directly flushed into the settling basin. Due to the infrequent nature of the high flow events, the amount of additional mercury deposition is expected to be insignificant compared with the amount deposited in typical yearly flow events.

Under the Modified Wide Setback Levee Plan, the settling basin could also serve as a potential source of mercury release into the Yolo Bypass. Under large flow events, water velocities of higher magnitude could potentially initiate scour in the base of the settling basin. These scoured, mercury-laden sediments could then flow into the Yolo Bypass, degrading the water quality downstream. However, a study on the settling basin has indicated that a flood event of 70,000 cfs (at a minimum, a 1 in 100 chance of occurring in any given year) would only increase the velocities within the settling basin by zero to 1.5 fps (See Feasibility Report). This would not induce the level of scour necessary to influence the mercury concentrations downstream. The Modified Wide Setback Levee Plan would not produce an increase in contamination to the system.

This project would not utilize groundwater, nor would it contribute to any changes in groundwater recharge. Therefore, there would be no long-term effects from this project on groundwater.

The Modified Wide Setback Levee Plan would reduce the amount of agricultural land that would produce runoff that would drain into the City's drainage system. The land confined by the levees would still produce runoff, however it would drain into the settling basin and not flow through the City's system. The Modified Wide Setback Levee

Plan would therefore have a beneficial effect by reducing the amount of runoff water that would enter the existing stormwater drainage system.

Work within Cache Creek for this plan would affect waters under the jurisdiction of the United States and therefore requirements of Section 404 of the Clean Water Act must be met. The modification of the bridges, slope protection, placement of riprap, gabions, and hard points in or along the creek could result in significant effects unless mitigation measures were developed and implemented. The non-Federal sponsor would be responsible for obtaining the Section 404 permit from the Corps, and the Section 1601/1603 (streambed alteration agreement) from the State Department Fish and Game. The Corps would obtain the Section 401 water quality certification from the California RWQCB.

Other construction practices also have the potential to degrade water quality. The following activities that could occur on the construction site have the potential to disturb soil and allow sediments/pollutants to enter Cache Creek: levee removal; paving of the levees; material delivery, storage and material use; vehicle/equipment cleaning; vehicle/equipment fueling; and vehicle/equipment maintenance.

The overall affect to water quality is potentially significant. Implementation of the mitigation measures listed in Section 4.9.4 would reduce this potentially significant effect to a less-than-significant level.

#### **4.9.4 Mitigation**

##### **Lower Cache Creek Flood Barrier Plan**

The settling basin may be used to mitigate mercury contamination originating from the upper reaches of Cache Creek. Mercury is typically highly affiliated with sediments, and the sediment deposition in the settling basin could potentially remove significant amounts of mercury from the water column.

The construction of the LCCFB Plan could temporarily alter the quality of stormwater runoff. Construction would require a large amount of earthmoving, which could result in the release of pollutants from various construction equipment and materials. Furthermore, nonvegetated areas in the construction zone would be more susceptible to erosion. Appropriate measures would be implemented to mitigate for these effects by minimizing the amount of soil erosion and pollutants entering the system. As a requirement of the Clean Water Act, an NPDES permit would be obtained prior to construction activity. For any discharges that would be exempt from the NPDES permit, waste discharge requirements would be followed. Required monitoring and BMP's would be enforced to ensure that the project is within compliance throughout the duration of construction. Such BMP's would include:

- The lead agency would prepare a stormwater pollution prevention plan. A portion of this plan would specifically address erosion and sediment control.

- Construction crews would install erosion controls such as hay bales, water bars, covers, sediment fences, and sensitive-area access restrictions where necessary and appropriate before initiating extensive clearing and grading.
- The lead agency would prepare a Hazardous Substance Control and Emergency Response Plan.
- The lead agency would comply with all Section 404 requirements.

Mitigation would reduce effects on water quality to a less-than-significant level.

### **Modified Wide Setback Levee Plan**

The settling basin may be used to mitigate mercury contamination originating from the upper reaches of Cache Creek. Mercury is typically highly affiliated with sediments, and the sediment deposition in the settling basin could potentially remove significant amounts of mercury from the water column.

The construction of the Modified Wide Setback Levee Plan could temporarily alter the quality of stormwater runoff. Construction would require a large amount of earthmoving, which could result in the release of pollutants from various construction equipment and materials. Furthermore, nonvegetated areas in the construction zone would be more susceptible to erosion. Appropriate measures would be implemented to mitigate for these effects by minimizing the amount of soil erosion and pollutants entering the system. For any discharges that would be exempt from the NPDES permit, waste discharge requirements would be followed. Required monitoring and BMP's would be enforced to ensure that the project is within compliance throughout the duration of construction. Such BMP's would include:

- The lead agency would prepare a stormwater pollution prevention plan. A portion of this plan would specifically address erosion and sediment control.
- Construction crews would install erosion controls such as hay bales, water bars, covers, sediment fences, and sensitive-area access restrictions where necessary and appropriate before initiating extensive clearing and grading.
- The lead agency would prepare a Hazardous Substance Control and Emergency Response Plan.
- The lead agency would comply with all Section 404 requirements.

Requirements under Section 404 of the Clean Water Act, water quality certification under Section 401 of the Clean Water Act, and a California State Fish and Game Section 1601/1603 streambed alteration agreement would be met prior to any construction activity. Mitigation measures would include revegetation of exposed areas soon after construction is completed. Sediment barriers would be installed along the perimeter of work areas to prevent the accidental discharge of sediment. An inspection and monitoring program would be implemented to ensure the effectiveness of all erosion

control efforts. In addition, BMPs would be implemented to avoid and minimize potential disturbances to habitat and fisheries resources.

Mitigation would reduce effects on water quality to a less-than-significant level.

#### **4.10 Potential Effects on Vegetation and Wildlife**

This section is intended to identify any potential adverse effects on vegetation and wildlife resources. Project effects on these resources would be both temporary and permanent. Temporary effects would result from construction activities, while permanent effects would result from new flood damage reduction structures. These effects are summarized in Tables 4-4 and 4-5.

A Habitat Evaluation Procedures (HEP) analysis was conducted by the USFWS in the project area to determine project-related effects on vegetation that support a variety of wildlife resources in the project area. This section includes a summary of the HEP analysis. The complete results of the analysis are in the draft CAR (Appendix A).

Under criteria based on the State CEQA Guidelines, the proposed project would be considered to have a significant effect on vegetation and wildlife if it would result in any of the following:

- A substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations, or by the California DFG or USFWS.
- A substantial adverse effect on Federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, and coastal) through direct removal, filling, hydrological interruption, or other means.
- Substantial interference with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
- A conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- A conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or State habitat conservation plan.

##### **4.10.1 No-Action Plan**

The No-Action Plan would include continued O&M by DWR. O&M activities consist of vegetation clearing on the levees and within the stream channel to reduce any hindrances to flow. Flood fighting and repair would also be necessary due to the current 30,000-cfs design flow (approximately a flooding event with a 1 in 10 chance of occurring in any

given year, although historically the existing levees have held floods with up to a 1 in 20 chance of occurring) and serious erosion of the creek banks. Without flood fighting and repair work, flooding risk to the unincorporated community and the city of Woodland would increase. These repairs, over the 50-year life of the project, have been estimated to likely include 2,100 lineal feet of slope protection and 30,750 lineal feet of 150-foot setback levee. (See Feasibility Report)

These activities would degrade an already heavily affected lower Cache Creek by removing or altering its remaining habitat and altering its hydraulics. Shaded riverine aquatic (SRA) habitat would be lost during the construction of 2,100 lineal feet of slope protection. Riparian habitat would also be affected by slope protection and by any new setback levee construction. Agricultural lands, although of lesser habitat value, do provide cover, forage, and nesting for wildlife species and would also be affected by new levee construction.

Effects to vegetation and wildlife from flood fighting and repair are potentially significant. The loss of SRA habitat would also reduce the quality of fish habitat within the creek. These effects to fish habitat would be less than significant as a result of the diminished value of fish habitat due to low flow and a disconnection with the Sacramento River system.

#### **4.10.2 Lower Cache Creek Flood Barrier Plan**

With the LCCFB Plan, the current levee system would still require O&M and potential flood fighting and repair activities under the direction of the DWR. In this case, effects from these activities, although the same as stated above, would be considered cumulative effects and be accounted for in Section 5.2.

Under the LCCFB Plan, the USFWS has identified five vegetation communities involved in levee construction, thereby affecting wildlife. Table 4-4 summarizes effects due to construction of the flood barrier as noted in the draft CAR.

Borrow material would be derived from the removal of the settling basin training levee and elsewhere in the settling basin, and from the construction of the toe drain. The effects of using this material has already been accounted for in the acreages listed in Table 4-1 and in Section 4.11.2.

Construction activities could also have effects on wildlife, such as birds, ground squirrels, rabbits, snakes, and lizards. Effects may include direct mortality through being struck by equipment or the crushing of burrows; disturbance and abandonment of territories, occupied habitat, and nests/young during the breeding season, and increased competition for resources in adjoining areas. Any displaced wildlife would be expected to return to the area after construction.

Both effects from construction activities and long-term project-related effects would be potentially significant. Implementation of the mitigation measures listed in Section 4.10.4 would reduce these potentially significant effects to less than significant.

**Table 4-4. Lower Cache Creek Flood Barrier Plan Effects and Mitigation**

HABITAT TYPE	EFFECTS	BASIS FOR MITIGATION	MITIGATION PROPOSED	COMMENTS
Native Trees	54 trees	5:1 replacement of trees	270 native trees	Trees would be planted on 2.89 acres of mitigation site.
Non-native Trees	46 trees	1:1 replacement of trees	46 native trees	See above
Scrub Shrub	0.28 acre	Habitat Evaluation Procedure analysis	0.31-acre scrub shrub habitat	Reseeding the haul route provides 0.28 acre. Remaining 0.03 acre would be planted in mitigation site.
Agricultural	121.9 acres	Minimize loss of habitat value	121.9 acres native grasses and forbs <sup>1</sup>	Reseeding the Flood Barrier provides 121.9 acres.
Ruderal Upland	0.52 acres	Minimize loss of habitat value	0.52 acre native grasses and forbs <sup>1</sup>	Covering and reseeding riprap provides 0.52 acre.

<sup>1</sup>Addressed through project design; additional mitigation lands not required.

#### 4.10.3 Modified Wide Setback Levee Plan

Under the Modified Wide Setback Levee Plan, the USFWS has identified four vegetation communities involved in levee construction, thereby affecting wildlife. Table 4-5 summarizes effects due to construction of the Modified Wide Setback Levee Plan according to the draft CAR. There would be an additional loss of upland and aquatic habitat during bridge and construction of streambank protection (hard-points). Mitigation for these and other losses to riparian and SRA would be met through compensation requirements for lost giant garter snake habitat.

Borrow material would be derived from the removal of the existing Cache Creek levee system and from adjacent agricultural fields. The effects of using material from the existing levee system has already been accounted for in Section 4.11.2. There would be no effects to vegetation and wildlife from obtaining borrow material in adjacent agricultural fields because borrow activities would be confined to currently tilled lands.

Construction activities could also have effects on wildlife, such as birds, ground squirrels, rabbits, snakes, and lizards. Effects may include direct mortality through being struck by equipment or the crushing of burrows; disturbance and abandonment of

territories, occupied habitat, and nests/young during the breeding season; and increased competition for resources in adjoining areas. Any displaced wildlife would be expected to return to the area after construction.

Both effects from construction activities and long-term project-related effects would be potentially significant. Implementation of the mitigation measures listed in Section 4.10.4 would reduce these potentially significant effects to less than significant.

**Table 4-5. Lower Cache Creek Modified Wide Setback Levee Plan Effects and Mitigation**

HABITAT TYPE	EFFECTS	BASIS FOR MITIGATION	MITIGATION PROPOSED	COMMENTS
Native and Non-native Trees	1,176 trees	1.5:1 replacement of trees	1,764 native trees	Trees would be planted on 16.2 acres of mitigation site.
Agricultural/Ruderal	174 acres	Minimize loss of habitat value	174 acres native grasses and forbs <sup>1</sup>	Reseeding the Flood Barrier provides at least 174 acres.
Riparian	9.01 acres	Minimize loss of habitat value	<sup>2</sup>	Mitigation for losses of riparian habitats would be met through requirements for lost giant garter snake habitat.
SRA	0.69 acre	Minimize loss of habitat value	<sup>2</sup>	Mitigation for losses of riparian habitats would be met through requirements for lost giant garter snake habitat.

<sup>1</sup>Addressed through project design; additional mitigation lands not required.

<sup>2</sup>Mitigation requirements would be decided during formal Section 7 consultation.

#### 4.10.4 Mitigation

##### Lower Cache Creek Flood Barrier Plan

The CAR outlines mitigation for effects to vegetation and wildlife resources for the LCCFB. This mitigation is summarized in Table 4-4. The agricultural land would be mitigated with the planting of native forbs and grasses on non-riprapped areas of the new flood barrier. The trees would be replaced at a 5:1 (native) and 1:1 (nonnative) ratio for a

total of 316 native trees on approximately 2.89 acres. Mitigation for lost scrub shrub habitat during removal of the training levee would include the replanting of the haul route after construction and the creation of an additional 0.03 acre for a total of 0.31 acre of scrub shrub. Placing approximately 18 inches of soils over the riprap and then reseeding the soil with native grasses and forbs would mitigate for the loss of upland habitat along I-5.

Appendix I includes a Habitat Mitigation Alternatives Analysis document that explores the effectiveness of mitigating for effects to both special-status species and wildlife habitat at five different sites. A habitat mitigation alternatives analysis was performed, rather than an incremental cost analysis, because it is expected that nearly all of the general habitat impacts will be offset by non-discretionary incidental take conditions resulting from formal consultations for endangered species and by project design features. Only minimal additional measures would be required to fully mitigate the remaining general habitat impacts as recommended by USFWS. Therefore, a habitat mitigation alternatives analysis was performed to identify the least cost mitigation plan that would effectively meet both the anticipated incidental take conditions and the minor remaining general habitat mitigation recommendations. The overall conclusion was to use project facilities where possible and then mitigate for the remaining effects by purchasing credits at a mitigation bank.

Additional mitigation would include:

- Limiting construction crews to the right-of-way and confinement of disturbance to as small an area as possible;
- Requiring construction crews to maintain a 15-m.p.h. speed limit on all unpaved roads to reduce the chance of wildlife being mortally wounded if struck by construction equipment;
- Avoidance of effects to Cache Creek's water quality by taking appropriate measures to prevent construction materials (fuels, oils, and lubricants) from spilling or otherwise entering the creek;
- Avoidance of effects to woody vegetation at all construction sites, staging areas, borrow sites, and haul routes by fencing them with orange construction fencing;
- Minimization of effects to trees along the construction area by having all trimming performed by a qualified arborist to ensure tree survival after the project;
- Conducting of nest surveys prior to the removal of any trees or scrub shrub to ensure migratory birds would not be lost during construction, pursuant to the Migratory Bird Treaty Act; and
- Revegetation of borrow, staging, turn-arounds, and any other disturbed areas with native grasses and forbs.

- Development of a mitigation and remediation plan for the project by the lead agency.

These mitigation recommendations are also listed in Section 5.7. Both long-term and construction activity effects would be mitigated, using USFWS recommendations, to a less-than-significant level.

### **Modified Wide Setback Levee Plan**

The CAR outlines mitigation for effects to vegetation and wildlife resources for the Modified Wide Setback Levee Plan. This mitigation is summarized in Table 4-5. Because the LCCFB was identified as the preliminary Least Environmentally Damaging plan, a detailed Mitigation Alternative Analysis was not completed for the Modified Wide Setback Levee. A discussion of mitigation for the Modified Wide Setback Levee Plan is limited to Sections 4.10.4 and 5.7 of this EIS/EIR.

Agricultural land would be mitigated with the planting of native forbs and grasses on non-riprapped areas of the new setback levee. The trees would be replaced at a 1.5:1 ratio. Because riparian and SRA habitats are also potential threatened or endangered species habitat, mitigation for effects on these habitats would be addressed during Section 7 consultation for the giant garter snake.

The land that would be constrained by the setback levees could serve as a mitigation site. This land also has the potential to serve as a site for future restoration of the lower Cache Creek ecosystem, providing substantial environmental benefits. Any additional mitigation requirements would be met by purchasing credits at a mitigation bank.

Additional mitigation for effects would include:

- Limiting construction crews to the right-of-way and confinement of disturbance to as small an area as possible;
- Requiring construction crews to maintain a 15 m.p.h. speed limit on all unpaved roads to reduce the chance of wildlife being mortally wounded if struck by construction equipment;
- Avoidance of effects to Cache Creek's water quality by taking appropriate measures to prevent construction materials (fuels, oils, and lubricants) from spilling or otherwise entering the creek;
- Avoidance of effects to woody vegetation at all construction sites, staging areas, borrow sites, and haul routes by fencing them with orange construction fencing;
- Minimization of effects to trees along the construction area by having all trimming performed by a qualified arborist to ensure tree survival after the project; and

- Conducting of nest surveys prior to the removal of any trees or scrub shrub to ensure migratory birds would not be lost during construction, pursuant to the Migratory Bird Treaty Act.
- Revegetation of borrow, staging, turn-arounds, and any other disturbed areas with native grasses and forbs.
- Development of a mitigation and remediation plan for the project by the lead agency.

These mitigation recommendations are also listed in Section 5.7. Both long-term and construction activity effects would be mitigated, using USFWS recommendations, to a less-than-significant level.

#### **4.11 Potential Effects on Special-Status Species**

This section is intended to identify any potential adverse project-related effects on special-status species. Project effects on special-status species would be both temporary and permanent. Temporary effects would result from construction activities, while permanent effects would result from new flood control structures.

A Special-Status Species Technical Appendix (Appendix B) was developed by the Corps to identify affected special-status species and project-related effects to these species. A species list was requested from the USFWS and can be found in Appendix G. The USFWS has provided a more current species list as an appendix to its draft CAR (Appendix A). Correspondence with NMFS regarding special-status fish species within their jurisdiction can be found in Appendix H. Because the LCCFB was identified as the preliminary Least Environmentally Damaging plan, the Special-Status Species Technical Appendix, and subsequently the Biological Assessment, does not include special-status species affected by construction of the Modified Wide Setback Levee Plan. A discussion of these species is limited to Section 4.11.3 of this EIS/EIR. The information contained within the Special-Status Species Technical Appendix and the rest of the draft EIS/EIR will be used as supporting documents for the Biological Assessment. The Biological Assessment will be submitted to the USFWS and NMFS concurrently with the submittal of the Draft EIS/EIR to initiate formal consultation.

Under criteria based on the State CEQA Guidelines, the proposed project would be considered to have a significant effect on special-status species if it would result in any of the following:

- Interfere substantially with the movement of any resident or migratory fish species or impede use of nursery sites.
- An adverse effect, either directly or through habitat modifications, to any endangered, rare, or threatened species, as listed in Title 14 of the California Code of Regulations (sections 670.2 or 670.5) or in Title 50, Code of Federal Regulations (sections 17.11 or 17.12).

- A substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies or regulations, or by the DFG or USFWS.

#### **4.11.1 No-Action Plan**

The No-Action Plan would include continued O&M by DWR. O&M activities consist of vegetation clearing on the levees and within the stream channel to reduce any hindrances to flow. Flood fighting and repair would also be necessary due to the current 30,000-cfs design flow (approximately a flooding event with a 1 in 10 chance of occurring in any given year although historically the existing levees have held floods with up to a 1 in 20 chance of occurring) and serious erosion of the creek banks. Without flood fighting and repair work, flooding risk to the unincorporated community and the city of Woodland would increase. These repairs, over the 50-year life of the project, have been estimated to likely include 2,100 lineal feet of slope protection and 30,750 lineal feet of 150-foot setback levee. (See Feasibility Report)

These activities would degrade an already heavily affected lower Cache Creek by removing or altering its remaining habitat and altering its hydraulics. Shaded riverine aquatic (SRA) habitat would be lost during the construction of 2,100 lineal feet of slope protection. Riparian habitat would also be affected by slope protection and by any new setback levee construction. Agricultural lands, although of lesser habitat value, do provide cover, forage, and nesting for wildlife species and would also be affected by new levee construction.

Effects on special-status species could include the loss of habitat, direct mortality during construction, disturbance and abandonment of territories, occupied habitat, and nests/young during the breeding season, and increased competition for resources in adjoining areas. In particular, there could be effects to Swainson's hawk nesting and foraging habitats; northwestern pond turtles and giant garter snake aquatic and upland habitat; valley elderberry longhorn beetle habitat; and bank swallow nesting habitat. The various effects on these special-status species would be considered potentially significant.

The No-Action alternative is not likely to significantly affect special-status fish within Cache Creek because population numbers are limited to the occasional migrant and existing habitat is already severely degraded.

#### **4.11.2 Lower Cache Creek Flood Barrier Plan**

With the LCCFB Plan, the current levee system would still require O&M and potential flood fighting and repair activities under the direction of the DWR. In this case, effects from these activities, although the same as stated above, would be considered cumulative effects and be accounted for in Section 5.2.

According to information provided by USFWS and NMFS, which has been incorporated into the Special-Status Species Technical Appendix, the LCCFB plan has the potential to affect the threatened giant garter snake and Central Valley steelhead, and the endangered chinook salmon. The specifics for the giant garter snake would be

addressed during formal Section 7 consultation with the USFWS. For planning purposes to develop the overall mitigation strategy for Cache Creek and conservation measures for the snake, the findings from prior consultation between the Corps and the USFWS regarding the snake in similar settings are considered in this document.

A field survey conducted by Sycamore Environmental biologist Dr. John Little, a recognized expert on the life history of the giant garter snake, determined that the bed and bank of Cache Creek and adjacent levees and several areas of agricultural drainage ditch along the project footprint and the west levee of the settling basin are potential giant garter snake habitat. Construction of the LCCFB would remove 17,000 feet of agricultural drainage ditch regarded as potential snake aquatic habitat. Riprap placed along the LCCFB between CR 101 to the west levee and along the west levee north to CR 102 would affect 22.7 acres of potential snake upland habitat. Removal of 3,000 feet of the west levee of the settling basin and 5,250 feet of the training levee adjacent to Cache Creek would affect 15.9 acres of potential upland snake habitat.

Placement of the haul route over the low-flow channel of the settling basin would affect 0.33 acre of aquatic habitat for the giant garter snake, chinook salmon, and steelhead (also designated as essential fish habitat for the Chinook salmon). This habitat would be temporarily affected and restored to pre-project conditions after construction; therefore, no additional habitat mitigation would be required for this effect. Individual steelhead and salmon are not expected to be affected because construction would occur during low-flow periods. Informal consultation with USFWS and NMFS would verify these conclusions.

Affected State-listed and species of special concern include the northwestern pond turtle and Swainson's hawks. The northwestern pond turtle also often uses giant garter snake habitats. Nesting Swainson's hawks may be located within large trees in the project area and may be disturbed by construction equipment and personnel, causing nest abandonment.

All these actions would be addressed by implementing the conservation measures listed in Sections 4.11.4 and 5.7, and incidental take conditions set out in the USFWS and NMFS Biological Opinions, thereby reducing any effects to less than significant.

#### **4.11.3 Modified Wide Setback Levee Plan**

According to information provided by USFWS and NMFS, the Modified Wide Setback Levee Plan has the potential to affect the threatened giant garter snake and Central Valley steelhead, and the endangered chinook salmon and valley elderberry longhorn beetle. If the Modified Wide Setback Levee Plan is chosen for construction, specific conservation measures for Federal special-status species would be addressed during formal Section 7 consultation with the USFWS and NMFS. For planning purposes to develop the overall mitigation strategy for Cache Creek and conservation measures for special-status species, the findings from prior consultation between the Corps and the USFWS regarding the effects to special-status species in similar settings are considered in this document.

A preliminary field survey conducted by Mr. John Downs, a CDM biologist, determined that construction of the Modified Wide Setback Levee Plan would include effects to, and the loss of up to, 100 elderberry shrubs directly removed and 2,000 shrubs indirectly affected through bridge expansion activities and the removal of portions of the existing levee system. The shrub is the habitat of the valley elderberry longhorn beetle, an endangered species. The creek is also considered habitat for the giant garter snake (aquatic and upland) and northwestern pond turtle (aquatic and upland). Any construction within Cache Creek or along its banks for bridge expansion and slope protection would cause habitat loss and disturbance effects. This plan also includes the removal of the entire training levee, which is considered upland giant garter snake habitat. A total of 121 acres of giant garter snake habitat (and consequently northwestern pond turtle habitat) would be lost during construction of the Modified Wide Setback Levee Plan.

Cache Creek is also a historic chinook salmon and Central Valley steelhead stream. Current mercury surveys within the creek by UC Davis researchers have turned up several potential redds and a few adult salmon. Construction of the Modified Wide Setback Levee Plan would cause the loss of habitat for the steelhead and essential fish habitat for the chinook salmon. Incidental take conditions aimed at reducing impacts to this habitat would be determined during Section 7 consultation with NMFS. Due to the limited number of salmon and steelhead within Cache Creek and construction during low-flow summer conditions, construction of the Modified Wide Setback Levee Plan would have an insignificant effect on individual salmon and steelhead.

Affected State-listed and species of special concern include the northwestern pond turtle and Swainson's hawks. The northwestern pond turtle also often uses giant garter snake habitats. Nesting Swainson's hawks may be located within large trees in the project area and may be disturbed by construction equipment and personnel, causing nest abandonment.

All these actions would be addressed by implementing the conservation measures listed in Sections 4.11.4 and 5.7, and incidental take conditions set out in the USFWS and NMFS Biological Opinions, thereby reducing any effects to less than significant.

#### **4.11.4 Mitigation**

##### **Lower Cache Creek Flood Barrier Plan**

Appendix I includes a Habitat Mitigation Alternatives Analysis document that explores the effectiveness of mitigating for effects to special-status species and wildlife habitat at five different sites. These effects were determined during informal consultation with the resource agencies during development of the draft CAR. The overall conclusion was to use project facilities where possible and then mitigate for the remaining effects by purchasing credits at a mitigation bank.

In addition, the Corps is proposing the following conservation measures as part of the Biological Assessment and the project description. These measures would be further refined, and additional incidental take conditions may be added during Section 7

consultation with the USFWS and NMFS, which would be initiated concurrent to the EIS/EIR release for public review.

The conservation measures for the giant garter snake include those taken from the “Programmatic Formal Consultation for U.S. Army Corps of Engineers 404 Permitted Projects with Relatively Small Effects on the Giant Garter Snake within Butte, Colusa, Glenn, Fresno, Merced, Sacramento, San Joaquin, Solano, Stanislaus, and Yolo Counties, California,” (November 13, 1997). Measures include:

- Seasonal restrictions (construction from May 1 to October 1 only) to avoid overwintering giant garter snakes;
- Ensuring that dewatered habitat remains dry for at least 15 consecutive days after April 15 and prior to excavation or filling;
- An environmental awareness program for construction workers;
- Avoidance of giant garter snake identified during completion of pre-construction surveys 24 hours prior to commencement of construction by a qualified biologist, who would remain available thereafter to provide additional services should a snake be encountered during construction;
- Halting of all construction activities within the area should a giant garter snake be encountered during construction until the snake has had time to move away from the area;
- Confinement of construction activities to the minimal area necessary to facilitate construction;
- Flagging and avoidance of areas that would not be affected by construction and are designated Environmentally Sensitive to the giant garter snake;
- Restoration of all riprap areas to upland habitat by placing at least an 18- to 24-inch layer of soil over the rock and reseeding the area with native grasses and forbs; and
- Compensation of lost habitat according to ratios agreed upon by the Corps and the USFWS.

Conservation measures for chinook salmon and steelhead are based on the recommendations outlined in the “Guidelines for Salmonid Passage at Stream Crossings,” (September, 2001). In addition to guidance specific to culverts, the following general conservation measures would be observed (the final determination of specific conservation measures would be determined during consultation with NMFS):

- Minimization of erosion and sediment delivery through the use of erosion control devices such as hay bales, water bars, covers, and sediment fences where necessary and appropriate;
- Restriction of access to sensitive-areas to minimize streamside habitat effects;
- Installation of culverts in a de-watered site with a sediment control and flow routing plan;
- Use of pumps with fish screens to dewater the site; and
- Restoration of the affected area to pre-project conditions including reseeded using locally native riparian and other vegetation.

Conservation measures for Swainson's hawks would include:

- Replacement of non-native trees at a 1:1 ratio and native trees at a 5:1 ratio.
- Avoidance of hawks identified during pre-construction surveys conducted according to Swainson's Hawk Technical Advisory Committee guidelines (2000); and
- Prohibition of construction activities within one-half mile of a nesting hawk until young fledge.

These conservation measures for the giant garter snake would provide sufficient conservation measures for the northwestern pond turtle.

Appendix I includes a Habitat Mitigation Alternatives Analysis document that explores the effectiveness of mitigating for effects to special-status species and wildlife habitat at five different sites. The overall conclusion was to use project facilities where possible and then mitigate for the remaining construction effects by purchasing credits at a mitigation bank.

All these actions would require compliance with incidental take conditions set out in the USFWS and NMFS Biological Opinions, thereby reducing any effects to less than significant.

### **Modified Wide Setback Levee Plan**

Because this plan was not selected as the Least Environmentally Damaging plan, further investigation (mitigation alternatives analysis or incremental analysis) into mitigation requirements and conservation measures was not conducted, and a biological assessment was not drafted. However, if this plan is selected for construction, conservation measures and incidental take conditions related to effects on special-status species would be determined through formal consultation with the USFWS and NMFS and outlined in the project Biological Assessment and the USFWS and NMFS Biological Opinions. The land that would be constrained by the setback levees could serve as a

mitigation site. This land also has the potential to serve as a site for future restoration of the lower Cache Creek ecosystem, providing numerous environmental benefits. Any additional mitigation or conservation requirements would be met by purchasing credits at a mitigation bank.

The Corps proposes the following conservation measures should the Modified Wide Setback Levee Plan be selected for construction. These measures would be further refined, and additional incidental take conditions may be added if and when Section 7 consultation with the USFWS and NMFS is initiated through the submittal of a biological assessment.

The following conservation measures for the valley elderberry longhorn beetle include those taken from the “Conservation Guidelines for the Valley Elderberry Longhorn Beetle,” (July 9, 1999). Measures include:

- All areas to be avoided during construction activities would be fenced at 100-feet from the dripline of each elderberry plant;
- Signs would be erected along the edge of the avoidance area designating the area as environmentally sensitive for the valley elderberry longhorn beetle;
- An environmental awareness program for construction workers; and
- Compensation of lost habitat according to ratios agreed upon by the Corps and the USFWS.

The following conservation measures for the giant garter snake include those taken from the “Programmatic Formal Consultation for U.S. Army Corps of Engineers 404 Permitted Projects with Relatively Small Effects on the Giant Garter Snake within Butte, Colusa, Glenn, Fresno, Merced, Sacramento, San Joaquin, Solano, Stanislaus, and Yolo Counties, California,” (November 13, 1997). Measures include:

- Seasonal restrictions (construction from May 1 to October 1 only) to avoid overwintering giant garter snakes;
- Ensuring that dewatered habitat remains dry for at least 15 consecutive days after April 15 and prior to excavation or filling;
- An environmental awareness program for construction workers;
- Avoidance of giant garter snake identified during completion of pre-construction surveys 24 hours prior to commencement of construction by a qualified biologist, who would remain available thereafter to provide additional services should a snake be encountered during construction;

- Halting of all construction activities within the area should a giant garter snake be encountered during construction until the snake has had time to move away from the area;
- Confinement of construction activities to the minimal area necessary to facilitate construction;
- Flagging and avoidance of areas that would not be affected by construction and are designated Environmentally Sensitive to the giant garter snake;
- Restoration of all riprap areas to upland habitat by placing at least an 18- to 24-inch layer of soil over the rock and reseeding the area with native grasses and forbs; and
- Compensation of lost habitat according to ratios agreed upon between the Corps and the USFWS.

Conservation measures for chinook salmon and steelhead are based on the recommendations outlined in the “Guidelines for Salmonid Passage at Stream Crossings,” (September, 2001). In addition to guidance specific to culverts, the following general conservation measures would be observed:

- Minimization of erosion and sediment delivery through the use of erosion control devices such as hay bales, water bars, covers, and sediment fences where necessary and appropriate;
- Restriction of access to sensitive-areas to minimize streamside habitat effects;
- Installation of culverts in a de-watered site with a sediment control and flow routing plan;
- Use of pumps with fish screens to dewater the site; and
- Restoration of the affected area to pre-project conditions including reseeding using locally native riparian and other vegetation.

Conservation measures for Swainson’s hawks would include:

- Replacement of non-native trees at a 1:1 ratio and native trees at a 5:1 ratio.
- Avoidance of hawks identified during pre-construction surveys conducted according to Swainson’s Hawk Technical Advisory Committee guidelines (2000); and
- Prohibition of construction activities within one-half mile of a nesting hawk until young fledge.

These conservation measures for the giant garter snake would provide sufficient conservation measures for the northwestern pond turtle.

All these actions would require compliance with incidental take conditions set out in the USFWS and NMFS Biological Opinions, thereby reducing any effects to less than significant.

#### **4.12 Potential Effects on Cultural Resources**

This section describes direct effects of the proposed project on cultural resources and suggests mitigation measures for those effects. An effect would be considered significant if the project would:

- Cause a substantial adverse change in the significance of a historical resource.
- Cause a substantial adverse change in the significance of a unique archaeological resource.

Under the National Historic Preservation Act of 1966, as amended (NHPA), proposed Federal projects, or other actions, must take into account the effects of those actions upon cultural resources identified as historic properties; that is, those eligible for, or listed on, the National Register of Historic Places. Section 106 of the NHPA and its implementing regulations (36 CFR 800) require that the Advisory Council on Historic Preservation, the State Historic Preservation Officer, and the interested public, including Native Americans, be provided an opportunity to comment on the effects that the proposed action may have on historic properties.

Because virtually none of the project area has been systematically examined for historic or prehistoric resources due to real estate and other constraints, and because many of the structures have not been evaluated for the NRHP, a draft Programmatic Agreement (PA) is included here (Appendix C) that stipulates the steps to be taken to be in compliance with the Section 106 of the NHPA and 36 CFR 800. Under Section 106 and the 36 CFR 800 regulations, consultation with the SHPO and others would be initiated during the next planning phase of the project. The PA would be reviewed by all parties concerned and finalized after comments have been addressed. The Section 106 consultation process would be concluded after the PA is signed. Implementation of the steps outlined in the PA would take place, as appropriate, beginning with a more complete inventory and evaluation of the resources. Mitigation would be accomplished during project construction.

If avoidance of effects to cultural resources is not possible, the Protection of Historic Properties (36 CFR 800.9) defines how the effects are determined based on the “criteria of effect.” Adverse effects include but are not limited to:

- Physical destruction, damage, or alteration of all or part of the property.

- Isolation of the property from or alteration of the character of the property's setting when that character contributes to the property's qualifications for the National Register.
- Introduction of visual, audible, or atmospheric elements that are out of character with the property or alter its setting.
- Neglect of a property, resulting in its deterioration or destruction.
- Transfer, lease, or sale of the property.

#### **4.12.1 No-Action Plan**

In general, the FIRM/FEMA map for the existing conditions shows that all cultural resources in the project area from the approximate vicinity of Court Street in Woodland north and west to Cache Creek are in the FEMA 100-year flood plain. In addition, any archeological sites and structures that might be determined historic west of I-5 and north of Cache Creek to CR 17 are in the flood plain. Yolo and other areas north of Cache Creek were not mapped. The Corps 100-year flood plain mapping excludes some areas, but is similar in coverage to the FIRM/FEMA map.

Under this plan, flooding could cause erosion to archeological sites and damage to historic structures. Owners of private property could alter historic structures to cause the buildings to be ineligible for any historic listing. Archeological sites could continue to be degraded from various activities including farming and construction.

#### **4.12.2 Lower Cache Creek Flood Barrier Plan**

Under this plan, cultural resources south of the flood barrier would be protected from flood damage. Owners of private property could alter historic structures so that the buildings would not be eligible for any historic listing. There are no known prehistoric archeological sites; unrecorded historic archeological sites could be disturbed by construction in Woodland.

Cultural resources between the flood barrier and the creek would still be subject to flooding and other damages as they are currently under the FIRM/FEMA delineation, with the exception of those located in the southeastern part where the flood barrier and the present west levee meet. Estimates provided in the Feasibility Report show that known cultural properties such as the Robinson olive trees, Nelson's Grove, and the Camillus Nelson residence could be flooded in a high flood, but the depth and duration of water ponding would vary depending on the location of the resource. For example, it is projected that the duration of ponding near the Camillus Nelson residence might be a few days longer than under existing conditions.

The effect on cultural resources, due to construction of the flood barrier, would be less than significant with the implementation of the mitigation measures listed in Section 4.12.4.

#### **4.12.3 Modified Wide Setback Levee Plan**

The creation of causeways under this plan could affect the California Northern Railroad and CR 99 bridges. If the bridges meet the NRHP criteria, this would be considered an adverse effect. The Wells Fargo station and prehistoric archeological sites CA-YOL-71 and CA-YOL-100 would be on the waterside of the levee and would be subject to erosion from floodflows. Other unrecorded archeological and historic structures could be inside the levee, and those meeting the NRHP criteria would be adversely affected by this plan.

Additional archeological and historic sites could be affected by levee construction, degradation of the present levee, and accelerated erosion. Cultural resources surveys and evaluations would need to be conducted under this variation to determine what, if any, other sites would be affected.

The effect on cultural resources, due to construction of the modified wide setback levee, would be less than significant.

#### **4.12.4 Mitigation**

##### **Lower Cache Creek Flood Barrier Plan**

Mitigation to Nelson's Grove and Robinson olive trees would not be required due to construction of the flood barrier. The frequency, depth, and duration of water ponding would likely not cause an adverse effect to these properties if they are determined eligible for the NRHP. Additional studies would need to be undertaken for the Camillus Nelson residence to more accurately determine if the property would be affected as a result of construction of the flood barrier. If it is determined that this property would be adversely affected, mitigation measures would be developed in consultation with the SHPO and other interested parties. Raising the home and outbuildings could cause the delisting of the property from the NRHP. Constructing a ring levee may be feasible, but an analysis to determine feasibility, as well as the placement of such a levee, would need to be completed. Any flood proofing measures would need to be esthetically designed to avoid altering the historic setting of the affected property. Mitigation costs would be cost shared between the Corps and the non-Federal sponsor.

Mitigation for cultural sites elsewhere between the flood barrier and Cache Creek would not be required since these sites would still be in the FIRM/FEMA 1 in 100 chance flood plain and the project would not have any adverse effects on them.

In addition to the above mitigation measures, the following BMP's would also be followed:

- If previously unidentified cultural materials and/or features are discovered during construction, all work in the immediate area would cease and a cultural resources specialist would be immediately contacted for identification and evaluation.

- If the materials and/or features are determined to be significant and cannot be avoided, a site-specific mitigation plan would be prepared in consultation with interested parties and the SHPO.
- If human remains were encountered, a cultural resources specialist and county coroner would be contacted in compliance with State law.

Mitigation would ensure that the overall effect on cultural resources remains less-than-significant.

### **Modified Wide Setback Levee Plan**

Mitigation measures for historic properties would be determined in accordance with stipulations in the Programmatic Agreement and could consist of avoidance; data recovery; and for structures, recordation under criteria of the Historic American Buildings Survey/Historic American Engineering Recordation (HABS/HAER). Flood proofing measures of the Wells Fargo station, if it meets the NRHP criteria, would need to address issues of environmental setting, effectiveness, and esthetics. Mitigation costs for archeological properties meeting the NRHP criteria would be borne by the Federal Government up to 1 percent of total Federal project costs. Costs above that amount, if approved, would be cost shared at the same ratio as stated in the project cost agreement. Mitigation for historic structures meeting the NRHP criteria would be cost shared.

In addition to the above mitigation measures, the following BMP's would also be followed:

- If previously unidentified cultural materials and/or features are discovered during construction, all work in the immediate area would cease and a cultural resources specialist would be immediately contacted for identification and evaluation.
- If the materials and/or features are determined to be significant and cannot be avoided, a site-specific mitigation plan would be prepared in consultation with interested parties and the SHPO.
- If human remains were encountered, a cultural resources specialist and county coroner would be contacted in compliance with State law.

Mitigation would ensure that the overall effect on cultural resources remains less-than-significant.

### **4.13 Potential Effects on Esthetic and Visual Resources**

Under criteria based on the State CEQA Guidelines, the proposed project would be considered to have a significant effect on esthetic and visual resources if it would result in any of the following:

- Have a substantial adverse effect on a scenic vista.

- Substantially damage scenic resources including, but not limited to, trees, rock outcroppings, and historic buildings near a State Scenic Highway.
- Substantially degrade the existing visual character or quality of the site and its surroundings.
- Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area.

In assessing the esthetic effects of a project, the visual sensitivity of the site must be considered. Areas of high visual sensitivity are highly visible to the general public. Scenic highways, tourist routes, and recreational areas generate sensory reactions and evaluations by the observer. The evaluations of a particular scene would vary depending on the perceptions and values of the observer. The determination of significance of potential esthetic effects is based on the change in visual character as determined by the obstruction of a public view, creation of an esthetically offensive public view, or adverse changes to objects having esthetic significance.

#### **4.13.1 No-Action Plan**

The No-Action Plan would include continued O&M by the DWR. O&M activities consist of vegetation clearing on the levees and within the stream channel to reduce any hindrances to flow. Because these activities already are part of the existing levee system O&M, effects to esthetic and visual resources would be less than significant.

#### **4.13.2 Lower Cache Creek Flood Barrier Plan**

Although not a part of the LCCFB Plan, the current levee system would still require O&M, flood fighting, and repair activities under the direction of the DWR. Effects from these activities are the same as stated in Section 4.14.1.

Construction activities such as the operation of heavy equipment and material storage would change the visual character of the area. However, these effects would be temporary and not considered significant as compared to the visual effects of the flood barrier itself. The borrow sites are located within agricultural fields. Excavation of these sites would not affect the esthetics of the area assuming these sites are restored as agricultural land.

The flood barrier would introduce a linear feature into a landscape with existing linear features (the I-5 right-of-way). The barrier would vary in height from approximately 2.5 feet above the ground in its western most origin to 18 feet where the levee joins the settling basin. At SH 16, where the greatest concentration of houses along the footprint of the LCCFB exists, the wall would be 5 feet high and would form a view block as compared to the existing open rural landscape. Portions of existing tree lines in this area would also be removed, therefore altering the visual character of the area. East of SH 16, the height would increase; however, the residential areas within close proximity to the flood barrier end after CR 98B. Although east of I-5 the LCCFB would be larger than to the west, it would be a view block to an industrialized area of Woodland

rather than a residential area. The LCCFB would have a significant effect because it changes the esthetic quality of the area, specifically for local residents west of I-5. The mitigation measures listed in Section 4.14.4 would lessen the effects, however not to a less-than-significant level.

There are no State-designated visual resources within the project area. Within the study area, SH 16 is eligible for a scenic highway designation (from Capay to its intersection with SH 20); however, this project would have no bearing on its continued candidacy. The construction of this project does not include additional sources of light; therefore, there would be no effect to nighttime views.

The overall effect to esthetics and visual resources would be significant.

#### **4.13.3 Modified Wide Setback Levee Plan**

Construction activities such as the operation of heavy equipment and material storage would change the visual character of the area. However, these effects would be temporary and are not considered significant. The borrow sites are located within agricultural fields. Excavation of these sites would not affect the esthetics of the area, assuming these sites are restored as agricultural land.

Cache Creek presents a curvilinear feature within the checkerboard pattern of rural Yolo County. The existing levee system closely follows the curving path of the creek. The setback levees would introduce new curvilinear features paralleling the creek at a 100-foot to 1,000-foot distance. The height of new setback levees would be 2 feet above the ground at its western most origin. The height would increase to 12 feet where it joins I-5. Downstream of I-5, the levee would maintain a height of at least 10 feet to where it joins the settling basin. The levees would form a new view block to residences that previously had a more open line-of-sight. The view block is considered significant because it changes the esthetic quality of the area for local residents. Implementation of the mitigation measures listed in Section 4.14.4 would reduce the effects, however not to a less-than-significant level.

The land constrained between the levees has the potential to be restored to its historical natural state of riparian forest habitat. This would increase the scenic quality of Cache Creek, presenting a potential beneficial effect on esthetic and visual resources.

There are no State-designated visual resources within the project area. Within the study area, SH 16 is eligible for a scenic highway designation (from Capay to its intersection with SH 20); however, this project would have no bearing on its continued candidacy. The construction of this project does not include additional sources of light; therefore, there would be no effect to nighttime views.

The overall effect to esthetics and visual resources would be significant.

#### **4.13.4 Mitigation**

##### **Lower Cache Creek Flood Barrier Plan**

The levees would be reseeded with native grasses and forbs. However, mitigation would not reduce the effect to a less-than-significant level.

##### **Modified Wide Setback Levee Plan**

The levees would be reseeded with native grasses and forbs. However, mitigation would not reduce the effect to a less-than-significant level.