

## Appendix A USFWS Species List

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**United States Department of the Interior**  
**FISH AND WILDLIFE SERVICE**

Sacramento Fish and Wildlife Office  
2800 Cottage Way, Room W-2605  
Sacramento, California 95825



September 24, 2012

Document Number: 120924102519

Jennifer Haire  
ICF International  
630 K Street, Suite 400  
Sacramento, CA 95814

Subject: Species List for Cartmill Avenue/State Route 99 Interchange Project

Dear: Ms. Haire

We are sending this official species list in response to your September 24, 2012 request for information about endangered and threatened species. The list covers the California counties and/or U.S. Geological Survey 7½ minute quad or quads you requested.

Our database was developed primarily to assist Federal agencies that are consulting with us. Therefore, our lists include all of the sensitive species that have been found in a certain area *and also ones that may be affected by projects in the area*. For example, a fish may be on the list for a quad if it lives somewhere downstream from that quad. Birds are included even if they only migrate through an area. In other words, we include all of the species we want people to consider when they do something that affects the environment.

Please read Important Information About Your Species List (below). It explains how we made the list and describes your responsibilities under the Endangered Species Act.

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be December 23, 2012.

Please contact us if your project may affect endangered or threatened species or if you have any questions about the attached list or your responsibilities under the Endangered Species Act. A list of Endangered Species Program contacts can be found [here](#).

Endangered Species Division



**U.S. Fish & Wildlife Service**  
**Sacramento Fish & Wildlife Office**  
**Federal Endangered and Threatened Species that Occur in**  
**or may be Affected by Projects in the Counties and/or**  
**U.S.G.S. 7 1/2 Minute Quads you requested**

Document Number: 120924102519

Database Last Updated: September 18, 2011

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Quad Lists

Listed Species

Invertebrates

*Branchinecta lynchi*

    vernal pool fairy shrimp (T)

*Desmocerus californicus dimorphus*

    valley elderberry longhorn beetle (T)

*Lepidurus packardi*

    vernal pool tadpole shrimp (E)

Fish

*Hypomesus transpacificus*

    delta smelt (T)

Amphibians

*Ambystoma californiense*

    California tiger salamander, central population (T)

*Rana draytonii*

    California red-legged frog (T)

Reptiles

*Gambelia (=Crotaphytus) sila*

    blunt-nosed leopard lizard (E)

*Thamnophis gigas*

    giant garter snake (T)

Mammals

*Dipodomys nitratoides exilis*

    Fresno kangaroo rat (E)

*Dipodomys nitratoides nitratoides*

    Tipton kangaroo rat (E)

*Vulpes macrotis mutica*

    San Joaquin kit fox (E)

Plants

*Caulanthus californicus*

    California jewelflower (E)

*Pseudobahia peirsonii*

    San Joaquin adobe sunburst (T)

Quads Containing Listed, Proposed or Candidate Species:

TULARE (311A)  
PAIGE (311B)  
GOSHEN (334C)  
VISALIA (334D)

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## County Lists

No county species lists requested.

### Key:

- (E) *Endangered* - Listed as being in danger of extinction.
- (T) *Threatened* - Listed as likely to become endangered within the foreseeable future.
- (P) *Proposed* - Officially proposed in the Federal Register for listing as endangered or threatened.
- (NMFS) Species under the Jurisdiction of the National Oceanic & Atmospheric Administration Fisheries Service. Consult with them directly about these species.
- Critical Habitat* - Area essential to the conservation of a species.
- (PX) *Proposed Critical Habitat* - The species is already listed. Critical habitat is being proposed for it.
- (C) *Candidate* - Candidate to become a proposed species.
- (V) Vacated by a court order. Not currently in effect. Being reviewed by the Service.
- (X) *Critical Habitat* designated for this species

## Important Information About Your Species List

### How We Make Species Lists

We store information about endangered and threatened species lists by U.S. Geological Survey 7½ minute quads. The United States is divided into these quads, which are about the size of San Francisco.

The animals on your species list are ones that occur within, **or may be affected by** projects within, the quads covered by the list.

- Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them.
- Amphibians will be on the list for a quad or county if pesticides applied in that area may be carried to their habitat by air currents.
- Birds are shown regardless of whether they are resident or migratory. Relevant birds on the county list should be considered regardless of whether they appear on a quad list.

### Plants

Any plants on your list are ones that have actually been observed in the area covered by the list. Plants may exist in an area without ever having been detected there. You can find out what's in the surrounding quads through the California Native Plant Society's online [Inventory of Rare and Endangered Plants](#).

### Surveying

Some of the species on your list may not be affected by your project. A trained biologist and/or botanist, familiar with the habitat requirements of the species on your list, should determine whether they or habitats suitable for them may be affected by your project. We recommend that your surveys include any proposed and candidate species on your list. See our [Protocol](#) and [Recovery Permits](#) pages.

For plant surveys, we recommend using the [Guidelines for Conducting and Reporting Botanical Inventories](#). The results of your surveys should be published in any environmental documents prepared for your project.

## Your Responsibilities Under the Endangered Species Act

All animals identified as listed above are fully protected under the Endangered Species Act of 1973, as amended. Section 9 of the Act and its implementing regulations prohibit the take of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any such animal.

Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR §17.3).

Take incidental to an otherwise lawful activity may be authorized by one of two procedures:

- If a Federal agency is involved with the permitting, funding, or carrying out of a project that may result in take, then that agency must engage in a formal [consultation](#) with the Service.

During formal consultation, the Federal agency, the applicant and the Service work together to avoid or minimize the impact on listed species and their habitat. Such consultation would result in a biological opinion by the Service addressing the anticipated effect of the project on listed and proposed species. The opinion may authorize a limited level of incidental take.

- If no Federal agency is involved with the project, and federally listed species may be taken as part of the project, then you, the applicant, should apply for an incidental take permit. The Service may issue such a permit if you submit a satisfactory conservation plan for the species that would be affected by your project.

Should your survey determine that federally listed or proposed species occur in the area and are likely to be affected by the project, we recommend that you work with this office and the California Department of Fish and Game to develop a plan that minimizes the project's direct and indirect impacts to listed species and compensates for project-related loss of habitat. You should include the plan in any environmental documents you file.

## Critical Habitat

When a species is listed as endangered or threatened, areas of habitat considered essential to its conservation may be designated as critical habitat. These areas may require special management considerations or protection. They provide needed space for growth and normal behavior; food, water, air, light, other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, rearing of offspring, germination or seed dispersal.

Although critical habitat may be designated on private or State lands, activities on these lands are not restricted unless there is Federal involvement in the activities or direct harm to listed wildlife.

If any species has proposed or designated critical habitat within a quad, there will be a separate line for this on the species list. Boundary descriptions of the critical habitat may be found in the Federal Register. The information is also reprinted in the Code of Federal Regulations (50 CFR 17.95). See our [Map Room](#) page.

## Candidate Species

We recommend that you address impacts to candidate species. We put plants and animals on our candidate list when we have enough scientific information to eventually propose them for listing as threatened or endangered. By considering these species early in your planning

process you may be able to avoid the problems that could develop if one of these candidates was listed before the end of your project.

### Species of Concern

The Sacramento Fish & Wildlife Office no longer maintains a list of species of concern. However, various other agencies and organizations maintain lists of at-risk species. These lists provide essential information for land management planning and conservation efforts.

[More info](#)

### Wetlands

If your project will impact wetlands, riparian habitat, or other jurisdictional waters as defined by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, you will need to obtain a permit from the U.S. Army Corps of Engineers. Impacts to wetland habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6520.

### Updates

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be December 23, 2012.



Appendix B Vernal Pool Branchiopods Wet  
Season Survey Report

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July 18, 2008

Rocky Montgomery  
Wildlife Biologist, San Joaquin Valley Branch  
U.S. Fish and Wildlife Service  
2800 Cottage Way, Room W-2605  
Sacramento, CA 95825

**Subject: 90-Day Report of Findings: Wet-Season Surveys for Listed Vernal Pool Branchiopods at the Cartmill Avenue/State Route 99 Interchange Improvement Project Area in Tulare County, California**

Dear Mr. Montgomery:

This letter documents the findings of listed branchiopod surveys conducted at the proposed Cartmill Avenue/State Route 99 (SR 99) Interchange Improvement Project Area in Tulare County, California (U.S. Fish and Wildlife Service [USFWS] correspondence tracking number 81420-2008-TA-0277).

**Executive Summary**

Two seasonal pools were surveyed during the 2007–08 wet season. No listed branchiopods were observed in either pool.

All pertinent materials required to comply with the terms and conditions of the ICF Jones & Stokes' 10(a)(1)(A) recovery permit (TE-795934-9) are submitted here to USFWS. An additional copy of this report will be submitted to the City of Tulare.

**Description of Proposed Project**

The proposed project area is located north of the city of Tulare (Figure 1) on the Tulare U.S. Geological Survey 7.5-minute topographic quadrangle map (Township 19S, Range 24E, Sections 26 and 35). Wet-season surveys were conducted to assist the City of Tulare in determining if there were any threatened or endangered branchiopod species that they needed to be concerned with and to gather information for preparation of a Natural Environment Study for the California Department of Transportation (Caltrans).

The proposed project consists of modifications to the existing SR 99/M Street–Cartmill Avenue interchange located at PM 31.9 in the city of Tulare, County of Tulare. The limits for all proposed improvements on SR 99 extend from approximately PM 31.3 south of Cartmill Avenue to approximately PM 32.6 north of Cartmill Avenue. The limits for the design-year improvements on the City of Tulare's street system include Cartmill Avenue from approximately 0.3 mile west of M Street to approximately 0.3 mile east of future Akers Street, and M Street from the SR 99 southbound off-ramp to approximately 0.1

mile south of Cartmill Avenue. There are two design alternatives that are currently being evaluated for this project.

Two listed branchiopod species—vernal pool fairy shrimp (*Branchinecta lynchi*), federally listed as threatened, and vernal pool tadpole shrimp (*Lepidurus packardii*), federally listed as endangered—have the potential to occur at the proposed Cartmill Avenue/SR 99 Interchange Improvement Project Area.

## Methods

On May 4, 2007, ICF Jones & Stokes wildlife biologist Jennifer Alvarez *née* Haire and botanist/wetland ecologist Joy Nishida conducted a reconnaissance-level survey of the Cartmill Avenue/SR 99 Interchange Improvement Project Area to assess the habitats present at the site and to determine the potential for special-status species to occur. During this survey, two seasonal pools were identified as providing potential habitat for vernal pool branchiopods (Figure 2).

On November 2, 2007, ICF Jones & Stokes submitted a request to USFWS to conduct wet-season sampling of these two seasonal pools in the project area. Authorization to conduct wet-season sampling was granted by Rocky Montgomery of the Sacramento USFWS office on November 7, 2007, via email (Attachment A).

During the 2007–08 wet season, Ms. Haire conducted protocol-level surveys at two potential branchiopod habitats at the Cartmill Avenue/SR 99 Interchange Improvement Project Area. ICF Jones & Stokes biologists Erin Hitchcock and Julia Camp assisted with the surveys under the supervision of Ms. Haire. ICF Jones & Stokes biologist Patrick Stone visited the project area on one occasion to survey pools; however, the pools were dry. Surveys were conducted in accordance with USFWS guidelines (U.S. Fish and Wildlife Service. 1996. *Interim Survey Guidelines to Permittees for Recovery Permits under Section 10(a)(1)(A) of the Endangered Species Act for the Listed Vernal Pool Branchiopods*. April 19.)

Ms. Haire began monitoring the pools on November 15, 2007, and initiated surveys at that time. The two pools were surveyed every 2 weeks over the course of the wet season. Protocol-level surveys were conducted by sweeping pool margins and sampling through the water column using a fine mesh dip net and/or brine shrimp net. A qualitative description of invertebrate populations observed in each seasonal pool and data characterizing the air temperature and habitat condition at the time of sampling were recorded on USFWS Vernal Pool Data Sheets. In addition, an estimate of the surface area and maximum depth at time of sampling were recorded.

## Results

No listed vernal pool branchiopods were observed in the two seasonal pools that were sampled (Table 1). One of the pools (pool 1) is a roadside pool between the SR 99 overpass and the southbound on-ramp. This pool is relatively shallow (23 centimeters maximum observed) and mainly unvegetated. The other pool (pool 2) is a small detention basin that collects stormwater runoff. This pool has the capacity to be 2 feet deep, but the maximum depth recorded over the wet season was 32 centimeters. Many individual fairy shrimp of the species *Branchinecta lindahli* were observed in pool 1 over the course of the wet

Mr. Rocky Montgomery  
July 18, 2008  
Page 3

season. One very small immature fairy shrimp was observed in pool 2 during the February 26, 2008, survey, but the pool had dried on the subsequent survey so that the identity (if captured) could not be determined. Representative photos of surveyed habitats in the project area are included as Attachment B. Copies of the completed data sheets are included in this document as Attachment C.

**Table 1.** Results of Surveys for Listed Branchiopods within the Cartmill Avenue/State Route 99 Interchange Improvement Project Area

Habitat	Survey Dates for 2007–08 Wet Season									
	11/15	11/29	12/19	1/2	1/15	1/31	2/12	2/26	3/12	3/26
Pool 1	BL	Dry	IM	IM and BL	IM and BL	BL	BL	IM and BL	BL	Dry
Pool 2	Dry	Dry	None	Dry	None	None	Dry	IM	Dry	Dry

IM = Immature fairy shrimp observed  
BL = *Branchinecta lindahli* was observed  
None = No vernal pool branchiopods observed at the time of survey  
Dry = Pool was dry at the time of survey

If you have any questions regarding this survey or this project, please contact me at 916/737-3000.

Sincerely,

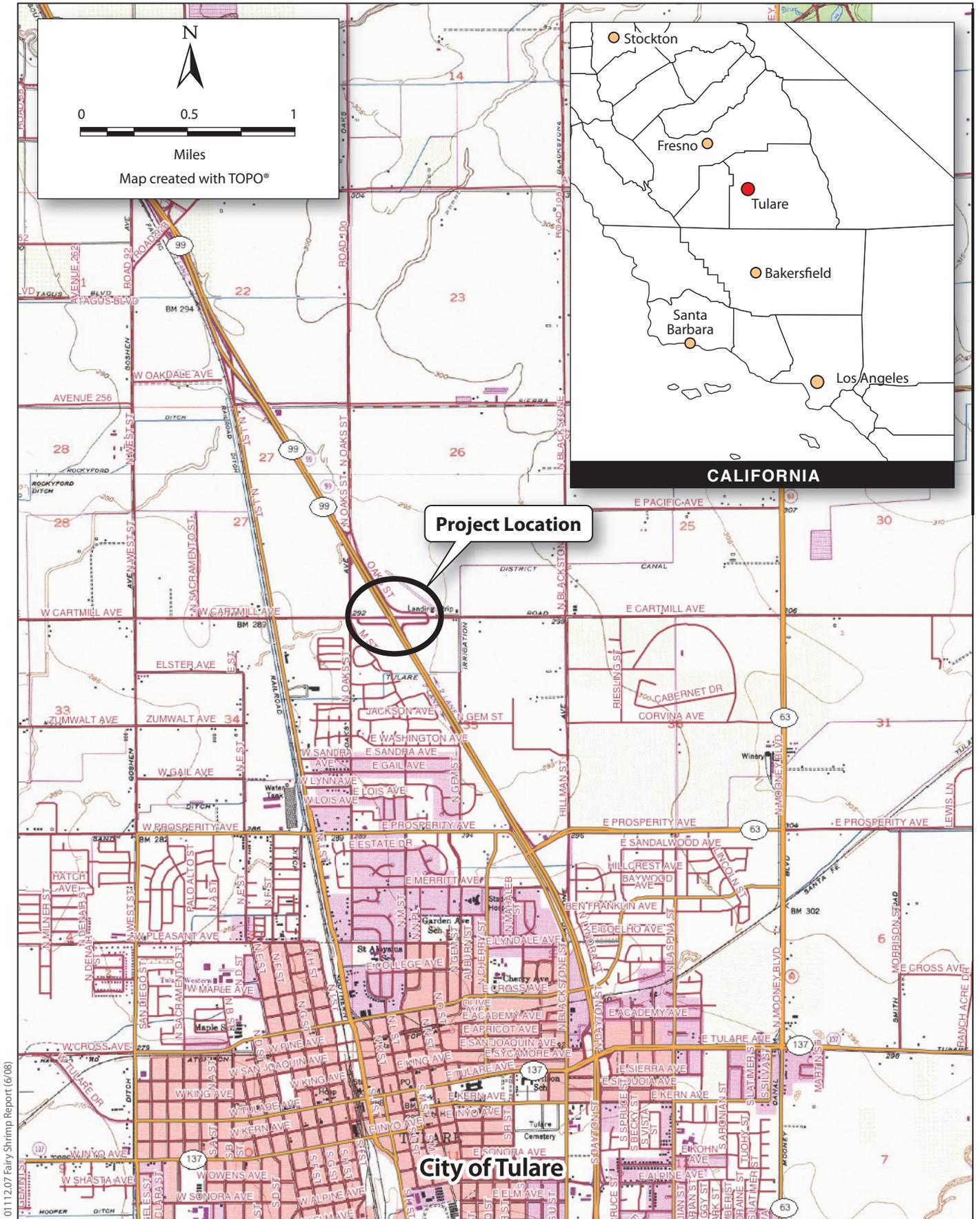


Jennifer Haire  
Senior Wildlife Biologist

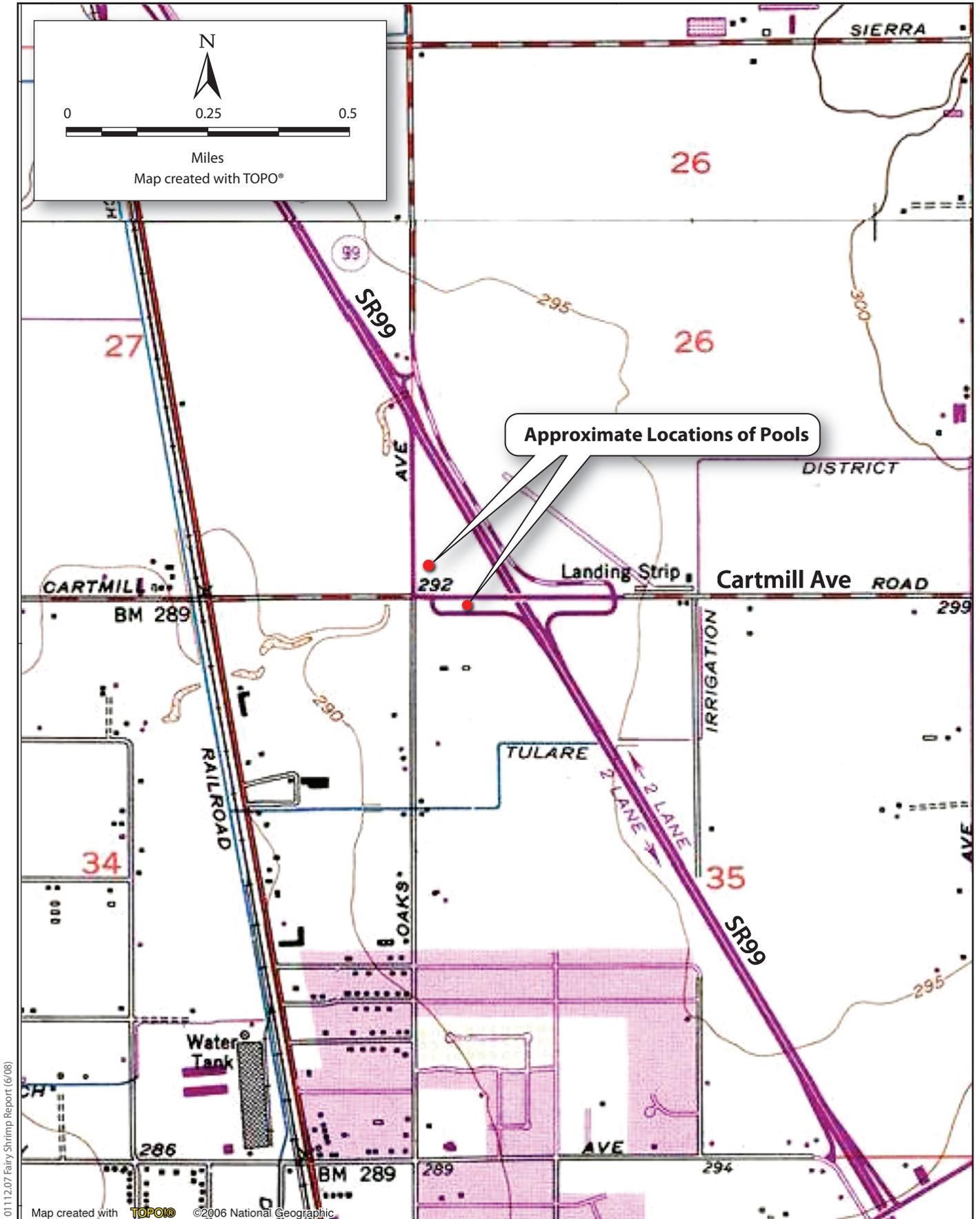
Attachments

cc: David Kelly, U.S. Fish and Wildlife Service  
Lawrence Host, U.S. Fish and Wildlife Service  
Michael Miller, City of Tulare  
Claire Bromund, ICF Jones & Stokes





**Figure 1**  
**Project Location**



01112.07 Fairy Shrimp Report (6/08)

**Figure 2**  
**Locations of Pools Sampled for Vernal Pool Branchiopods**



November 2, 2007

U.S. Fish and Wildlife Service  
San Joaquin Valley Branch  
2800 Cottage Way W-2605  
Sacramento, CA 95825

Subject: 10-Day Notification to Conduct Wet-Season Surveys for Listed Vernal Pool Branchiopods for the Cartmill Avenue/State Route 99 Interchange Improvements Project, Tulare California.

To Whom it May Concern:

This letter is a request to commence wet-season surveys for the federally listed vernal pool fairy shrimp (*Branchinecta lynchi*) and vernal pool tadpole shrimp (*Lepidurus packardii*), at two seasonal pools located within the Cartmill Avenue/State Route 99 Interchange Improvements project area. If additional pools are located during the course of the season within the project area, these will also be surveyed. The approximate locations of the two pools are shown on the attached portion of the Tulare U.S. Geological Survey 7.5-minute quadrangle map. A map of the project area is also enclosed. This 10-day notification letter serves to comply with the Terms and Conditions of recovery permit # TE-795934-9.

The proposed project consists of modifications to the existing State Route 99 (SR99)/M Street - Cartmill Avenue interchange located in the City of Tulare, County of Tulare. The need for the project is to provide additional capacity at the Cartmill Avenue interchange with SR 99 to relieve existing traffic congestion at the Cartmill Avenue/SR 99 Northbound Off-Ramp intersection and at the Cartmill Avenue/M Street intersection; to accommodate planned growth including significant commercial development proposed adjacent to the interchange, and to provide improved east-west traffic circulation and improved access with SR 99 within the northern area of the City of Tulare. The proposed project will also correct an existing sub-standard vertical clearance between the Cartmill Avenue over crossing and SR 99; insufficient horizontal clearance to accommodate future widening of SR 99 to an eight-lane freeway plus auxiliary lanes consistent with the revised Transportation Concept Report for SR 99; and non-standard ramp geometries.

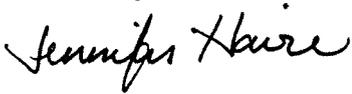
Wet-season sampling will be conducted by Jennifer Alvarez *née* Haire, Aundrea Asbell, or Patrick Stone under Jones & Stokes' permit # TE-795934-9, and will be performed in

San Joaquin Valley Branch  
November 2, 2007  
Page 2

accordance with the methods described in U.S. Fish and Wildlife Service' *Interim Survey Guidelines to Permittees for Recovery Permits under Section 10(a) (1) (A) of the Endangered Species Act for the Listed Vernal Pool Branchiopods* (April 19, 1996).

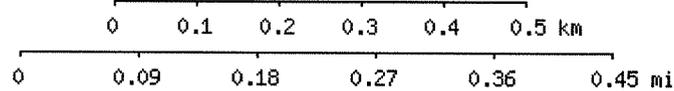
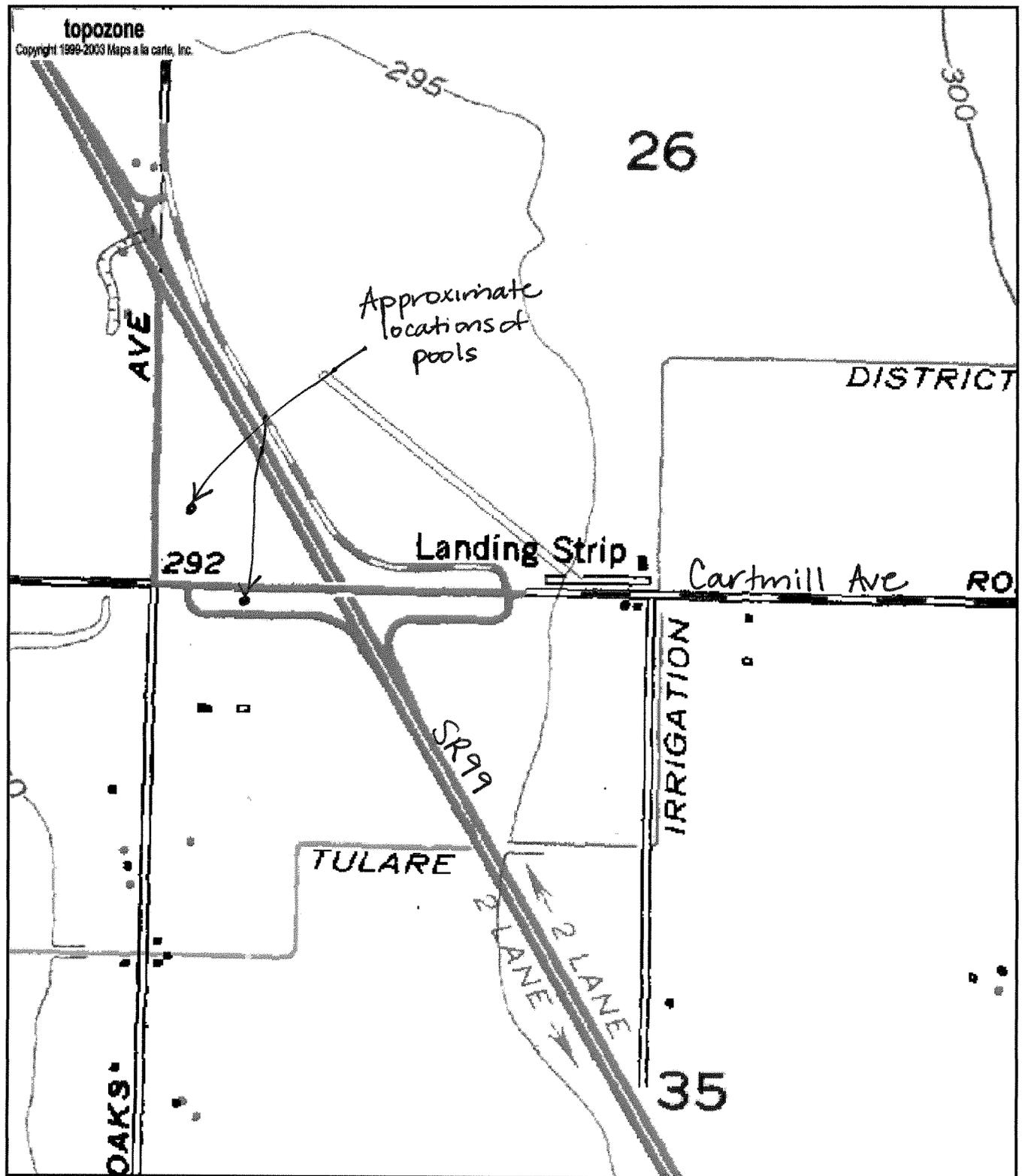
If you have any questions regarding these surveys, please contact me at (916) 737-3000.

Sincerely,

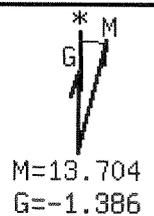
A handwritten signature in cursive script that reads "Jennifer Haire".

Jennifer Haire  
Wildlife Biologist

Enclosures



UTM 11 289587E 4012947N (NAD27)  
**USGS TULARE (CA) Quadrangle**  
 Projection is UTM Zone 11 NAD83 Datum





## Jennifer Haire

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**From:** Rocky\_Montgomery@fws.gov  
**Sent:** Wednesday, November 07, 2007 10:10 AM  
**To:** Jennifer Haire  
**Cc:** David\_Kelly@fws.gov  
**Subject:** Wet-Season Survey for VP Branchiopods TE-795934-9

Jennifer Haire:

By this e-mail message, and in response to your recent request (2 November 2007 letter), Jennifer Alvarez *nee* Haire, Aundrea Asbell, and Patrick Stone are authorized under Jones & Stokes permit # TE-795934-9 to conduct:

(i) wet season surveys of vernal pool branchiopods (including *Branchinecta lynchi* and *Lepidurus packardii*)

per the conditions of their Recover Permits, under the Endangered Species Act, as well as

(i) Interim Survey Guidelines to Permittees for Recovery Permits under Section 10(a)(1)(A) of the Endangered Species Act for the Listed Vernal Pool Branchiopods USFWS; April 19, 1996)

at the proposed Cartmill Avenue/State Route 99 Interchange Improvements Project, Tulare County, California.

Please remember to have all biologists carry a copy of their permit while doing the work, and to follow the terms and conditions of the permit and the survey protocol, including the reporting requirements. In your report, please include which surveys were authorized, the names of all persons involved the surveys, their recovery permit numbers, and the date of this authorization, to help ensure that we correctly record the fulfillment of the reporting requirement under this authorization. Please let us know if the surveys are not performed as authorized, or if they are done by a different permittee under a separate authorization.

Please send separate copies of the report(s) to the San Joaquin Valley Branch (Attn. Proposed Cartmil Ave/SR 99 Interchange Improvements Project/Jones) and David Kelly (of this office) at the time of any formal or informal consultation under section 7 of the Endangered Species Act with the Fish and Wildlife Service.

Please reference our correspondence tracking number 81420-2008-TA-0277 in any future correspondence concerning this sampling. Thank you.

Sincerely,

Rocky Montgomery  
Wildlife Biologist, San Joaquin Valley Branch  
Sacramento Fish & Wildlife Office  
2800 Cottage Way, Room W-2605  
Sacramento, CA 95825-1846  
(916) 414-6600





Looking east at Pool 1 on November 29, 2007



Looking east at Pool 1 on January 15, 2008

01112.07 Fairy Shrimp Report (6-08)



Looking northeast at Pool 2 on November 29, 2007



Looking northeast at Pool 2 on January 15, 2008

01112.07 Fairy Shrimp Report (6-08)



**U.S. Fish and Wildlife Service Vernal Pool Data Sheet  
Wet Season Survey**

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:  
(note reproductive status)

*B. lindahli (mature)*

Notostracans: *none*  
(note reproductive status)

(Optional) Species Observations:

Cladocerans:  yes  no  
 Conchostracans: yes  no  
 Copepods: yes  no  
 Ostracods  yes  no  
 Fish yes  no  
 Frogs yes  no  
 Salamanders yes  no  
 Waterfowl yes  no  
 Other (specify) \_\_\_\_\_

Insects: (adult or larvae)

Anisoptera: yes no  
 Zygoptera: yes no  
 Hydrophilidae: yes no  
 Dytiscidae: yes no  
 Corixidae: yes no  
 Notonectidae: yes no  
 Belostomatidae: yes no  
 Other (specify) \_\_\_\_\_

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
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**U.S. Fish and Wildlife Service Vernal Pool Data Sheet  
Wet Season Survey**

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:  
(note reproductive status)

*Dry*

Notostracans:  
(note reproductive status)

(Optional) Species Observations:

Cladocerans:      yes no

Conchostracans: yes no

Copepods:        yes no

Ostracods         yes no

Fish               yes no

Frogs             yes no

Salamanders      yes no

Waterfowl        yes no

Other (specify) \_\_\_\_\_

Insects: (adult or larvae)

Anisoptera:      yes no

Zygoptera:       yes no

Hydrophilidae:  yes no

Dytiscidae:      yes no

Corixidae:       yes no

Notonectidae:   yes no

Belostomatidae: yes no

Other (specify) \_\_\_\_\_

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
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**U.S. Fish and Wildlife Service Vernal Pool Data Sheet  
Wet Season Survey**

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: Dry  
(note reproductive status)

Notostracans:  
(note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	<u>yes</u>	no - lots of tracks
Other (specify)	_____	

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify)	_____	

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
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# U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

*immature fairy shrimp - 1000's*

Notostracans: (note reproductive status)

*none*

(Optional) Species Observations: Circle Taxa Present

Vertebrates: (Circle all lifestages: E= Eggs, L=Larvae, M=Metamorphs, A=Adults)	Invertebrates:	Insects: (adults or larvae)
Pacific tree frog:            E   L   M   A	Cladocerans	Chironomidae
Western toad:                E   L   M   A	Conchostracans	Dytiscidae
Spadefoot toad:            E   L   M   A	Copepods	Corixidae
California tiger salamander:    E   L   M   A	<u>Ostracods</u>	Notonectidae
Mosquito fish	Flatworms	Halipilidae
Three-spined stickleback	Horsehair worms	Culicidae
Waterfowl: feathers or _____	Springtails	Anisoptera
Other (specify): _____	Water mites	Zygoptera
_____	Other (specify): _____	Hydrophilidae
_____	_____	Other (specify): _____

**U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey**

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: \_\_\_ no X yes

Required color slides and/or photographs for the project site are included: \_\_\_ no X yes

Date: 12/19/07 Time: 1217 County: Tulare Quad: Tulare

Collector(s): J. Hairie + E. Hitchcock Permit #: TE-795934

Site/Project Name: Cartmill Avenue Pool #: 2

Township: 19S Range: 24E Section: 26 lat. \_\_\_ long.

Temperature: Water: 57.0°F °C Air: 57.7°F °C

Pool Depth:

Surface Area:

at time of sampling: 32 cm at time of sampling: 18 m x 17 m

estimated maximum: 24 cm estimated maximum: 23 m x 23 m

Habitat Condition: (circle where appropriate)

- undisturbed    disturbed:    tire tracks    garbage    discing/plowing
- ungrazed    grazed:    cattle    horses    sheep    other \_\_\_\_\_
- light    moderate    heavy

- land use of habitat: ruderal / small detention basin

(Optional) Water Chemistry Data

Alkalinity (total): \_\_\_\_\_ ppm or  
mg/l

Conductivity: \_\_\_\_\_ uMHO

Dissolved NH4: \_\_\_\_\_ ppt or ppm

Dissolved Oxygen: \_\_\_\_\_ ppm or mg/l

pH: \_\_\_\_\_

Turbidity: (secchi disc depth) \_\_\_\_\_ cm or:  
clear to bottom \_\_\_\_\_

Salinity : \_\_\_\_\_ ppt or ppm

Total Dissolved Solids (TDS): \_\_\_\_\_ ppm

Notes:

# U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

*None*

Notostracans: (note reproductive status)

*None*

(Optional) Species Observations: Circle Taxa Present *None*

Vertebrates: (Circle all lifestages: E= Eggs, L=Larvae, M=Metamorphs, A=Adults)

Pacific tree frog:            E   L   M   A

Western toad:                E   L   M   A

Spadefoot toad:            E   L   M   A

California tiger salamander:    E   L   M   A

Mosquito fish

Three-spined stickleback

Waterfowl: feathers or \_\_\_\_\_

Other (specify):  
\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Invertebrates:

Cladocerans

Conchostracans

Copepods

Ostracods

Flatworms

Horsehair worms

Springtails

Water mites

Other (specify):  
\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Insects: (adults or larvae)

Chironomidae

Dytiscidae

Corixidae

Notonectidae

Haliplidae

Culicidae

Anisoptera

Zygoptera

Hydrophilidae

Other (specify):  
\_\_\_\_\_

\_\_\_\_\_

# U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: \_\_\_ no X yes

Required color slides and/or photographs for the project site are included: \_\_\_ no X yes

Date: 01/02/08 Time: 1112 County: Tulare Quad: Tulare

Collector(s): J. Haire + E. Hitchcock Permit #: TE-795934

Site/Project Name: Cartmill Avenue Pool #: 1

Township: 19S Range: 24E Section: 35 lat. \_\_\_ long. \_\_\_

Temperature: Water: 11.7 °C Air: 13.5 °C

Pool Depth:

Surface Area:

at time of sampling: 15 cm at time of sampling: 12 m x 8 m

estimated maximum: 30 cm estimated maximum: 27 m x 12 m

Habitat Condition: (circle where appropriate)

- undisturbed    disturbed:    tire tracks    garbage    discing/plowing

- ungrazed    grazed:    cattle    horses    sheep    other \_\_\_\_\_

light    moderate    heavy

- land use of habitat: roadside pool

(Optional) Water Chemistry Data

Alkalinity (total): \_\_\_\_\_ ppm or  
mg/l

Conductivity: \_\_\_\_\_ uMHO

Dissolved NH<sub>4</sub>: \_\_\_\_\_ ppt or ppm

Dissolved Oxygen: \_\_\_\_\_ ppm or mg/l

pH: \_\_\_\_\_

Turbidity: (secchi disc depth) \_\_\_\_\_ cm or:  
clear to bottom \_\_\_\_\_

Salinity: \_\_\_\_\_ ppt or ppm

Total Dissolved Solids (TDS): \_\_\_\_\_ ppm

Notes:

# U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

*B. lindahli - 1000's of adults + immature fairy shrimp*

Notostracans: (note reproductive status)

*none*

(Optional) Species Observations: Circle Taxa Present

Vertebrates: (Circle all lifestages: E= Eggs, L=Larvae, M=Metamorphs, A=Adults)

Pacific tree frog:            E   L   M   A

Western toad:                E   L   M   A

Spadefoot toad:            E   L   M   A

California tiger salamander:    E   L   M   A

Mosquito fish

Three-spined stickleback

Waterfowl: feathers or \_\_\_\_\_

Other (specify):  
\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Invertebrates:

Cladocerans

Conchostracans

Copepods

Ostracods

Flatworms

Horsehair worms

Springtails

Water mites

Other (specify):  
\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Insects: (adults or larvae)

Chironomidae

Dytiscidae

Corixidae

Notonectidae

Halipilidae

Culicidae

Anisoptera

Zygoptera

Hydrophilidae

Other (specify):  
\_\_\_\_\_

\_\_\_\_\_

# U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: \_\_\_ no X yes

Required color slides and/or photographs for the project site are included: \_\_\_ no X yes

Date: 01/02/08 Time: 1100 County: Tulare Quad: Tulare

Collector(s): J. Haire + E. Hitchcock Permit #: TE-795934

Site/Project Name: Cartmill Avenue Pool #: 2

Township: 19S Range: 24E Section: 26 lat. \_\_\_ long. \_\_\_

Temperature: Water: \_\_\_\_\_ °C Air: \_\_\_\_\_ °C

Pool Depth: Dry Surface Area: \_\_\_\_\_

at time of sampling: \_\_\_\_\_ cm at time of sampling: \_\_\_\_\_ m x \_\_\_\_\_ m

estimated maximum: \_\_\_\_\_ cm estimated maximum: \_\_\_\_\_ m x \_\_\_\_\_ m

Habitat Condition: (circle where appropriate)

- undisturbed    disturbed:    tire tracks    garbage    discing/plowing
- ungrazed    grazed:    cattle    horses    sheep    other \_\_\_\_\_
- light    moderate    heavy

- land use of habitat: \_\_\_\_\_

## (Optional) Water Chemistry Data

Alkalinity (total): \_\_\_\_\_ ppm or mg/l

Conductivity: \_\_\_\_\_ uMHO

Dissolved NH4: \_\_\_\_\_ ppt or ppm

Dissolved Oxygen: \_\_\_\_\_ ppm or mg/l

pH: \_\_\_\_\_

Turbidity: (secchi disc depth) \_\_\_\_\_ cm or: clear to bottom \_\_\_\_\_

Salinity: \_\_\_\_\_ ppt or ppm

Total Dissolved Solids (TDS): \_\_\_\_\_ ppm

Notes:

**U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey**

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Dry

Notostracans: (note reproductive status)

(Optional) Species Observations: Circle Taxa Present

Vertebrates: (Circle all lifestages: E= Eggs, L=Larvae, M=Metamorphs, A=Adults)

Pacific tree frog:            E   L   M   A

Western toad:                E   L   M   A

Spadefoot toad:            E   L   M   A

California tiger salamander:    E   L   M   A

Mosquito fish

Three-spined stickleback

Waterfowl: feathers or \_\_\_\_\_

Other (specify):  
\_\_\_\_\_  
\_\_\_\_\_

Invertebrates:

Cladocerans

Conchostracans

Copepods

Ostracods

Flatworms

Horsehair worms

Springtails

Water mites

Other (specify):  
\_\_\_\_\_  
\_\_\_\_\_

Insects: (adults or larvae)

Chironomidae

Dytiscidae

Corixidae

Notonectidae

Haliplidae

Culicidae

Anisoptera

Zygoptera

Hydrophilidae

Other (specify):  
\_\_\_\_\_

**U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey**

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: \_\_\_ no X yes

Required color slides and/or photographs for the project site are included: \_\_\_ no X yes

Date: 01/15/08 Time: 11:37 County: Tulare Quad: Tulare

Collector(s): Jennifer Haire and Erin Hitchcock Permit #: TE-795934

Site/Project Name: Cartmill Avenue Pool #: 1

Township: 19S Range: 24E Section: 35 lat. \_\_\_ long. \_\_\_

Temperature: Water: 10.8 °C Air: 8.8 °C

Pool Depth:

Surface Area:

at time of sampling: 20 cm at time of sampling: 13 m x 7 m

estimated maximum: 30 cm estimated maximum: 27 m x 12 m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing  
- ungrazed grazed: cattle horses sheep other \_\_\_\_\_  
light moderate heavy

- land use of habitat:

roadside pool

(Optional) Water Chemistry Data

Alkalinity (total): \_\_\_\_\_ ppm or mg/l

Conductivity: \_\_\_\_\_ uMHO

Dissolved NH4: \_\_\_\_\_ ppt or ppm

Dissolved Oxygen: \_\_\_\_\_ ppm or mg/l

pH: \_\_\_\_\_

Turbidity: (secchi disc depth) \_\_\_\_\_ cm or: clear to bottom \_\_\_\_\_

Salinity: \_\_\_\_\_ ppt or ppm

Total Dissolved Solids (TDS): \_\_\_\_\_ ppm

Notes:

# U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

1,000's *B. lindahli* mature

10's *B. lindahli* immature

Notostracans: (note reproductive status)

None

(Optional) Species Observations: Circle Taxa Present

Vertebrates: (Circle all lifestages: E= Eggs, L=Larvae, M=Metamorphs, A=Adults)

Pacific tree frog:            E   L   M   A

Western toad:                E   L   M   A

Spadefoot toad:            E   L   M   A

California tiger salamander:    E   L   M   A

Mosquito fish

Three-spined stickleback

Waterfowl: feathers or \_\_\_\_\_

Other (specify): \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Invertebrates:

Cladocerans

Conchostracans

Copepods

Ostracods

Flatworms

Horsehair worms

Springtails

Water mites

Other (specify): \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Insects: (adults or larvae)

Chironomidae

Dytiscidae

Corixidae

Notonectidae

Haliplidae

Culicidae

Anisoptera

Zygoptera

Hydrophilidae

Other (specify): \_\_\_\_\_

\_\_\_\_\_

**U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey**

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: \_\_\_ no X yes

Required color slides and/or photographs for the project site are included: \_\_\_ no X yes

Date: 01/15/08 Time: 11:17 County: Tulare Quad: Tulare

Collector(s): Jennifer Haire and Erin Hitchcock Permit #: TE-795934

Site/Project Name: Cartmill Avenue Pool #: 2

Township: 19S Range: 24E Section: 24 lat. \_\_\_ long. \_\_\_

Temperature: Water: 10.1 °C Air: 9.3 °C

Pool Depth:

Surface Area:

at time of sampling: 12 cm at time of sampling: 11 m x 11 m

estimated maximum: 2ft cm estimated maximum: 23 m x 23 m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed tire tracks garbage discing/plowing

- ungrazed grazed: cattle horses sheep other \_\_\_\_\_

light moderate heavy

- land use of habitat: small detention basin  
Water highly discolored runoff (emerald green in color)

(Optional) Water Chemistry Data

Alkalinity (total): \_\_\_\_\_ ppm or  
mg/l

Conductivity: \_\_\_\_\_ uMHO

Dissolved NH4: \_\_\_\_\_ ppt or ppm

Dissolved Oxygen: \_\_\_\_\_ ppm or mg/l

pH: \_\_\_\_\_

Turbidity: (secchi disc depth) \_\_\_\_\_ cm or:  
clear to bottom \_\_\_\_\_

Salinity : \_\_\_\_\_ ppt or ppm

Total Dissolved Solids (TDS): \_\_\_\_\_ ppm

Notes:

# U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

*None*

Notostracans: (note reproductive status)

*None*

(Optional) Species Observations: Circle Taxa Present *none*

Vertebrates: (Circle all lifestages: E= Eggs, L=Larvae, M=Metamorphs, A=Adults)

Pacific tree frog:            E   L   M   A

Western toad:                E   L   M   A

Spadefoot toad:             E   L   M   A

California tiger salamander:    E   L   M   A

Mosquito fish

Three-spined stickleback

Waterfowl: feathers or \_\_\_\_\_

Other (specify): \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Invertebrates:

Cladocerans

Conchostracans

Copepods

Ostracods

Flatworms

Horsehair worms

Springtails

Water mites

Other (specify): \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Insects: (adults or larvae)

Chironomidae

Dytiscidae

Corixidae

Notonectidae

Haliplidae

Culicidae

Anisoptera

Zygoptera

Hydrophilidae

Other (specify): \_\_\_\_\_

\_\_\_\_\_



# U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

*B. lindahli 100's*

Notostracans: (note reproductive status)

*none*

(Optional) Species Observations: Circle Taxa Present

Vertebrates: (Circle all lifestages: E= Eggs, L=Larvae, M=Metamorphs, A=Adults)	Invertebrates:	Insects: (adults or larvae)
Pacific tree frog:            E   L   M   A	<u>Cladocerans</u>	Chironomidae
Western toad:                E   L   M   A	Conchostracans	Dytiscidae
Spadefoot toad:            E   L   M   A	Copepods	Corixidae
California tiger salamander:                E   L   M   A	<u>Ostracods</u>	Notonectidae
Mosquito fish	Flatworms	Haliplidae
Three-spined stickleback	Horsehair worms	Culicidae
Waterfowl: feathers or _____	Springtails	Anisoptera
Other (specify): _____	Water mites	Zygoptera
_____	Other (specify): _____	Hydrophilidae
_____	_____	Other (specify): _____

**U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey**

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: \_\_\_ no X yes

Required color slides and/or photographs for the project site are included: \_\_\_ no X yes

Date: 01 / 31 / 08 Time: 1123 County: Tulare Quad: Tulare

Collector(s): J. Haire + E. Hitchcock Permit #: TE-795934

Site/Project Name: Cartmill Avenue Pool #: 2

Township: 19S Range: 24E Section: 26 lat. \_\_\_ long. \_\_\_

Temperature: Water: 13.7 °C Air: 13.0 °C

Pool Depth: \_\_\_\_\_ Surface Area: \_\_\_\_\_

at time of sampling: 27 cm at time of sampling: 14 m x 13 m

estimated maximum: 2ft cm estimated maximum: 23 m x 23 m

Habitat Condition: (circle where appropriate)

- undisturbed    disturbed:    tire tracks    garbage    discing/plowing
- ungrazed    grazed:    cattle    horses    sheep    other \_\_\_\_\_
- light    moderate    heavy

- land use of habitat: roadside pool / detention basin

(Optional) Water Chemistry Data

Alkalinity (total): \_\_\_\_\_ ppm or mg/l

Conductivity: \_\_\_\_\_ uMHO

Dissolved NH4: \_\_\_\_\_ ppt or ppm

Dissolved Oxygen: \_\_\_\_\_ ppm or mg/l

pH: \_\_\_\_\_

Turbidity: (secchi disc depth) \_\_\_\_\_ cm or: clear to bottom \_\_\_\_\_

Salinity : \_\_\_\_\_ ppt or ppm

Total Dissolved Solids (TDS): \_\_\_\_\_ ppm

Notes:

# U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

*none*

Notostracans: (note reproductive status)

*none*

(Optional) Species Observations: Circle Taxa Present *none*

Vertebrates: (Circle all lifestages: E= Eggs, L=Larvae, M=Metamorphs, A=Adults)

Pacific tree frog:            E   L   M   A

Western toad:                E   L   M   A

Spadefoot toad:             E   L   M   A

California tiger salamander:    E   L   M   A

Mosquito fish

Three-spined stickleback

Waterfowl: feathers or \_\_\_\_\_

Other (specify):  
\_\_\_\_\_  
\_\_\_\_\_

Invertebrates:

Cladocerans

Conchostracans

Copepods

Ostracods

Flatworms

Horsehair worms

Springtails

Water mites

Other (specify):  
\_\_\_\_\_  
\_\_\_\_\_

Insects: (adults or larvae)

Chironomidae

Dytiscidae

Corixidae

Notonectidae

Haliplidae

Culicidae

Anisoptera

Zygoptera

Hydrophilidae

Other (specify):  
\_\_\_\_\_



# U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

*B. lindahli* 1000's

Notostracans: (note reproductive status)

*none*

(Optional) Species Observations: Circle Taxa Present

Vertebrates: (Circle all lifestages: E= Eggs, L=Larvae, M=Metamorphs, A=Adults)

Pacific tree frog:            E   L   M   A

Western toad:                E   L   M   A

Spadefoot toad:             E   L   M   A

California tiger salamander:    E   L   M   A

Mosquito fish

Three-spined stickleback

Waterfowl: feathers or \_\_\_\_\_

Other (specify): \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Invertebrates:

Cladocerans

Conchostracans

Copepods

Ostracods

Flatworms

Horsehair worms

Springtails

Water mites

Other (specify): \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Insects: (adults or larvae)

Chironomidae

Dytiscidae

Corixidae

Notonectidae

Halplidae

Culicidae

Anisoptera

Zygoptera

Hydrophilidae - beetle

Other (specify): \_\_\_\_\_

\_\_\_\_\_

**U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey**

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: \_\_\_ no X yes

Required color slides and/or photographs for the project site are included: \_\_\_ no X yes

Date: 02/12/08 Time: 1205 County: Tulare Quad: Tulare

Collector(s): J. Haire + J. Camp Permit #: TE-795934

Site/Project Name: Cartmill Avenue Pool #: 2

Township: 19S Range: 24E Section: 26 lat. \_\_\_ long.

Temperature: Water: \_\_\_ °C Air: \_\_\_ °C

Pool Depth: DRY Surface Area:

at time of sampling: \_\_\_ cm at time of sampling: \_\_\_ m x \_\_\_ m

estimated maximum: \_\_\_ cm estimated maximum: \_\_\_ m x \_\_\_ m

Habitat Condition: (circle where appropriate)

- undisturbed    disturbed:    tire tracks    garbage    discing/plowing
- ungrazed    grazed:    cattle    horses    sheep    other \_\_\_\_\_
- light    moderate    heavy
- land use of habitat:

(Optional) Water Chemistry Data

Alkalinity (total): \_\_\_ ppm or mg/l

Conductivity: \_\_\_ uMHO

Dissolved NH4: \_\_\_ ppt or ppm

Dissolved Oxygen: \_\_\_ ppm or mg/l

pH: \_\_\_\_\_

Turbidity: (secchi disc depth) \_\_\_ cm or: clear to bottom \_\_\_\_\_

Salinity : \_\_\_ ppt or ppm

Total Dissolved Solids (TDS): \_\_\_ ppm

Notes:

# U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

DRY

Notostracans: (note reproductive status)

(Optional) Species Observations: Circle Taxa Present

Vertebrates: (Circle all lifestages: E= Eggs, L=Larvae, M=Metamorphs, A=Adults)

Pacific tree frog:            E   L   M   A

Western toad:                E   L   M   A

Spadefoot toad:             E   L   M   A

California tiger salamander:    E   L   M   A

Mosquito fish

Three-spined stickleback

Waterfowl: feathers or \_\_\_\_\_

Other (specify): \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Invertebrates:

Cladocerans

Conchostracans

Copepods

Ostracods

Flatworms

Horsehair worms

Springtails

Water mites

Other (specify): \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Insects: (adults or larvae)

Chironomidae

Dytiscidae

Corixidae

Notonectidae

Halplidae

Culicidae

Anisoptera

Zygoptera

Hydrophilidae

Other (specify): \_\_\_\_\_

\_\_\_\_\_

**U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey**

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: \_\_\_ no X yes

Required color slides and/or photographs for the project site are included: \_\_\_ no X yes

Date: 02/26/08 Time: 1237 County: Tulare Quad: Tulare

Collector(s): J. Haire Permit #: TE-795934

Site/Project Name: Cartmill Avenue Pool #: 1

Township: 19S Range: 24E Section: 35 lat. \_\_\_ long. \_\_\_

Temperature: Water: 21.1 °C Air: 16.5 °C

Pool Depth: \_\_\_\_\_ Surface Area: \_\_\_\_\_  
at time of sampling: 20 cm at time of sampling: 25 m x 9 m  
estimated maximum: 30 cm estimated maximum: 27 m x 12 m

Habitat Condition: (circle where appropriate)

- undisturbed      disturbed:      tire tracks      garbage      discing/plowing
- ungrazed      grazed:      cattle      horses      sheep      other \_\_\_\_\_  
   light      moderate      heavy

- land use of habitat: roadside pool - btwn rd + freeway on ramp

(Optional) Water Chemistry Data

Alkalinity (total): \_\_\_\_\_ ppm or mg/l      Conductivity: \_\_\_\_\_ uMHO  
Dissolved NH4: \_\_\_\_\_ ppt or ppm      Dissolved Oxygen: \_\_\_\_\_ ppm or mg/l  
pH: \_\_\_\_\_      Turbidity: (secchi disc depth) \_\_\_\_\_ cm or: clear to bottom \_\_\_\_\_  
Salinity : \_\_\_\_\_ ppt or ppm      Total Dissolved Solids (TDS): \_\_\_\_\_ ppm

Notes:

**U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey**

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

*B. lindahli 100s*  
*immature fairy shrimp 100s*

Notostracans: (note reproductive status)

*none*

(Optional) Species Observations: Circle Taxa Present

Vertebrates: (Circle all lifestages: E= Eggs, L=Larvae, M=Metamorphs, A=Adults)

Invertebrates:

Insects: (adults or larvae)

Pacific tree frog:            E   L   M   A

Western toad:                E   L   M   A

Spadefoot toad:            E   L   M   A

California tiger salamander:    E   L   M   A

Mosquito fish

Three-spined stickleback

Waterfowl: feathers or \_\_\_\_\_

Other (specify): \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Cladocerans

Conchostracans

Copepods

Ostracods

Flatworms

Horsehair worms

Springtails

Water mites

Other (specify): \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Chironomidae

Dytiscidae

Corixidae

Notonectidae

Haliplidae

Culicidae

Anisoptera

Zygoptera

Hydrophilidae

Other (specify): \_\_\_\_\_

\_\_\_\_\_



# U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

1 immature fairy shrimp

Notostracans: (note reproductive status)

none

(Optional) Species Observations: Circle Taxa Present

Vertebrates: (Circle all lifestages: E= Eggs, L=Larvae, M=Metamorphs, A=Adults)

Pacific tree frog:  E L M A

Western toad: E L M A

Spadefoot toad: E L M A

California tiger salamander: E L M A

Mosquito fish

Three-spined stickleback

Waterfowl: feathers or \_\_\_\_\_

Other (specify): \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Invertebrates:

Cladocerans

Conchostracans

Copepods

Ostracods

Flatworms

Horsehair worms

Springtails

Water mites

Other (specify): \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Insects: (adults or larvae)

Chironomidae

Dytiscidae

Corixidae

Notonectidae

Halplidae

Culicidae

Anisoptera

Zygoptera

Hydrophilidae

Other (specify): \_\_\_\_\_

\_\_\_\_\_



# U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

*B. lindahi - 10's*

Notostracans: (note reproductive status)

*none*

(Optional) Species Observations: Circle Taxa Present

Vertebrates: (Circle all lifestages: E= Eggs, L=Larvae, M=Metamorphs, A=Adults)	Invertebrates:	Insects: (adults or larvae)
Pacific tree frog:            E   L   M   A	Cladocerans	Chironomidae
Western toad:                E   L   M   A	Conchostracans	Dytiscidae
Spadefoot toad:            E   L   M   A	Copepods	<u>Corixidae</u>
California tiger salamander:                E   L   M   A	<u>Ostracods</u>	Notonectidae
Mosquito fish	Flatworms	Halipidae
Three-spined stickleback	Horsehair worms	Culicidae
Waterfowl: feathers or _____	Springtails	Anisoptera
Other (specify): _____	Water mites	Zygoptera
_____	Other (specify): _____	Hydrophilidae
_____	_____	Other (specify): _____



# U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

DRY

Notostracans: (note reproductive status)

(Optional) Species Observations: Circle Taxa Present

Vertebrates: (Circle all lifestages: E= Eggs, L=Larvae, M=Metamorphs, A=Adults)

Invertebrates:

Insects: (adults or larvae)

Pacific tree frog:            E   L   M   A

Cladocerans

Chironomidae

Western toad:                E   L   M   A

Copepods

Corixidae

Spadefoot toad:            E   L   M   A

Ostracods

Notonectidae

California tiger salamander:    E   L   M   A

Flatworms

Haliplidae

Mosquito fish

Horsehair worms

Culicidae

Three-spined stickleback

Springtails

Anisoptera

Waterfowl: feathers or \_\_\_\_\_

Water mites

Zygoptera

Other (specify): \_\_\_\_\_

Other (specify): \_\_\_\_\_

Hydrophilidae

\_\_\_\_\_

\_\_\_\_\_

Other (specify): \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey**

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: \_\_\_ no X yes

Required color slides and/or photographs for the project site are included: \_\_\_ no X yes

Date: 3/26/08 Time: 12:00 County: Tulare Quad: Tulare

Collector(s): P. Stone, E. Hitchcock Permit #: TE-795934

Site/Project Name: Cartmill Avenue Pool # 1+2

Township: 19S Range: 24E Section: 20 lat. \_\_\_ long. \_\_\_

Temperature: Water: \_\_\_ °C Air: \_\_\_ °C

Pool Depth: Surface Area:

at time of sampling: Ø cm at time of sampling: Ø m x Ø m Dry

estimated maximum: \_\_\_ cm estimated maximum: \_\_\_ m x \_\_\_ m

Habitat Condition: (circle where appropriate)

- undisturbed    disturbed:    tire tracks    garbage    discing/plowing
- ungrazed    grazed:    cattle    horses    sheep    other \_\_\_\_\_
- light    moderate    heavy
- land use of habitat:

(Optional) Water Chemistry Data

Alkalinity (total): \_\_\_ ppm or mg/l

Conductivity: \_\_\_ uMHO

Dissolved NH4: \_\_\_ ppt or ppm

Dissolved Oxygen: \_\_\_ ppm or mg/l

pH: \_\_\_\_\_

Turbidity: (secchi disc depth) \_\_\_ cm or: clear to bottom \_\_\_\_\_

Salinity : \_\_\_ ppt or ppm

Total Dissolved Solids (TDS): \_\_\_ ppm

Notes:

# U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Dry

Notostracans: (note reproductive status)

(Optional) Species Observations: Circle Taxa Present

Vertebrates: (Circle all lifestages: E= Eggs, L=Larvae, M=Metamorphs, A=Adults)

Pacific tree frog:            E   L   M   A

Western toad:                E   L   M   A

Spadefoot toad:             E   L   M   A

California tiger salamander:    E   L   M   A

Mosquito fish

Three-spined stickleback

Waterfowl: feathers or \_\_\_\_\_

Other (specify):  
\_\_\_\_\_  
\_\_\_\_\_

Invertebrates:

Cladocerans

Conchostracans

Copepods

Ostracods

Flatworms

Horsehair worms

Springtails

Water mites

Other (specify):  
\_\_\_\_\_  
\_\_\_\_\_

Insects: (adults or larvae)

Chironomidae

Dytiscidae

Corixidae

Notonectidae

Halipilidae

Culicidae

Anisoptera

Zygoptera

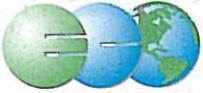
Hydrophilidae

Other (specify):  
\_\_\_\_\_

Appendix C Vernal Pool Branchiopods Dry  
Season Survey Report

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16 June 2009

Jennifer Haire  
ICF Jones & Stokes  
630 K Street, Suite 400  
Sacramento, California 95814

**RE: Cartmill Avenue – Soil Sample Analysis**

Dear Ms. Haire:

At the request of ICF Jones and Stokes, 20 soil samples (10 per pool) were processed and inspected for the presence of anostracan (fairy shrimp) and notostracan (tadpole shrimp) cysts. The soil samples were collected by ICF Jones and Stokes (Permit # TE-795934-9) from two vernal pools located on the Cartmill Avenue site in Tulare County in June 2008. The soil samples were later transferred to ECORP Consulting, Inc. (ECORP) (Permit #TE-012973-5) in December 2008 for processing and analyses.

**METHODS**

All soil material was completely processed and analyzed. Each sample was mechanically separated by sieving soil material through a series of three 8-inch diameter brass sieves (mesh sizes of 710- $\mu$ m, 300- $\mu$ m, and 150- $\mu$ m). Sieved fractions were then further differentiated via density separation into organic (floating) and inorganic (sinking) fractions. All soil fractions retained by the 300- $\mu$ m and 150- $\mu$ m mesh size sieves were then microscopically inspected for the presence of anostracan (fairy shrimp) and notostracan (tadpole shrimp) cysts. Total cyst density information for each soil sample was recorded based on the following categories: none, 10s of cysts/100 ml soil, 100s of cysts/100 ml soil and 1,000 of cysts/100 ml soil. Evidence of other aquatic invertebrates encountered was also noted on the data sheets (Attachment A).

**RESULTS**

A total of 20 soil samples were analyzed. Soil samples from Pool-1 contained *Branchinecta* species cysts ranging in numbers estimated at 10s to 1,000s per 100 ml of soil. No vernal pool branchiopod cysts were found in soil samples collected from Pool-2 (Table 1). There appear to be at least two morphologically distinct types of *Branchinecta* species cysts in the soil samples collected from Pool-1. The cysts were

compared with electron micrographs from Hill and Sheppard (1997) and ECORP reference material. The two types of cysts most closely resemble cysts of *Branchinecta mackini* and *Branchinecta lindahli*. *Branchinecta mackini* and *Branchinecta lindahli* both occur in Tulare County, and have been reported to occur in the same pools (Eriksen and Belk 1999). Some of the *Branchinecta* cysts were similar in appearance to *Branchinecta lynchi* but a positive identification could not be made given the fact that cyst morphology of the genus can be quite variable. Cysts of *B. lindahli* can occasionally resemble those of listed species. Given that *B. lynchi* is also known to occur in Tulare County, the presence of this species cannot be ruled out in the absence of further wet season work and or rearing of cysts. Evidence of other aquatic invertebrates observed in the soil samples included Coleoptera fragments, Diptera fragments and Ostracoda shells.

**Table 1 – Results of the Cartmill Avenue Vernal Pool Soil Sample Analysis**

Feature ID	Soil Sample ID	Branchiopod Cysts (#/100ml soil)	Other Organisms <sup>1</sup>
Pool-1	1-1	<i>Branchinecta</i> sp. (100s)	OS
Pool-1	1-2	<i>Branchinecta</i> sp. (100s)	OS, DF
Pool-1	1-3	None	OS
Pool-1	1-4	<i>Branchinecta</i> sp. (10s)	OS
Pool-1	1-5	<i>Branchinecta</i> sp. (1,000s)	OS
Pool-1	1-6	<i>Branchinecta</i> sp. (100s)	OS
Pool-1	1-7	<i>Branchinecta</i> sp. (100s)	OS
Pool-1	1-8	<i>Branchinecta</i> sp. (100s)	OS
Pool-1	1-9	<i>Branchinecta</i> sp. (100s)	OS
Pool-1	1-10	<i>Branchinecta</i> sp. (10s)	OS
Pool-2	2-1	None	OS, DF
Pool	2-2	None	OS, DF
Pool	2-3	None	OS
Pool	2-4	None	OS, DF
Pool	2-5	None	OS
Pool	2-6	None	OS, DF, CF
Pool	2-7	None	OS, DF
Pool	2-8	None	OS, DF
Pool	2-9	None	OS, DF
Pool	2-10	None	OS, DF, CF

<sup>1</sup> CF = Coleoptera fragments, DF = Diptera fragments, OS = Ostracoda shells

If you have any questions, please feel free to contact me at (916) 782-9100.

Sincerely,

Peter Balfour  
Vice President

Attachment(s)

## REFERENCES

- Hill, R. E. and W. D. Sheppard. 1997. Observations on the identification of California anostracan cysts. *Hydrobiologia*. 359: 113-123.
- Eriksen, C. H. and D. Belk. 1999. *Fairy Shrimps of California's Puddles, Pools, and Playas*. Mad River Press, Eureka, CA. 196 pp.



# ATTACHMENT A

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Vernal Pool Branchiopod Dry Season Data Sheets



Project Name:	Cartmill Avenue			
Project Number:	2008-185			
Permitted Biologist:				
Permit #:	TE012973-4			
Date Collected:				
Wetland Feature ID:	POOL 1			
Sample Processing Date:				
Sample Processing Personnel:				
Samples Processed:				
	Organic Fractions		Inorganic Fractions	
	Sieve Size		Sieve Size	
Sample	0.150 mm	0.300 mm	0.150 mm	0.300 mm
1-1	BSP = 100s, OS	OS	OS	OS
1-2	BSP = 100s, OS	OS, DF	BSP = 10s, OS	OS -
1-3	OS	OS	OS	OS
1-4	BSP = 10s, OS	OS	OS	OS
1-5	BSP = 1,000s, OS	BSP = 10s, OS	BSP = 10s, OS	OS
1-6	BSP = 100s, OS	OS	OS	OS
1-7	BSP = 100s, OS	OS	OS	OS
1-8	BSP = 100s	OS	OS	OS
1-9	BSP = 100s, OS	OS	OS	OS
1-10	BSP = 10s, OS	BSP = 10s, OS	OS	OS
Species	Code			
<i>Branchinecta sp.</i>	BSP			
<i>Lepidurus packardii</i>	LP			
<i>Lindieriella occidentalis</i>	LO			
Other Organisms:				
Cladocera ephippia	CE			
Ostracoda shells	OS			
Coleoptera fragments	CF			
Diptera fragments	DF			
Hemiptera fragments	HF			
Formicidae (ant) fragments	FF			
Collembola	CO			

Project Name:	Cartmill Avenue			
Project Number:	2008-185			
Permitted Biologist:				
Permit #:	TE012973-4			
Date Collected:				
Wetland Feature ID:	POOL 2			
Sample Processing Date:				
Sample Processing Personnel:				
Samples Processed:				
	Organic Fractions		Inorganic Fractions	
	Sieve Size		Sieve Size	
Sample	0.150 mm	0.300 mm	0.150 mm	0.300 mm
2-1	OS, DF	OS	—	—
2-2	OS	OS, DF	—	—
2-3	OS	OS, DF	—	—
2-4	OS	OS	—	—
2-5	OS	OS	—	—
2-6	OS	OS, DF, CF	—	—
2-7	OS, DF	OS, DF	—	—
2-8	OS	OS, DF	—	—
2-9	OS	OS, DF	—	—
2-10	OS	OS, DF, CF	—	—
Species	Code			
<i>Branchinecta sp.</i>	BSP			
<i>Lepidurus packardii</i>	LP			
<i>Lindleriella occidentalis</i>	LO			
Other Organisms:				
Cladocera ephippia	CE			
Ostracoda shells	OS			
Coleoptera fragments	CF			
Diptera fragments	DF			
Hemiptera fragments	HF			
Formicidae (ant) fragments	FF			
Collembola	CO			

## Appendix D Agency Correspondence

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## Haire, Jennifer

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**From:** Haire, Jennifer  
**Sent:** Monday, June 27, 2011 3:55 PM  
**To:** 'Mike\_Thomas@fws.gov'  
**Cc:** Ashkar, Shahira  
**Subject:** RE: Tulare - Cartmill Ave project info

Hi Mike,

Thanks for getting back to me. I appreciate your willingness to answer questions or funnel them to a specific biologist. I don't anticipate there being too many questions. We have been waiting for a contract/authorization to proceed on the HCP, and have just received that, so I anticipate starting on this soon. Thanks again for your help!

Jennifer

---

**From:** Mike\_Thomas@fws.gov [mailto:Mike\_Thomas@fws.gov]  
**Sent:** Monday, June 27, 2011 3:13 PM  
**To:** Haire, Jennifer  
**Subject:** RE: Tulare - Cartmill Ave project info

Hi Jennifer,

Sorry for the delay in getting back to you. We do not currently have staff available to work on the project, either my staff or staff from the San Joaquin Valley. If you have general questions you are certainly welcome to contact me. Specific questions about species or the general area I'll likely have to coordinate with someone in the San Joaquin Valley.

Again, sorry for the delay.  
Thanks

Mike

=====  
Mike Thomas | Division Chief  
Conservation Planning  
U.S. Fish & Wildlife Service  
2800 Cottage Way, Room W-2605  
Sacramento, CA 95825-1846  
(916) 414-6678  
=====

"Haire, Jennifer" <JHaire@icfi.com>

06/14/2011 04:06 PM

To "Mike\_Thomas@fws.gov" <Mike\_Thomas@fws.gov>  
cc "Ashkar, Shahira" <SAshkar@icfi.com>  
Subject RE: Tulare - Cartmill Ave project info

**From:** Haire, Jennifer  
**Sent:** Tuesday, May 31, 2011 11:04 AM  
**To:** Mike\_Thomas@fws.gov  
**Cc:** Ashkar, Shahira  
**Subject:** RE: Tulare - Cartmill Ave project info

Hi Mike,

Just following up on your May 10 meeting with the San Joaquin Valley Branch Chief. Is there any hope for a biologist to be assigned to this project? Our schedule has slipped a bit so we are now planning on having it ready to submit in mid-July. As I said before, we would mainly want someone that we could contact during the next month to discuss expected impacts and mitigation to ensure that the HCP adequately addresses the effects of the project prior to it being submitted.

Thank you,

Jennifer

**From:** Mike\_Thomas@fws.gov [mailto:Mike\_Thomas@fws.gov]  
**Sent:** Monday, May 02, 2011 5:17 PM  
**To:** Haire, Jennifer  
**Cc:** Ashkar, Shahira  
**Subject:** RE: Tulare - Cartmill Ave project info

Hi Jennifer,

Since Jen is a caltrans contractor, what she works on is limited by the scope of work/contract she is under. I believe that is why she can't work on a HCP.

Regarding requirements for a cat x, I'm assuming there is or will be a CEQA document for the project? If there is/will be then much of the information needed for the Screening Form for a cat x should be contained within that document. I am including a link to the Screening Form on our web site. The information we need has to enable the Service to answer the questions on the form and provide a justification for the answer.

For applicants/consultants proposing a low-effect HCP I usually recommend they do a dry run through the screening form to make sure they think it meets NEPA's cat x requirements. If anything kicks it out, then it will have to at least do an EA level NEPA document (although I can't make that determination based on the information I have now). The Service would make the final determination and fill out the Screening Form once we had someone assigned to the project.

Here is the link to the Screening Form

<http://training.fws.gov/EC/Resources/nepa/cd/Endangered%20Species/HCP%20Low%20Effect%20screening%20form%20and%20EAS%202008.rtf>

Thanks  
Mike

=====

Mike Thomas | Chief  
Conservation Planning Branch  
U.S. Fish & Wildlife Service  
2800 Cottage Way, Room W-2605  
Sacramento, CA 95825-1846  
(916) 414-6678

=====

"Haire, Jennifer" <JHaire@icfi.com>

05/02/2011 04:54 PM

To "Mike\_Thomas@fws.gov" <Mike\_Thomas@fws.gov>  
cc "Ashkar, Shahira" <SAshkar@icfi.com>  
Subject RE: Tulare - Cartmill Ave project info

Mike – thank you for the update on the situation and for getting back to me so quickly. I would appreciate if you could discuss this project during your May 10 meeting. Jen Schofield seemed uncomfortable with taking on an HCP. I don't expect that it will take a lot of effort but it would be nice to know who to direct specific questions to so that we can be in agreement on what is in the HCP as much as possible before we submit it. We are hoping to have it ready by mid-June.

Could you please also tell me what USFWS requires, if anything, from the applicant for the Categorical Exclusion? We are trying to provide a scope and cost for the HCP effort and aren't sure if we should allot time/effort for the CE /supporting material.

Thank you,  
Jennifer

**From:** Mike\_Thomas@fws.gov [mailto:Mike\_Thomas@fws.gov]  
**Sent:** Monday, May 02, 2011 4:43 PM  
**To:** Haire, Jennifer  
**Subject:** Re: Tulare - Cartmill Ave project info

Hi Jennifer,

I received your voice mail from today (May 2, 2011). Jen Schofield had let me know last week that you'd likely be checking in. We have between 20-27 HCP that are not currently assigned. Due to limited staff and a large backlog of HCPs, we are currently focusing our efforts on larger/regional HCPs. As a result we do not currently have staff available to assign to this project. However, I will discuss the project at my next coordination meeting (May 10th) with the San Joaquin Valley branch chief to see if he may have staff available for the project.

Thanks

Mike

=====

Mike Thomas | Chief  
Conservation Planning Branch  
U.S. Fish & Wildlife Service  
2800 Cottage Way, Room W-2605  
Sacramento, CA 95825-1846

(916) 414-6678  
=====

"Haire, Jennifer" <JHaire@icfi.com>

03/25/2011 10:59 AM

To "Mike\_Thomas@fws.gov" <Mike\_Thomas@fws.gov>  
cc "Ashkar, Shahira" <SAshkar@icfi.com>  
Subject Tulare - Cartmill Ave project info

Hi Mike,

Below is some information for the State Route 99 (SR 99)/Cartmill Avenue Interchange Improvements Project in Tulare County. We are looking for assistance to determine if formal consultation will be needed for this project. There is no federal nexus.

The City of Tulare, in conjunction with California Department of Transportation, are proposing to modify the existing SR 99–M Street–Cartmill Avenue interchange in the city of Tulare. The SR99/Cartmill Avenue Interchange Improvements Project would improve safety, provide additional capacity, improve east-west circulation, and improve local access with SR 99 at Cartmill Avenue.

The two attached figures show the location of the project and the community types in the project area.

Federally listed species to be addressed are vernal pool fairy shrimp and San Joaquin kit fox.

I would be happy to provide additional information or conduct a site visit with the assisting biologist.

Thanks so much for your help with this.

Jennifer

**Jennifer Haire** | Senior Wildlife Biologist | 916.737.3000 | [jhaire@icfi.com](mailto:jhaire@icfi.com) | [icfi.com](http://icfi.com)  
**ICF INTERNATIONAL** | 630 K Street, Suite 400, Sacramento, CA 95814 | 916.737.3030 (f) | 916.529.6975 (m)  
In January 2010, ICF Jones & Stokes became ICF International.

 Please consider the environment before printing this e-mail.

[attachment "Fig1\_1\_Proj Location\_01.09-Small.pdf" deleted by Mike Thomas/SAC/R1/FWS/DOI] [attachment "Fig3\_1\_Communities.pdf" deleted by Mike Thomas/SAC/R1/FWS/DOI]

## Appendix E Natural Environment Study

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# State Route 99/Cartmill Avenue Interchange Improvements



## Revised Natural Environment Study

State Route 99 and Cartmill Avenue overcrossing intersection  
Between 0.6 mile south of Cartmill Avenue and 0.7 mile north of  
Cartmill Avenue

City of Tulare, Tulare County

06-TUL-99-31.3/32.6

06-332200

July 2012





# State Route 99/Cartmill Avenue Interchange Improvements

## Revised Natural Environment Study

*State Route 99 and Cartmill Avenue overcrossing intersection  
Between 0.6 mile south of Cartmill Avenue and 0.7 mile north of Cartmill Avenue*

*City of Tulare, Tulare County*

06-TUL-99-31.3/32.6

06-332200

July 2012

STATE OF CALIFORNIA  
Department of Transportation  
CITY OF TULARE  
Development Services Department, Engineering Division

Prepared By: *Jessica Hughes for J. Haire* Date: 7/25/12  
Jennifer Haire, Wildlife Biologist  
916-737-3000  
ICF International, Sacramento

Approved By: *Michael W. Miller* Date: 07/25/12  
Michael Miller, Senior Civil Engineer  
559-684-4269  
City of Tulare

Approved By: *[Signature]* Date: 8/1/2012  
Primavera Parker, Associate Biologist  
(559) 445-5502  
San Joaquin Environmental Management Branch  
California Department of Transportation, District 6

Approved By: *[Signature]* Date: 8/1/2012  
G. William "Trais" Norris III, Branch Chief  
(559) 445-6447  
Sierra Pacific Environmental Management Branch  
California Department of Transportation, District 6



# Summary

---

## S.1 Project Description

The City of Tulare (City), in conjunction with California Department of Transportation (Caltrans), proposes to modify the existing State Route 99 (SR 99)–M Street–Cartmill Avenue interchange located between post miles 31.3 and 32.6 in the City of Tulare. The project would improve safety, provide additional capacity, improve east-west circulation, and improve local access with SR 99 at Cartmill Avenue. Figures 1-1 and 1-2 show the project vicinity and location, respectively.

## S.2 Purpose and Need

The purpose of the project is to:

- Relieve traffic congestion by providing additional capacity for Cartmill Avenue, improving local access to and from SR 99 and Cartmill Avenue, and improving east-west circulation.
- Enhance traffic safety.
- Provide sufficient vertical clearance between the Cartmill Avenue overcrossing and SR 99.

The need for the project involves three topics: relieve traffic congestion, enhance safety, and provide sufficient clearance.

## S.3 Summary of Results and Impacts

Sensitive resources were identified through consultation with Caltrans and the U.S. Fish and Wildlife Service (USFWS); a review of existing information; and field surveys conducted by ICF International (formerly ICF Jones & Stokes) biologists. The following sensitive resource issues were documented or identified as having the potential to occur in or adjacent to the project area (biological study area [BSA]) and therefore could be affected by the project.

### S.3.1 Wetlands and Other Waters

Four seasonal pools, three created detention basins, and two irrigation ditches are located in the BSA. The seasonal pools did not meet the three United States Army Corps of Engineers (USACE) wetland criteria or the definition of waters of the state. The created detention basins were excavated in uplands and do not appear to replace previously existing natural features. Through the preliminary jurisdictional determination process, the USACE will treat the detention basins and irrigation ditches as waters of the U.S. and assume jurisdiction under Section 404 of the Clean Water Act.

### **S.3.1 Sensitive Natural Communities and Native Trees**

Two sensitive natural communities known from the project region were identified during the search of the CNDDDB as having the potential to occur in the BSA: Great Valley valley oak riparian forest and valley sacaton grassland (California Natural Diversity Database 2010a). Neither of these two sensitive natural communities is present in the BSA. The four seasonal pools, two irrigation ditches, and the detention basin located west of SR 99 that has open water and supports cattails represent the only natural communities in the BSA that could potentially be considered sensitive. Two large native trees, a valley oak (*Quercus lobata*) and a cottonwood (*Populus* sp.), occur outside of the project site but within the buffer area along the southernmost irrigation ditch that runs east-west.

### **S.3.2 Sensitive Species**

The following conclusions have been reached regarding sensitive species in the project BSA.

- No sensitive plants are known to occur or have potential to occur in the BSA.
- Low quality denning, foraging, and dispersal habitat for San Joaquin kit fox occurs in the BSA and there is therefore low potential for this species to occur in the BSA. Implementation of standard protection measures for kit fox would ensure that effects on kit fox would be minimized. In addition, compensation would be provided for the loss of foraging habitat from the project.
- It is assumed that vernal pool fairy shrimp is present in the BSA due to inconclusive survey results from two pools that were surveyed. Compensation for impacts on these pools would be provided..
- Ruderal annual grasslands and row crops within the BSA are suitable foraging habitat for Swainson's hawk. Larger oaks and eucalyptus trees are present in the BSA and provide suitable nesting habitat for Swainson's hawks. Implementation of avoidance and minimization measures identified for nesting migratory birds would ensure that, if present, no Swainson's hawk nests would be removed or disturbed by the project.
- Limited nesting habitat for other sensitive birds and non-sensitive migratory birds, including raptors, is present in the BSA. Construction of the project could affect nesting migratory birds, including raptors, if construction were to remove or otherwise disturb occupied nests during the breeding season. Construction activities during the breeding season that result in the death of young or loss of reproductive potential would violate the Migratory Bird Treaty Act (MBTA) and California Department of Fish and Game (CDFG) codes 3503 and 3503.5. Implementation of avoidance and minimization measures identified for nesting migratory birds, including raptors, would ensure that the project would not result in the loss or disturbance of nests, eggs, or young.

### **S.3.3 Invasive Plants**

Invasive plant species were documented in the BSA. The project would temporarily create additional disturbed areas, but it would not increase the area currently subject to repeated disturbance. Measures would be implemented to avoid and minimize the potential introduction and spread of invasive plant species.

## **S.4 Permit Requirements**

The project proponent would obtain and implement the conditions of the following permit:

- Clean Water Act Section 404, Nationwide Permit #14 (Linear Transportation Projects) issued by USACE
- Water Quality Certification (CWA 401) and Wastewater Discharge Requirements issued by the Central Valley Regional Water Quality Control Board (Central Valley RWQCB)

## **S.5 Mitigation Agreements**

As part of the project, the project proponent or its contractor would implement the following avoidance and minimization measures (abbreviated), which are described in Chapter 4. These measures have been identified based on natural resources present or with potential to occur in the BSA and the potential impacts that could result from the project. Compensation to be provided by the project proponent is summarized below as well.

- Avoid and minimize direct effects on seasonal pool SP-2 by implementing erosion control measures.
- Compensate for direct effects on habitat for vernal pool fairy shrimp. Compensation ratios and location of compensation will be determined during consultation with USFWS.
- Avoid and minimize the introduction of new invasive species into the project area and the spread of invasive plant species to uninfested areas.
- Avoid and minimize impacts to burrowing owl by conducting preconstruction surveys for active burrows and implementing the CDFG guidelines for burrowing owl mitigation, if necessary.
- Avoid and minimize impacts to Swainson's hawk and other migratory birds and raptors by removing trees and shrubs during the nonbreeding season or conducting preconstruction nest surveys. Removal of Swainson's hawk's nests will be avoided unless approved by CDFG.
- Mitigate for loss of Swainson's hawk foraging habitat by providing for replacement habitat in accordance with CDFG requirements.
- Avoid and minimize impacts to San Joaquin kit fox by minimizing temporary construction disturbances, conducting preconstruction den searches, establishing and observing exclusion zones around potential dens.

- Compensate for the loss of foraging habitat for San Joaquin kit fox. Compensation ratios and location of compensation will be determined during consultation with USFWS and CDFG.

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## List of Abbreviated Terms

BMPs	best management practices
Cal-IPC	California Invasive Plant Council
Caltrans	California Department of Transportation
CDFA	California Department of Food and Agriculture
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	<i>Code of Federal Regulations [CFR]</i>
City	City of Tulare
CNDDDB	California Natural Diversity Database
CNPS	California Native Plant Society
COZEEP	Construction Zone Enhancement Enforcement Program
CWA	Clean Water Act
DFG	California Department of Fish and Game
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
ICF	ICF International
MBTA	Migratory Bird Treaty Act
ml	milliliters
MOU	Memorandum of Understanding
NEPA	National Environmental Policy Act
NISC	National Invasive Species Council
NMFS	National Marine Fisheries Service
PM	post mile
Porter-Cologne	Porter-Cologne Water Quality Control Act
SBC	Southwestern Bell Corporation
SCE	Southern California Edison
SR 99	State Route 99
Standardized Recommendations	Standardized Recommendations for the Protection of San Joaquin kit fox prior to or During Ground Disturbance
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WDRs	waste discharge charges
WMA	Weed Management Area
USACE	U.S. Army Corps of Engineers

# Chapter 1 Introduction

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## 1.1 Introduction

The City of Tulare (City), in conjunction with California Department of Transportation (Caltrans), proposes to modify the existing State Route 99 (SR 99)–M Street–Cartmill Avenue interchange located between post miles (PM) 31.3 and 32.6 in the city of Tulare. The Cartmill Avenue SR 99 Interchange Improvements Project (project) would improve safety, provide additional capacity, improve east-west circulation, and improve local access with SR 99 at Cartmill Avenue. Figures 1-1 and 1-2 show the project vicinity and location, respectively.

Through the project area, SR 99 is a four-lane freeway with a 42-foot-wide median. Full freeway access between SR 99 and Cartmill Avenue/M Street/Oaks Street is currently provided by a southbound off-ramp to M Street north of Cartmill Avenue; a southbound on-ramp from Cartmill Avenue; a northbound off-ramp to Cartmill Avenue; and both northbound hook on- and off-ramps to Oaks Street north of Cartmill Avenue. Each ramp is a single-lane entrance to, or exit from, the freeway. Stop-sign control is currently provided at the various ramp intersections.

Currently, Cartmill Avenue crosses over SR 99 at a 30-degree skew. This overcrossing is a two-span structure with closed abutments. There is approximately 51 feet of lateral clearance for each direction of travel on SR 99, and approximately 15 feet of vertical clearance on the freeway. The overcrossing is constructed to a width of 38 feet, with a paved width of 28 feet from one face of the curb to the other.

## 1.2 Purpose and Need

### 1.2.1 Purpose

The purpose of the project is to:

- Relieve traffic congestion by providing additional capacity for Cartmill Avenue, improving local access to and from State Route 99 and Cartmill Avenue, and improving east-west circulation.
- Enhance traffic safety.
- Provide sufficient vertical clearance between the Cartmill Avenue overcrossing and State Route 99.

### 1.2.2 Need

The need for the project is divided into three topics: traffic congestion, accident rates, and nonstandard/insufficient clearance.

### **1.2.2.1 Relieve Traffic Congestion**

The primary need for the project is generated by existing traffic congestion along Cartmill Avenue at the Cartmill Avenue/State Route 99 northbound off-ramp intersection and at the Cartmill Avenue/M Street/State Route 99 southbound off-ramp intersection. Congestion at these points also affects east–west circulation in the northern area of the city of Tulare.

### **1.2.2.2 Enhance Safety**

Based on 3-year accident data (April 1, 2007 to March 31, 2010), the State Route 99 northbound off-ramp to Cartmill Avenue and the State Route 99 southbound off-ramp to M Street currently experience actual accident rates that are higher than the corresponding average accident rates for similar facilities. The State Route 99 northbound off-ramp to Cartmill Avenue experienced seven accidents during this 3-year period. The collision types included two broadsides, two sideswipes, one overturn, one hit object and one rear end. Five of the accidents occurred within the ramp area/intersection street while two accidents occurred on the ramp. The State Route 99 southbound off-ramp to M Street experienced five accidents during this three-year period with four accidents involving a hit object and one overturn accident. One of the hit object accidents also involved a fatality.

### **1.2.2.3 Provide Sufficient Clearance**

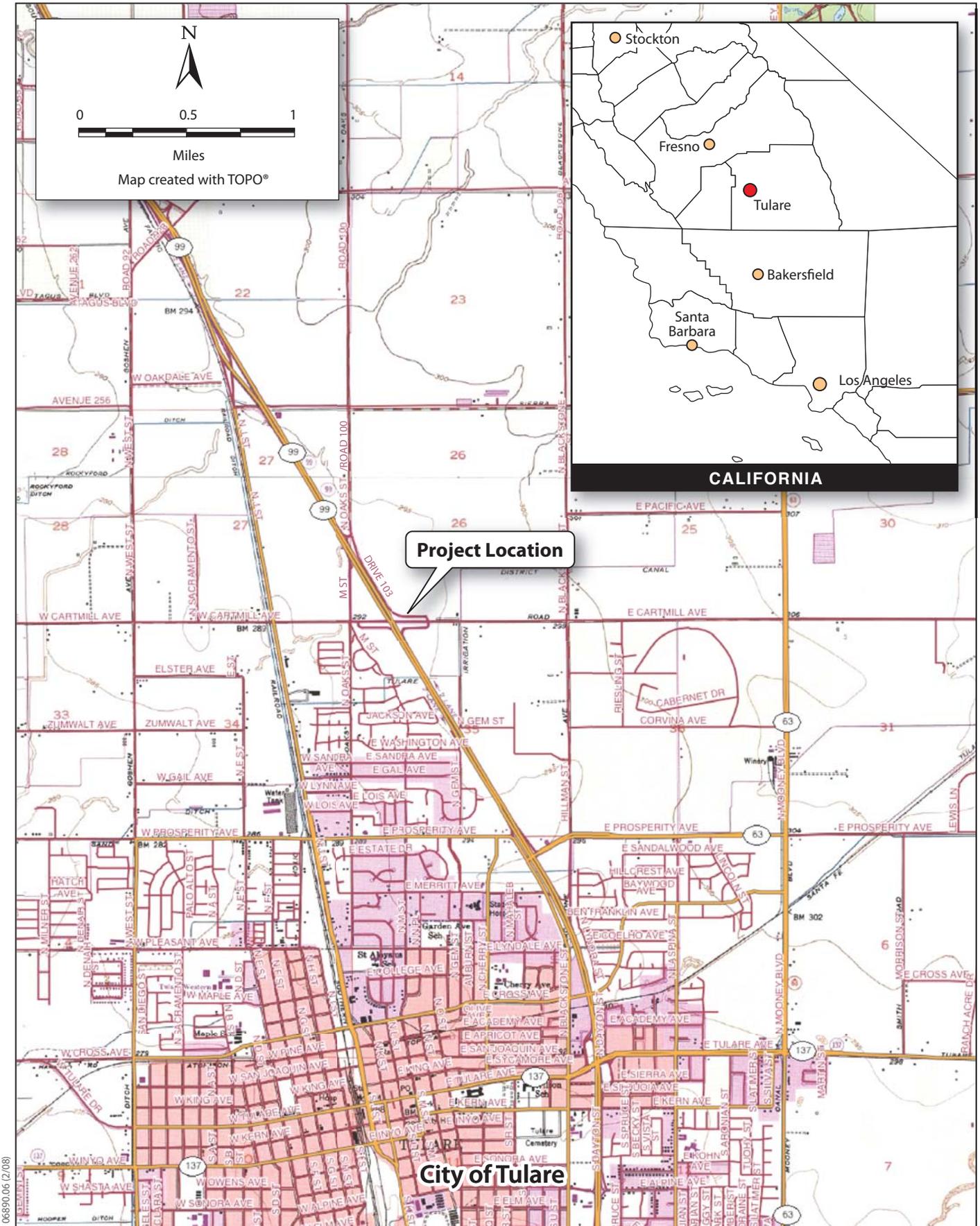
Currently, the existing width (or horizontal clearance) of the Cartmill Avenue structure over State Route 99 (overcrossing) would not accommodate future widening of State Route 99 to the ultimate transportation corridor dimensions for the highway (8-lane freeway, approximately 160 feet wide through the Cartmill Avenue overcrossing). The proposed project would include the replacement of the existing Cartmill Avenue overcrossing with a new structure that meets current design standards and would allow for future widening of State Route 99.

## **1.3 Alternatives**

A multidisciplinary team developed various design alternatives to achieve the project purpose and need while avoiding or minimizing environmental impacts. Two build alternatives (Alternative 1 and Alternative 2), and a No-Build Alternative are being considered.

### **1.3.1 Build Alternatives**

This section describes the two proposed build alternatives (Alternative 1 and Alternative 2), the common design features of these alternatives, and the features that are unique to each. No alternatives are proposed at a location other than the interchange because location alternatives would not be feasible and would not meet the purpose and need of the project. The project would be constructed in a single phase as described below.



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Figure 1-1  
Project Location



Alternative 1 would include the construction of a new Cartmill Avenue overcrossing structure, hook on-ramps to north- and southbound State Route 99, and the realignment of Akers Street (Road 100) and Drive 103. Alternative 2 would include the construction of a new Cartmill Avenue overcrossing structure, a hook on-ramp to northbound State Route 99, a new intersection at the on- and off-ramps to southbound State Route 99 and Cartmill Avenue, and the realignment of Akers Street (Road 100) and Drive 103.

### **1.3.1.1 Common Design Features of the Build Alternatives**

The proposed improvements for Alternatives 1 and 2 are shown in Figures 1-3 and 1-4. The project features common to both build alternatives are listed below.

- Remove on the existing northbound State Route 99 hook off- and on-ramps at Road 100/Drive 103.
- Construct two lanes on new alignment for Akers Street (Road 100) east of the existing Drive 103 frontage road between Cartmill Avenue and just north of the existing northbound State Route 99 hook on- and off-ramps at Road 100/Drive 103. (Road 100 would be extended to the south to intersect with Cartmill Avenue, and the new road is referred to as Akers Street.)
- Remove the existing frontage road between Cartmill Avenue and the northbound State Route 99 hook ramps (Drive 103).
- Widen Cartmill Avenue from two lanes to a six-lane divided arterial from M Street to Akers Street.
- Transition Cartmill Avenue from M Street west and from Akers Street east to match existing Cartmill Avenue roadway sections.
- Transition M Street from Cartmill Avenue south to match existing roadway sections.
- Construct a new Cartmill Avenue overcrossing structure over State Route 99.
- Remove the existing Cartmill Avenue overcrossing structure over State Route 99.
- Remove the existing northbound State Route 99 off-ramp to Cartmill Avenue.
- Construct a new northbound State Route 99 off-ramp to Cartmill Avenue with a two-lane exit from State Route 99 and a 1,300-foot-long auxiliary lane.
- Construct a new loop on-ramp and direct connecting on-ramp from Cartmill Avenue to northbound State Route 99.
- Provide a traffic census/data collection loop on each ramp lane at the gore.

### **1.3.1.2 Unique Features of the Build Alternatives**

The proposed improvements for Alternatives 1 and 2 are shown in Figures 1-3 and 1-4. In addition to the common project features already noted, the two alternatives vary as described below.

### **Alternative 1**

- Modify the existing direct-connecting on-ramp from Cartmill Avenue to southbound State Route 99.
- Construct a new loop on-ramp from westbound Cartmill Avenue to southbound State Route 99.
- Modify the existing southbound State Route 99 off-ramp to M Street to the intersection with Cartmill Avenue.
- Construct six new retention basins (Basins A, B, C, D, E, and F in Figure 1-3) to accommodate and direct storm water runoff from the proposed interchange.
- Capitol cost estimated at \$37.0 million.

### **Alternative 2**

- Construct a new direct-connecting on-ramp from Cartmill Avenue to southbound State Route 99 with a single-lane entrance to State Route 99 and a 1,000-foot auxiliary lane.
- Construct a retaining wall adjacent to the direct-connecting on-ramp from Cartmill Avenue to southbound State Route 99 and adjacent to the existing church property.
- Relocate the southbound State Route 99 off-ramp to M Street to a new connection with Cartmill Avenue east of M Street.
- Construct seven new retention basins (Basins C, D, E, F, G, H, and I in Figure 1-4) to accommodate and direct storm water runoff from the proposed interchange.
- Capitol cost estimated at \$33.3 million.

### **1.3.2 No-Build Alternative**

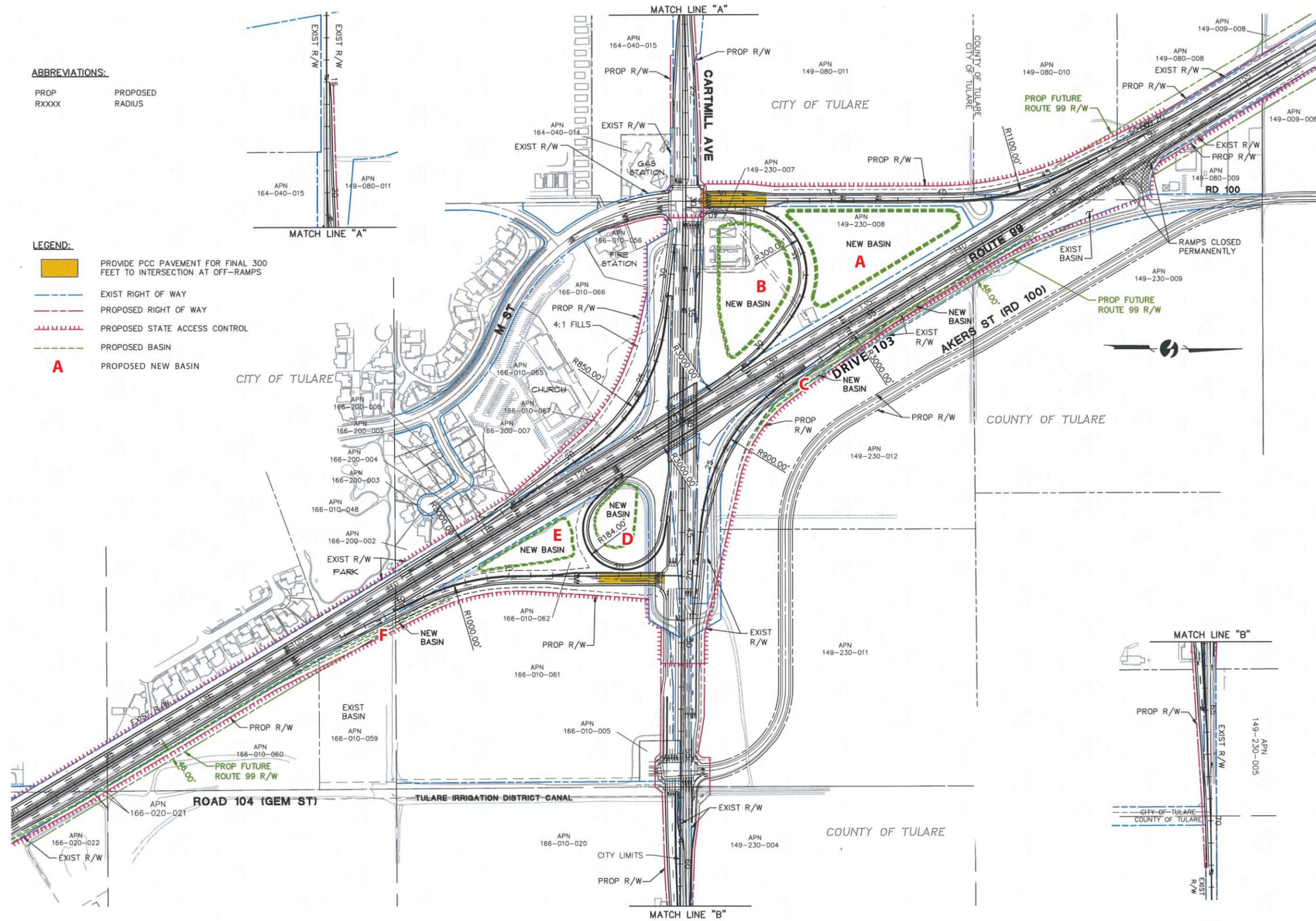
The No-Build Alternative would maintain the existing intersection structure configuration and nonstandard vertical clearance. The existing p.m. peak-hour level of service grade of *F* at the Cartmill Avenue/SR 99 northbound off-ramp intersection and the level of service grade of *E* at the Cartmill Avenue/M Street intersection would continue and worsen as planned development occurred.

**ABBREVIATIONS:**

PROP RXXXX PROPOSED RADIUS

**LEGEND:**

-  PROVIDE PCC PAVEMENT FOR FINAL 300 FEET TO INTERSECTION AT OFF-RAMPS
-  EXIST RIGHT OF WAY
-  PROPOSED RIGHT OF WAY
-  PROPOSED STATE ACCESS CONTROL
-  PROPOSED BASIN
-  PROPOSED NEW BASIN



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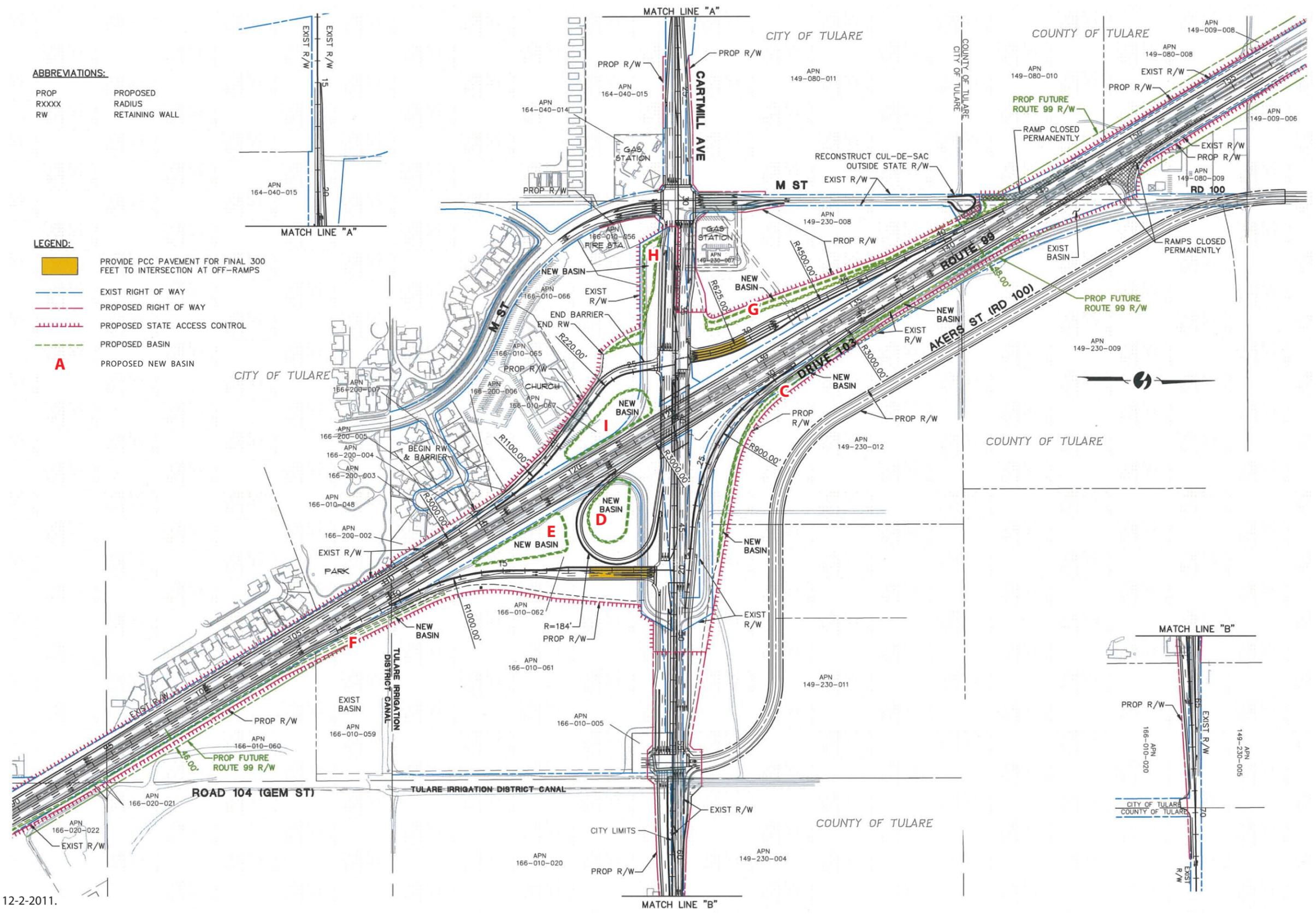
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**Figure 1-2  
Alternative 1**

**ABBREVIATIONS:**  
 PROP PROPOSED  
 RXXXX RADIUS  
 RW RETAINING WALL

**LEGEND:**

- PROVIDE PCC PAVEMENT FOR FINAL 300 FEET TO INTERSECTION AT OFF-RAMPS
- EXIST RIGHT OF WAY
- PROPOSED RIGHT OF WAY
- PROPOSED STATE ACCESS CONTROL
- PROPOSED BASIN
- PROPOSED NEW BASIN



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Source: Omni-Means, 12-2-2011.

**Figure 1-3  
Alternative 2**

# Chapter 2 Study Methods

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This section describes the regulatory requirements that are relevant to biological resources and the methods used to determine the potential for special-status species or their habitats to be present within or near the study area (defined in Chapter 3).

## 2.1 Regulatory Requirements

### 2.1.1 Federal Endangered Species Act

The federal Endangered Species Act (ESA) of 1973, and subsequent amendments, provides regulation for the conservation of endangered and threatened species and the ecosystems on which they depend. The U.S. Fish and Wildlife Service (USFWS) (with jurisdiction over plants, wildlife, and resident fish) and the National Marine Fisheries Service (NMFS) (with jurisdiction over anadromous fish and marine fish and mammals) oversee the ESA.

Section 9 of the ESA prohibits the take of any fish or wildlife species listed as endangered, including the destruction of habitat that prevents the species' recovery. *Take* is defined as an action or attempt to hunt, harm, harass, pursue, shoot, wound, capture, kill, trap, or collect a species. Section 9 prohibitions also apply to threatened species unless a special rule has been defined with regard to take at the time of listing.

Under Section 9 of the ESA, the take prohibition applies only to wildlife and fish species. However, Section 9 does prohibit the unlawful removal and reduction to possession, or malicious damage or destruction, of any endangered plant from federal land. Section 9 prohibits acts to remove, cut, dig up, damage, or destroy an endangered plant species in nonfederal areas in knowing violation of any state law or in the course of criminal trespass. Candidate species and species that are proposed or under petition for listing receive no protection under Section 9.

In cases where a nonfederal entity is undertaking an action that does not require federal authorization, the take of listed species must be permitted by USFWS through the Section 10 process. If the proposed project would result in the incidental take of a listed species, the applicant must first obtain a Section 10(a)(1)(B) incidental take permit (ITP). Incidental take under Section 10 is defined as take of federally listed fish and wildlife species "that is incidental to, but not the purposes of, otherwise lawful activities". To receive an ITP, the nonfederal entity is required to prepare a Habitat Conservation Plan (HCP). The HCP must include conservation measures that avoid, minimize, and mitigate the project's impact on listed species and their habitat. Listed species with potential to occur in the project area include vernal pool fairy shrimp (*Branchinecta lynchi*), a federally listed threatened species; vernal pool tadpole shrimp (*Lepidurus packardii*), a federally listed endangered species; and San Joaquin kit fox (*Vulpes macrotis mutica*), a state listed endangered and federally listed threatened species. These species are discussed in Chapter 4. No suitable habitat for resident or anadromous fish is present in the project area.

### 2.1.2 Clean Water Act

The federal CWA was enacted as an amendment to the federal Water Pollution Control Act of 1972, which outlined the basic structure for regulating discharges of pollutants to waters of the United States. The CWA serves as the primary federal law protecting the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands.

The CWA empowers the U.S. Environmental Protection Agency (EPA) to set national water quality standards and effluent limitations and includes programs addressing both point-source and nonpoint-source pollution. *Point-source pollution* is pollution that originates or enters surface waters at a single, discrete location, such as an outfall structure or an excavation or construction site. *Nonpoint-source pollution* originates over a broader area and includes urban contaminants in stormwater runoff and sediment loading from upstream areas. The CWA operates on the principle that all discharges into the nation's waters are unlawful unless specifically authorized by a permit; permit review is the CWA's primary regulatory tool. The following sections provide additional details on specific sections of the CWA.

#### ***Permits for Fill Placement in Waters and Wetlands (Section 404)***

CWA Section 404 regulates the discharge of dredged and fill materials into waters of the United States. Waters of the United States refers to oceans, bays, rivers, streams, lakes, ponds, and wetlands, including any or all of the following:

- areas within the ordinary high water mark (OHWM) of a stream, including nonperennial streams with a defined bed and bank and any stream channel that conveys natural runoff, even if it has been realigned; and
- seasonal and perennial wetlands, including coastal wetlands

On January 9, 2001, the U.S. Supreme Court made a decision in *Solid Waste Agency of Northern Cook County v. United States Army Corps of Engineers* (SWANCC) [121 S.Ct. 675, 2001] that affected the USACE's jurisdiction in isolated waters. Based on SWANCC, the USACE no longer has jurisdiction or regulates isolated wetlands (i.e., wetlands that have no hydrologic connection with a water of the United States).

More recently, a federal ruling on two consolidated cases (June 19, 2006; *Rapanos v. United States* and *Carabell v. U.S. Army Corps of Engineers*), referred to as the *Rapanos decision*, affects whether some waters or wetlands are considered jurisdictional under the CWA. In these cases, the U.S. Supreme Court reviewed the USACE definition of *waters of the United States* and whether or not it extended out to tributaries of traditional navigable waters (TNWs) or wetlands adjacent to those tributaries. The decision provided two standards for determining jurisdiction of water bodies that are not TNWs:

1. if the non-TNW is a relatively permanent water (RPW) or is a wetland directly connected to a RPW, or
2. if the water body has "significant nexus" to a TNW. The significant nexus definition is based on the purpose of the CWA ("restore and maintain the chemical, physical, and biological integrity of the Nation's waters").

Guidance issued by EPA and USACE on the Rapanos decision requires application of these two standards and use of substantially more documentation to support a jurisdictional determination for a water body.

Applicants must obtain a permit from the USACE for all discharges of dredged or fill material into waters of the United States, including adjacent wetlands, before proceeding with a proposed activity. The USACE may issue either an individual permit evaluated on a case-by-case basis or a general permit evaluated at a program level for a series of related activities. General permits are preauthorized and are issued to cover multiple instances of similar activities expected to cause only minimal adverse environmental effects. The nationwide permits (NWP) are a type of general permit issued to cover particular fill activities. Each NWP specifies particular conditions that must be met for the NWP to apply to a particular project. Compliance with CWA Section 404 requires compliance with several other environmental laws and regulations. The USACE cannot issue an individual permit or verify the use of a general permit until the requirements of the National Environmental Policy Act (NEPA), the ESA, and the National Historic Preservation Act have been met. In addition, the USACE cannot issue or verify any permit until a water quality certification or a waiver of certification has been issued pursuant to CWA Section 401.

The project proponent will apply for a Section 404 NWP #14 (Linear Transportation Projects), which authorizes the “construction, expansion, modification, or improvement of linear transportation projects.... and the temporary structures, fills, and work necessary to construct the linear transportation projects.”

### ***Permits for Stormwater Discharge (Section 402)***

CWA Section 402 regulates construction-related stormwater discharges to surface waters through the NPDES program, administered by EPA. In California, the State Water Resources Control Board is authorized by EPA to oversee the NPDES program through the RWQCBs (see the related discussion under “Porter-Cologne Water Quality Control Act” below). The study area is under the jurisdiction of the Central Valley RWQCB.

NPDES permits are required for projects that disturb more than 1 acre of land. The NPDES permitting process requires the applicant to file a public notice of intent (NOI) to discharge stormwater and to prepare and implement a stormwater pollution prevention plan (SWPPP). The SWPPP includes a site map and a description of proposed construction activities. In addition, it describes the best management practices (BMPs) that would be implemented to prevent soil erosion and discharge of other construction-related pollutants (e.g., petroleum products, solvents, paints, cement) that could contaminate nearby water resources. Permittees are required to conduct annual monitoring and reporting to ensure that BMPs are correctly implemented and effective in controlling the discharge of stormwater-related pollutants.

### ***Water Quality Certification (Section 401)***

Under CWA Section 401, applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the United States must obtain certification from the state in which the discharge would originate or, if appropriate, from the interstate water pollution control agency with jurisdiction over affected waters at the point where the discharge

would originate. Therefore, all projects that have a federal component and may affect state water quality (including projects that require federal agency approval, such as issuance of a Section 404 permit) must also comply with CWA Section 401.

For each of the above sections of the CWA, the City of Tulare would obtain and comply with the applicable federal and state permits, and all conditions that are attached to those permits would be implemented as part of the proposed project. The permit conditions would be clearly identified in the construction plans and specifications and monitored during and after construction to ensure compliance. A Section 401 Water Quality Certification from the Central Valley RWQCB would be required for the irrigation ditches and detention basins in the study area.

### **2.1.3 Executive Order 13112**

Executive Order (EO) 13112, signed February 3, 1999, directs all federal agencies to prevent and control the introduction of invasive species in a cost-effective and environmentally sound manner. The EO established the National Invasive Species Council (NISC), which is composed of federal agencies and departments, and a supporting Invasive Species Advisory Committee composed of state, local, and private entities. In 2008, the NISC released an updated national invasive species management plan that recommends objectives and measures to implement the EO and prevent the introduction and spread of invasive species (National Invasive Species Council 2008). The EO requires consideration of invasive species in National Environmental Policy Act (NEPA) analyses, including their identification and distribution, their potential impacts, and measures to prevent or eradicate them.

### **2.1.4 Migratory Bird Treaty Act**

The Migratory Bird Treaty Act (MBTA) protects migratory bird species from take. Under the MBTA, *take* is defined as to (or attempt to) pursue, hunt, shoot, capture, collect, or kill (*50 Code of Federal Regulations [CFR] 10.12*). The definition differentiates between “intentional” take (take that is the purpose of the activity in question) and “unintentional” take (take that results from, but is not the purpose of, the activity in question).

EO 13186 (signed January 10, 2001) directs each federal agency taking actions that would have, or would likely have, a negative impact on migratory bird populations to work with USFWS to develop a memorandum of understanding (MOU) to promote the conservation of migratory bird populations. Protocols developed under the MOU must include the following agency responsibilities.

- Avoid and minimize, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions.
- Restore and enhance habitat of migratory birds, as practicable.
- Prevent or abate the pollution or detrimental alteration of the environment for the benefit of migratory birds, as practicable.

The EO is designed to assist federal agencies in their efforts to comply with the MBTA; it does not constitute any legal authorization to take migratory birds. The discussion of nesting migratory birds in Chapter 4 describes potential project impacts on migratory birds and mitigation measures to avoid impacts on those species.

### **2.1.5 California Endangered Species Act**

The California Endangered Species Act (CESA) (California Fish and Game Code Section 2050 et seq.) establishes state policy to conserve, protect, restore, and enhance threatened or endangered species and their habitats. CESA mandates that state agencies should not approve projects that jeopardize the continued existence of threatened or endangered species if reasonable and prudent alternatives are available that would avoid jeopardy. For projects that would affect a species on the federal and state lists, compliance with ESA satisfies CESA if the California Department of Fish and Game (DFG) determines that the federal incidental take authorization is consistent with CESA under California Fish and Game Code Section 2080.1. For projects that would result in take of a species that is only state listed, the project proponent must apply for a take permit under Section 2081(b). Two state-listed species, San Joaquin kit fox and Swainson's hawk (*Buteo swainsoni*), have the potential to occur in the project area. Avoidance and minimization measures described in Chapter 4 would avoid potential impacts on these species.

### **2.1.6 California Fully Protected Species**

The California Fish and Game Code provides protection from take for a variety of species, referred to as *fully protected species*. Section 5050 lists fully protected amphibians and reptiles; Section 3515 lists fully protected fish; Section 3511 lists protected birds; and Section 4700 lists protected mammals. The California Fish and Game Code defines *take* as “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” Except for take related to scientific research, all take of fully protected species is prohibited. One fully protected species, white-tailed kite (*Elanus leucurus*), has potential to occur in the project area.

### **2.1.7 California Fish and Game Code Sections 3503 and 3503.5**

Under these sections of the California Fish and Game Code, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird or to take, possess, or destroy any birds of prey or their nests or eggs. Birds of prey and other migratory bird nests were observed in the project area.

### **2.1.8 Porter-Cologne Water Quality Control Act**

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act) authorizes the State Water Resources Control Board to regulate state water quality and protect beneficial uses. Under the Porter-Cologne Act definition, waters of the state are “any surface water or groundwater, including saline waters, within the boundaries of the state.” Although all waters of the United

States that are within the borders of California are also waters of the state, the reverse is not true. If the U.S. Army Corps of Engineers (USACE) determines that a wetland is not subject to regulation under Section 404, CWA Section 401 water quality certification is not required. However, the regional water quality control board may impose waste discharge requirements if fill material is placed into waters of the state. The irrigation ditches and detention basins in the project area meet the definitions of waters of the state.

## 2.2 Studies Required

Potential biological resource issues associated with the project were identified through review of existing information and field surveys. It was determined that the studies below would be required to document natural resources in the study area.

- General habitat evaluation to determine whether suitable habitat exists for sensitive plant and animal species.
- Protocol level surveys for federally listed vernal pool branchiopods.
- Botanical field survey to identify plant communities, occurrences of sensitive plant species, and noxious weed infestations.
- Delineation of wetlands and waters of the United States.

The following methods were used to identify natural resources in the project area: a prefield investigation, field surveys, and coordination with the resource agencies. Each element is described below.

### 2.2.1 Prefield Investigation

To prepare for the field surveys, biologists reviewed existing resource information related to the project to evaluate whether sensitive species or other sensitive biological resources (e.g., waters of the United States) could occur in the project area. As this document was prepared and revised, updated versions of the resources were obtained, reviewed, and incorporated. The sources listed below were reviewed.

- California Native Plant Society's (CNPS's) online Inventory of Rare and Endangered Plants of California (2010).
- California Natural Diversity Database (CNDDB) records search of the Tulare, Paige, Goshen, Visalia, Cairns Corner, Exeter, Taylor Weir, Tipton, and Woodville U.S. Geological Survey (USGS) 7.5-minute quadrangles (California Natural Diversity Database 2012a) (Appendix A).
- A list of endangered and threatened species that may occur in or be affected by projects within the Tulare, Paige, Goshen, and Visalia USGS 7.5-minute quadrangles (U.S. Fish and Wildlife Service 2012) (Appendix B).

- California list of noxious weed species (California Department of Food and Agriculture 2010) and invasive plant inventory (California Invasive Plant Council 2006).
- The online soil survey data available for the western part of Tulare County, California (Natural Resources Conservation Service 2008).

This information was used to develop lists of sensitive species and other sensitive biological resources that could be present in the project region. Species from the lists were considered if they were known to occur in the project region (i.e., within a 10-mile radius of the project area) or if suitable habitat for the species was known to be present in the project area.

## 2.3 Personnel and Survey Dates

Biological surveys were conducted in 2007, 2008 and 2009 in the project area and/or study area (defined in Chapter 3) by ICF International (ICF) (formerly ICF Jones & Stokes) biologists. Additionally, a portion of the study area was driven by on July 5, 2012 to confirm that a portion of the study area had been modified by another project. Methods for documenting wetlands and other waters of the United States and conducting botanical and wildlife surveys are described below.

### 2.3.1 Waters of the United States

ICF botanist/wetland ecologists Joy Nishida and Jessica Hughes conducted a delineation of wetlands and other waters within the project area on August 7, 2007 to identify features within the project area that are potentially subject to state (Porter-Cologne) and/or the federal (Clean Water Act [CWA]) regulation. The fieldwork for the 2007 delineation was conducted in accordance with the routine onsite determination method described in the *1987 U.S. Army Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987:42–95) and implementing the supplemental procedures and wetland indicators described in the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual for the Arid West Region* (U.S. Army Corps of Engineers 2006:12–76).

On March 17 and March 24, 2009, Ms. Hughes conducted a supplemental delineation for areas that were incorporated into the project area as the result of revisions to the project boundary. The field work for the 2009 delineation was conducted in accordance with the routine onsite determination method described in the *1987 U.S. Army Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987:42–95) and implementing the supplemental procedures and wetland indicators described in the recently finalized *Regional Supplement to the Corps of Engineers Wetland Delineation Manual for the Arid West Region* (U.S. Army Corps of Engineers 2008:13–84).

### **2.3.2 Botanical Resources**

Ms. Nishida conducted a botanical survey for spring-blooming sensitive plants on May 4, 2007. Ms. Nishida and Ms. Hughes conducted a second botanical survey for summer-blooming sensitive plants known to occur in the project region on August 7, 2007. A list of plant species observed in the project area is included as Appendix C. Natural communities in the study area were also identified and mapped during the field surveys. The results of these surveys are presented in Chapters 3 and 4.

### **2.3.3 Wildlife Resources**

ICF Jones & Stokes wildlife biologist Jennifer Haire conducted a habitat-based field assessment for wildlife in the study area on May 4, 2007. Ms. Haire and ICF wildlife biologist Erin Hitchcock revisited the study area on June 11, 2008 to survey the Akers Street portion of the project area and to look for burrows throughout the project area. During habitat-based field assessments, biologists took notes on the general topography of the study area, vegetation present, and amount of human activity/disturbance at the site and recorded wildlife (or wildlife signs) observed during the visit. On March 17, 2009, Ms. Hitchcock conducted a habitat assessment survey at the western extent of the project area where the project boundary had been extended. A list of wildlife species observed in the study area is provided in Appendix D.

Wet season protocol surveys for listed vernal pool branchiopods were conducted at two seasonal pools by Ms. Haire under permit TE-795934. Monitoring of the two seasonal pools to determine when they began to hold water commenced on November 15, 2007. By December 19, 2007, both pools were inundated and surveys began at this time. The two pools were surveyed every 2 weeks over the course of the wet season. Both pools were dry by March 26, 2008, and surveys were terminated at this time because no additional rain fell. Ms. Haire and Ms. Hitchcock collected soil samples from the two seasonal pools on June 11, 2008. Soil samples were processed and analyzed by ECORP Consulting Inc.

On July 5, 2012, Ms. Haire drove by the western extent of the study area to confirm that this portion of the study area had been modified by another project and determine if conditions had changed for one of the seasonal pools (SP-4) in the study area.

## **2.4 Agency Coordination and Professional Contacts**

During preparation of this document, ICF coordinated with the following federal and state agencies.

## **2.4.1 Federal**

### **2.4.1.1 U.S. Fish and Wildlife Service**

November 2, 2007: ICF submitted a request to USFWS to conduct wet-season sampling of two seasonal pools in the project area. Email authorization to conduct wet-season sampling was granted by Rocky Montgomery of the Sacramento USFWS office on November 7, 2007.

May 27, 2008: ICF submitted a request to Rocky Montgomery at USFWS to conduct dry-season sampling of these two seasonal pools in the project area. Email authorization to conduct dry-season sampling was granted by Mr. Montgomery of the Sacramento USFWS office on May 29, 2008.

July 18, 2008: ICF submitted a 90-day report containing the results of wet season surveys to Rocky Montgomery at USFWS.

July 21, 2008: ICF submitted a request to Rocky Montgomery at USFWS to transfer soil to Pete Balfour for processing and cyst analysis. Authorization to transfer soil was granted by Mr. Montgomery on July 22, 2008.

August 7, 2008: ICF received a letter from Peter Cross of USFWS in response to the 90-day wet season report expressing their concern about the one immature fairy shrimp that was observed in pool 2 and encouraging ICF to make further efforts to confirm the species of Branchinecta that this individual represented. The letter stated that if the species could not be confirmed, they would likely assume it to be the federally-listed species.

September 24, 2009: ICF submitted a 90-day report containing the results of dry season surveys to Mary Ann Owens, the new contact for the project at USFWS.

March 8, 2011 through June 27, 2011: ICF coordinated with Mike Thomas of the Sacramento USFWS office regarding preparation of an HCP for the proposed project.

December 12, 2011: ICF sent an email to Mr. Thomas regarding who the HCP should be sent to at the USFWS. Mr. Thomas replied the same day to send it to him.

March 2, 2012: A Low-Effect HCP was submitted to Mr. Thomas at the USFWS.

May 2, 2012: ICF was copied on an email indicating that Nina Bicknese at the USFWS had been assigned the Cartmill Avenue Low-Effect HCP.

May 14, 2012: Phone conversation between ICF and Ms. Bicknese regarding the contents of the Low-Effect HCP.

May 24, 2012: Ms. Bicknese asked for clarification on and sent questions about the Low-Effect HCP in electronic emails to ICF.

May 29, 2012 through June 6, 2012: Telephone conversations between ICF and Ms. Bicknese about her comments on the Low-Effect HCP.

May 30, 2012: Ms. Bicknese sent her comments in an electronic file to ICF via email.

July 11, 2012: ICF submitted a revised Low Effect HCP to Ms. Bicknese.

July 12, 2012: Ms. Bicknese sent an email to ICF that summarized the steps to be taken after a finalized Low Effect HCP is accepted and requesting additional biological justification for the proposed mitigation ratios for San Joaquin kit fox habitat. ICF replied to this email on July 13, 2012, and provided biological justification for the proposed mitigation ratios on July 16, 2012.

July 16, 2012: Ms. Bicknese sent additional comments on the revised Low Effect HCP.

#### **2.4.1.2 U.S. Army Corps of Engineers**

May 17, 2012: ICF submitted a Wetland Delineation to the USACE.

June 11, 2012: Erin Hanlon of the USACE, called ICF saying she had received the Wetland Delineation and had not yet reviewed it.

June 14, 2012: ICF received an e-mail from Ms. Hanlon indicating that the irrigation channels drain to the Tulare Lake Bed and requesting acreages for those features and changes to the map.

June 14, 2012: ICF project manager, permitting staff and botanist discussed the connection to the Tulare Lake Bed with Ms. Hanlon and got clarification on necessary changes to maps.

June 20, 2012: ICF provided the USACE with a revised map.

#### **2.4.2 State**

##### **2.4.2.1 California Department of Transportation**

Jennifer Haire (ICF wildlife biologist) and Claire Bromund (ICF project manager) met Primavera Parker and Zachary Parker onsite on September 10, 2008 to determine the potential for fairy shrimp to occur in the portion of the project area located east of SR 99 and north of Cartmill Avenue (Akers Street portion of the project area) and to determine the need for San Joaquin kit fox surveys.

## 2.5 Limitations That May Influence Results

The timing of the May 4 and August 7, 2007 botanical surveys coincided with the known blooming period for all of the 14 sensitive plant species known to occur in the project region except San Joaquin adobe sunburst (*Pseudobahia peirsonii*) (California Native Plant Society 2010; California Natural Diversity Database 2010; U.S. Fish and Wildlife Service 2010). San Joaquin adobe sunburst blooms from March through April, occurs in annual grassland and cismontane woodland, and has specific microhabitat requirements (i.e., adobe clay soils) (California Native Plant Society 2010). No cismontane woodland occurs in the project area, and no adobe clay soils have been documented in soil surveys of the project area (Natural Resources Conservation Service 2008). Although this species was documented in the project vicinity, the data is based on an 1897 collection that, based on soil conditions and historic date of collection and the actual occurrence location, may actually be further east near Porterville (California Natural Diversity Database 2012a). The annual grassland in the project area has been substantially disturbed by human activities and is dominated by non-native, ruderal species. Additionally, the elevation of the project area is slightly outside of the documented elevation range for San Joaquin adobe sunburst. Therefore, the botanists concluded that the project area does not contain suitable habitat for San Joaquin adobe sunburst.



# Chapter 3 Results: Environmental Setting

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## 3.1 Description of the Existing Biological and Physical Conditions

### 3.1.1 Biological Study Area

The BSA consists of the project area and a 250-foot-wide buffer area (Figure 3-1). The *project area* includes the area adjacent to the SR 99–Cartmill Avenue interchange where modifications and/or replacement of existing interchange components would occur. The *buffer area* includes the area adjacent to the project area (within 250 feet) where potential impacts to special-status species and other biological resources could also occur.

### 3.1.2 Physical Conditions

The BSA is located in the San Joaquin Valley geographic subdivision of the Great Central Valley (Hickman 1993). The topography of the BSA is typical of an alluvial fan. Elevations in the BSA range from approximately 285 to 290 feet. The BSA is surrounded on three sides by agricultural lands (i.e., row crops, fallow fields, orchards). The lands southwest of the interchange have been substantially more developed, and additional development is proposed in the area located northeast of the interchange.

### 3.1.3 Biological Conditions in the Biological Study Area

The natural communities in the BSA have been substantially altered as a result of long-term human activity (i.e., agricultural practices and development associated with the interchange). Five distinct communities were identified and mapped in the BSA: ruderal annual grassland, agricultural land, irrigation ditches, seasonal pools, created detention basins, and developed areas (Figure 3-1). The total area of each community type that occurs within the BSA is listed in Table 3-1.

**Table 3-1. Approximate Total Area (Acres) of Community Types in the Biological Study Area**

Community Type	Area
Ruderal annual grassland	45.47
Agricultural land	152.11
Irrigation ditches	0.72
Seasonal pools	0.95
Created detention basins	5.51
Developed land	36.02
<b>Total</b>	<b>240.78</b>

The BSA supports both common natural communities and natural communities of special concern. *Common natural communities*, which have little diversity of species, are habitats that are widespread, able to reestablish naturally after disturbance, or capable of supporting primarily non-native species. Compensation for the loss of these communities is generally not required by agencies unless the specific site is habitat for or supports sensitive species (e.g., raptor foraging or nesting habitat or upland habitat in a wetland watershed). One common natural community, ruderal annual grassland, occurs in the BSA. The agricultural lands and developed/paved areas are not natural communities.

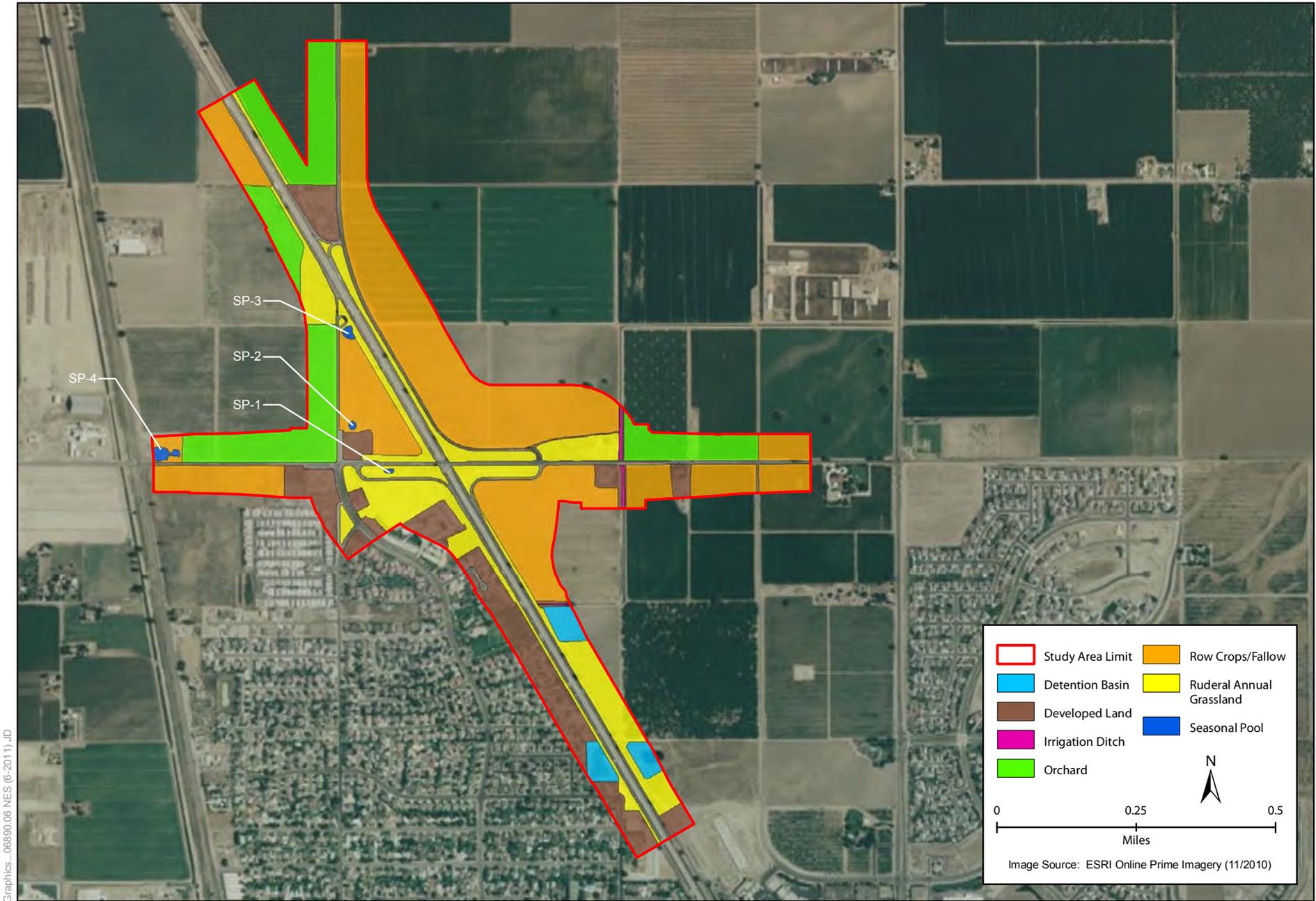
*Natural communities of special concern* are habitats considered sensitive because of their high level of species diversity, high productivity, unusual nature, limited distribution, or declining status. Local, state, and federal agencies consider these habitats important. The CNDDDB maintains a current list of rare natural communities throughout the state. USFWS considers certain habitats (such as wetlands) important to wildlife, and USACE and U.S. Environmental Protection Agency (EPA) consider wetland habitats important for water quality and wildlife. The state protects wetlands under the Porter-Cologne Act. Within the BSA, the seasonal pools, irrigation ditches, and created detention basin located on the west side of SR 99 that contains cattails are potential natural communities of special concern.

The locations, dominant plant species, and typical wildlife species of each natural community area within the BSA are described below. Lists of all plant and wildlife species observed during the field surveys are included in Appendices C and D, respectively.

### 3.1.3.1 Ruderal Annual Grassland

Ruderal annual grassland within the BSA occurs primarily along SR 99 and Cartmill Avenue. The ruderal annual grassland varies from sparsely vegetated to densely vegetated with non-native annual grasses and ruderal forbs. Plant species commonly observed in ruderal annual grassland were ripgut brome (*Bromus diandrus*), wild oats (*Avena fatua*), Italian ryegrass (*Lolium multiflorum*), horseweed (*Conyza* sp.), and jointed charlock (*Raphanus raphanistrum*).

Annual grasslands are used by many wildlife species for foraging and breeding. Grasslands support numerous small mammals, including California meadow vole (*Microtus californicus*), deer mice (*Peromyscus maniculatus*), western harvest mouse (*Reithrodontomys megalotis*), Botta's pocket gopher (*Thomomys bottae*), brush rabbits (*Sylvilagus bachmani*), and black-tailed jackrabbits (*Lepus californicus*). Additionally, grasslands provide suitable foraging habitat for coyotes (*Canis latrans*), gopher snakes (*Pituophis melanoleucus*), burrowing owls (*Athene cunicularia*), red-tailed hawks (*Buteo jamaicensis*), red-shouldered hawks (*Buteo lineatus*), American kestrels (*Falco sparverius*), barn owls (*Tyto alba*), great-horned owl (*Bubo virginianus*), and northern harriers (*Circus cyaneus*); these species are known to prey on the above-listed small mammals. Other species associated with grassland habitats include seed-eating and insectivorous species, including western kingbirds (*Tyrannus verticalis*), savannah sparrows (*Passerculus sandwichensis*), western bluebirds (*Sialia mexicana*), western meadowlarks (*Sturnella neglecta*), and pallid bat (*Antrozous pallidus*). The small amount of grassland habitat in the BSA limits its suitability as foraging or breeding habitat for wildlife. In addition, its proximity to noise and disturbance from vehicular traffic along Cartmill Avenue and



**Figure 3-1**  
**Community Types in the Biological Study Area**



SR 99 reduces the quality of the habitat for wildlife and decreases the number of species expected to occur there.

### 3.1.3.2 Agricultural Land (Orchard and Row Crops)

Agricultural landscapes in the BSA consist of orchards and row crops. Plum orchards are located on the east side of SR 99 adjacent to a disked field and north of Cartmill Avenue in the northwest corner of the BSA. The row crops observed within and immediately adjacent to the BSA were corn, alfalfa, and wheat. The corn and alfalfa were located in the northeastern portion of the BSA, and the wheat was located in the southeastern portion of the BSA. The field in the northwestern portion of the BSA that is bounded by SR 99, Cartmill Avenue, and the southbound SR 99 off-ramp was fallow and recently disked at the time of the field surveys on May 4, 2007.

Agricultural lands are established on fertile soils that historically supported abundant wildlife. The quality of habitat for wildlife is greatly diminished when the land is converted to agricultural uses and is intensively managed. Many species of rodents and birds have adapted to agricultural lands, but they are often controlled by fencing, trapping, and poisoning to prevent excessive crop losses. However, certain agricultural lands have become important habitats for wintering waterfowl and breeding and wintering raptors. (Mayer and Laudenslayer 1988: 138.) Wildlife species associated with agricultural lands include mourning dove (*Zenaida macroura*), American crow (*Corvus brachyrhynchos*), Brewer's blackbird (*Euphagus cyanocephalus*), various raptor species, egrets, California meadow vole, deer mice, western harvest mice, and California ground squirrel (*Spermophilus beecheyi*).

### 3.1.3.3 Irrigation Ditches

There are two irrigation ditches in the BSA that are located east of the SR 99/Cartmill Avenue interchange (Figure 3-1). The ditches are channels excavated in uplands for the purposes of agriculture that neither appear to replace a previously existing natural drainage feature nor have an apparent connection to any natural drainage. The channels of the irrigation ditches were unlined and had either a *U* or *V* shape.

Irrigation ditches are often used by common reptiles and amphibians including common garter snake (*Thamnophis sirtalis*), bullfrogs (*Rana catesbeiana*), tree frogs (*Hyla regilla*), and western toad (*Bufo boreas*).

### 3.1.3.4 Seasonal Pools

Four seasonal pools occur in the BSA (see Figure 3-1). The first seasonal pool (SP-1) is located south of Cartmill Avenue between the Cartmill Avenue overpass and the southbound SR 99 on-ramp. SP-1 is a relatively shallow pool (maximum depth estimated to be 12 inches) that is approximately 0.071 acre (90 feet by 36 feet) in size. It has grassy and weedy vegetation along the edges and other areas that have shorter inundation periods. Plant species observed in SP-1 were Italian ryegrass, turkey mullein (*Eremocarpus setigerus*), Mexican tea (*Chenopodium*

*ambrosioides*), puncture vine (*Tribulus terrestris*), and Russian thistle. This pool is surrounded by ruderal road-side grassland and developed areas (roadways).

The second seasonal pool (SP-2) is a small (0.11 acre) retention basin near the intersection of North Oak Street and Cartmill Avenue, just north of an AM/PM Minimart. Review of aerial photographs show that this basin was created in 2005-2006 when the AM-PM was constructed. The retention basin is approximately 4 feet deep by 80 feet in diameter and contained water during both the May and August 2007 visits. The basin is moderately vegetated with Bermuda grass (*Cynodon dactylon*), hyssop loosestrife (*Lythrum hyssopifolium*), rabbitsfoot grass (*Polypogon monspeliensis*), Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*), and purslane speedwell (*Veronica peregrina* ssp. *xalapensis*). This pool is surrounded by a fallow agricultural field and developed areas (roadways and the AM/PM and parking lot).

The third seasonal pool (SP-3) occurs at the north end of the fallow field in the northwestern portion of the BSA that is bounded by SR 99, Cartmill Avenue, and the southbound SR 99 off-ramp. Plant species observed in SP-3 during the botanical surveys were Bermuda grass, tall flatsedge (*Cyperus eragrostis*), ripgut brome, and horseweed. SP-3 is surrounded by a fallow agricultural field that is frequently disked. This seasonal pool is heavily vegetated and did not have standing water during any of the surveys conducted.

The fourth seasonal pool (SP-4) is located in the westernmost portion of the BSA, just east of North J Road. The seasonal pool is located within an essentially unvegetated area. At the time of the March 17, 2009 site visit, the pool contained roadside trash and the surface of the pool was covered with an oily film, likely associated with road runoff. It appeared that the area is used to turn vehicles around as evidenced by the numerous vehicle tracks through the pool. A new overpass was recently constructed over North J Road (Cartmill Avenue at Union Pacific Railroad Grade Separation Project), such that SP-4 has been removed or is located between the project area and the eastern soil mound of the overpass.

### **3.1.3.5 Created Detention Basins**

Three large created detention basins are located within the buffer zone in the southern portion of the BSA. The detention basins are unlined, have steep sides and a level bottom, and capture runoff from the adjacent roadways and residential development. The detention basin on the western side of SR-99 was constructed prior to 1994 and was observed to have open water and was vegetated with cattails. The other basins were constructed in 2003 and 2009 and are largely unvegetated.

### **3.1.3.6 Developed Land**

Developed areas within the BSA consist of houses, gas stations, a fire station, a church, and roads. These areas are mainly located south of Cartmill Avenue and west of SR 99. Landscape vegetation—including non-native trees and shrubs, turf grass, and non-native herbaceous species—is associated with these developed areas. Wildlife known to occur in developed areas

include American crow, common raven, Brewer's blackbird, house finch (*Carpodacus mexicanus*), and house sparrow (*Passer domesticus*).

### 3.1.4 Invasive Plant Species

*Invasive plant species* are species listed by the California Department of Food and Agriculture (CDFA) and other invasive plants designated by the California Invasive Plant Council (Cal-IPC). Road, highway, and related construction projects are some of the principal dispersal pathways for invasive plant species and their seeds. The introduction and spread of invasive plants adversely affect natural plant communities by displacing native plant species that provide shelter and forage for wildlife species. Table 3-2 identifies invasive plant species identified by CDFA and Cal-IPC that were observed within the BSA (California Department of Food and Agriculture 2010; California Invasive Plant Council 2006). Most of these species occur within the ruderal annual grassland, ruderal areas, and along the edges of agricultural land.

**Table 3-2. Invasive Plant Species Observed in the Biological Study Area**

Species	CDFA	Cal-IPC
Tree-of-heaven ( <i>Ailanthus altissima</i> )	C	Moderate
Slender wild oat ( <i>Avena barbata</i> )	–	Moderate
Wild oat ( <i>Avena fatua</i> )	–	Moderate
Ripgut brome ( <i>Bromus diandrus</i> )	–	Moderate
Yellow star-thistle ( <i>Centaurea solstitialis</i> )	C	High
Bermuda grass ( <i>Cynodon dactylon</i> )	C	Moderate
Red-stemmed filaree ( <i>Erodium cicutarium</i> )	–	Limited
Eucalyptus ( <i>Eucalyptus</i> sp.)	–	Limited or moderate
Mediterranean barley ( <i>Hordeum marinum</i> ssp. <i>gussoneanum</i> )	–	Moderate
Foxtail barley ( <i>Hordeum murinum</i> ssp. <i>leporinum</i> )	–	Moderate
Italian ryegrass ( <i>Lolium multiflorum</i> )	–	Moderate
Hyssop loosestrife ( <i>Lythrum hyssopifolium</i> )	–	Limited
Rabbitsfoot grass ( <i>Polypogon monspeliensis</i> )	–	Limited
Russian thistle ( <i>Salsola tragus</i> )	C	Limited
Charlock ( <i>Sinapis arvensis</i> )	–	Limited
Johnsongrass ( <i>Sorghum halepense</i> )	C	–
Puncture vine ( <i>Tribulus terrestris</i> )	C	–

**Notes:** The CDFA and Cal-IPC lists assign ratings that reflect the CDFA and Cal-IPC views of the statewide importance of the pest, likelihood that eradication or control efforts would be successful, and present distribution of the pest in the state. These ratings are guidelines that indicate the most appropriate action to take against a pest under general circumstances.

The CDFA categories indicated in the table are defined as follows:

- **C:** State-endorsed holding action and eradication only when found in a nursery; action to retard spread outside nurseries at the discretion of the commissioner.

The Cal-IPC categories indicated in the table are defined as follows:

- **Moderate:** Species with substantial and apparent ecological impacts, moderate to high rates of dispersal, and limited to widespread distribution; establishment dependent on disturbance.
- **Limited:** Species with minor ecological impacts, low to moderate rates of invasion, and limited distribution; locally persistent and problematic.

## 3.2 Regional Species and Habitats of Concern

Regional species and habitats of concern were identified using the CNDDDB records search (California Natural Diversity Database 2012a), CNPS's online *Inventory of Rare and Endangered Plants of California* (2010), the species list obtained from the USFWS (2012) website (Appendix B), and species distribution and habitat requirements data. Nine sensitive plant species and 21 sensitive wildlife species, and two sensitive fish species were identified as having the potential to occur in the project region. No sensitive species have been documented in the BSA. Table 3-3 lists sensitive plant, wildlife, and fish species known to occur or have the potential to occur in the geographic region (i.e., within 10 miles of the project area).

### 3.2.1.1 Sensitive Plant Species

Of the nine sensitive plant species known to occur in the project region, six species occur in natural communities that are not present in the BSA or occur outside of the elevation range of the BSA (e.g., vernal pools, chaparral, meadows and seeps). No sensitive plant species were observed in the BSA during spring and summer botanical surveys conducted on May 4, 2007 and August 7, 2007, respectively. The timing of the surveys coincided with the reported blooming periods of eight of the nine sensitive plant species. The timing of the surveys did not coincide with the reported blooming period of one species, San Joaquin adobe sunburst.

The blooming period of San Joaquin adobe sunburst is from March through April and ended just prior to the May 4, 2007 survey. Although this species was documented in the project vicinity, the data is based on an 1897 collection that, based on soil conditions and historic date of collection and the actual occurrence location, may actually be further east near Porterville (California Natural Diversity Database 2012a). Furthermore, San Joaquin adobe sunburst has specific microhabitat requirements (i.e., adobe clay soils) that have not been documented within the BSA (California Native Plant Society 2010; Natural Resources Conservation Service 2008). Additionally, the ruderal annual grassland in the BSA has been substantially disturbed by human activities (e.g., development, disking) and is dominated by non-native, ruderal species. Thus, the BSA does not contain suitable habitat for San Joaquin adobe sunburst.

### 3.2.1.2 Sensitive Wildlife Species

Based on review of the CNDDDB and USFWS lists, and professional knowledge of species current distributions, a total of 21 sensitive wildlife species were identified as having potential to occur within the project region. After completion of the field surveys and a review of the species' distribution and habitat requirements data, the biologist determined that 13 of the 21 species would not occur in the BSA because it lacks suitable habitat for those species or it is outside the species' known range. An explanation for the absence of each species from the BSA is provided in Table 3-3. Of the eight special-status wildlife species with potential to occur in the project area, one species, tricolored blackbird (*Agelaius tricolor*) has low potential for occurrence due to the lack of suitable breeding habitat within the BSA. Because of this low potential, this species is not discussed further.

The remaining seven sensitive wildlife species—vernal pool fairy shrimp, vernal pool tadpole shrimp, northern harrier, white-tailed kite, Swainson’s hawk, burrowing owl, and San Joaquin kit fox—have a moderate to high potential to occur in the BSA and have potential to be affected by construction activities. These species are discussed in Chapter 4.

### **3.2.1.3 Sensitive Fish Species**

There is no suitable habitat for fish in the BSA. Therefore, the two sensitive fish species identified on the USFWS species lists would not occur in the BSA and fish are not discussed further.

### **3.2.1.4 Other Protected Species**

Other protected species are migratory birds (including raptors) and native trees.

#### ***Migratory Birds***

Non-sensitive migratory birds, including raptors, have the potential to nest in trees and shrubs within and adjacent to the BSA. Swallows may also nest on the underside of the Cartmill Avenue overcrossing. Although these species are not considered sensitive wildlife species, their occupied nests and eggs are protected by CDFG codes 3503 and 3503.5 and the MBTA.

#### ***Native Trees***

Two native trees occur outside of the project area but within the 250-foot-wide buffer area. A large cottonwood (*Populus fremontii*) and a large valley oak (*Quercus lobata*) are located along the southernmost irrigation ditch that runs east-west.

Table 3-3. Sensitive Species Known from the Project Region

Common and Scientific Name	Legal Status <sup>a</sup> (Federal/State /CNPS)	General Habitat Description	Habitat Present/ Absent	Rationale
<b>Plants</b>				
Heartscale <i>Atriplex cordulata</i>	-/-/1B.2	Saline or alkaline soils in chenopod scrub, meadows and seeps, sandy soils in valley and foothill grassland; 3–1,230 feet. Blooming period is April through October. Occurs in southern Sacramento Valley and San Joaquin Valley	Absent	No chenopod scrub, meadows, or seeps present. Annual grassland is repeatedly disturbed (e.g., disking) and dominated by ruderal species. Not observed during blooming-period survey.
Earlimart orache <i>Atriplex erecticaulis</i>	-/-/1B.2	Valley and foothill grassland; 131–328 feet. Blooming period is August through September. Occurs in southern San Joaquin Valley in Kern, Kings, and Tulare Counties.	Absent	Annual grassland is repeatedly disturbed (e.g., disking) and dominated by ruderal species. Not observed during blooming-period survey.
Lesser saltscale <i>Atriplex minuscula</i>	-/-/1B.1	Saline or alkaline soils in chenopod scrub, playas, valley and foothill grassland; 49–656 feet. Blooming period is May through October. Occurs in southern San Joaquin Valley.	Absent	No chenopod scrub or playas present. Annual grassland is repeatedly disturbed (e.g., disking) and dominated by ruderal species. Not observed during blooming-period survey.
Subtle orache <i>Atriplex subtilis</i>	-/-/1B.2	Valley and foothill grassland; 131–328 feet. Blooming period is June through October, and uncommonly through November. Occurs in Sacramento Valley and San Joaquin Valley from Butte County to Kern County.	Absent	Annual grassland is repeatedly disturbed (e.g., disking) and dominated by ruderal species. Not observed during blooming-period survey.
California jewel-flower <i>Caulanthus californicus</i>	E/E/1B.1	Sandy soils in chenopod scrub, pinyon-juniper woodland, valley and foothill grassland; 200–3,281 feet. Blooming period is February through May. Historically known in San Joaquin Valley from Fresno County to Kern County; presumed extirpated from Kings and Tulare Counties	Absent	No chenopod scrub or pinyon-juniper woodland present. Annual grassland is repeatedly disturbed (e.g., disking) and dominated by ruderal species. Not observed during blooming-period survey.
Recurved larkspur <i>Delphinium recurvatum</i>	-/-/1B.2	Alkaline soils in chenopod scrub, cismontane woodland, valley and foothill grassland; 10–2,460 feet. Blooming period is March through June. Historically known in Central Valley from Butte County to Kern County; presumed extinct in Butte and Colusa Counties.	Absent	No chenopod scrub or cismontane woodland present. Annual grassland is repeatedly disturbed (e.g., disking) and dominated by ruderal species. Not observed during blooming-period survey.
Spiny-sepaed button-celery <i>Eryngium spinocephalum</i>	-/-/1B.2	Vernal pools, valley and foothill grassland; 262–836 feet. Blooming period is April through May. Occurs in the eastern San Joaquin Valley and the adjacent Sierra Nevada foothills.	Absent	No vernal pools present. Annual grassland is repeatedly disturbed (e.g., disking) and dominated by ruderal species. Not observed during blooming-period survey.

Table 3-3. Continued

Common and Scientific Name	Legal Status <sup>a</sup> (Federal/State /CNPS)	General Habitat Description	Habitat Present/ Absent	Rationale
California satintail <i>Imperata brevifolia</i>	-I-/2.1	Mesic areas in chaparral, coastal scrub, Mojavean desert scrub, meadows and seeps (often alkali), riparian scrub; below 1,640 feet. Blooming period is September through May. Known to occur in the San Joaquin Valley, South Coast, San Gabriel Mountains, San Bruno Mountains, Mojave Desert, and elsewhere.	Absent	No chaparral, coastal scrub, Mojavean desert scrub, meadows and seeps, or riparian scrub present. Not observed during blooming-period survey.
San Joaquin adobe sunburst <i>Pseudobahia peirsonii</i>	T/E/1B.1	Adobe clay soils in valley and foothill grassland, cismontane woodland; 295–2,625 feet. Blooming period is March–April. Occurs in the Sierra Nevada foothills in Kern County, southeastern San Joaquin Valley in Fresno and Tulare Counties.	Absent	No cismontane woodland present. Annual grassland is repeatedly disturbed (e.g., disking) and dominated by ruderal species. No adobe clay soils documented in BSA (NRCS 2008).
<b>Invertebrates</b>				
Vernal pool fairy shrimp <i>Branchinecta lynchi</i>	T/--	Found in Central Valley, central and south Coast Ranges from Tehama County to Santa Barbara County. Isolated populations also in Riverside County.  Common in vernal pools; also found in sandstone rock outcrop pools.	Present	Suitable habitat present in two seasonal pools within the BSA. Not observed during wet season surveys. Dry season survey inconclusive.
Vernal pool tadpole shrimp <i>Lepidurus packardii</i>	E/--	Found from Shasta County south to Merced County. Occur in vernal pools and ephemeral stock ponds.	Present	Suitable habitat present in two seasonal pools within the BSA. Not observed during wet season surveys.
Valley elderberry longhorn beetle <i>Desmocerus californicus dimorphus</i>	T/--	Stream side habitats below 3,000 feet throughout the Central Valley  Occur in riparian and oak savanna habitats with elderberry shrubs; elderberries are the host plant	Absent	No elderberry shrubs occur in the BSA.
<b>Fish</b>				
Delta smelt <i>Hypomesus transpacificus</i>	T/T	Found primarily in the Sacramento–San Joaquin Estuary, but has been found as far upstream as the mouth of the American River on the Sacramento River and Mossdale on the San Joaquin River; range extends downstream to San Pablo Bay  Occur in estuary habitat in the Delta where fresh and brackish water mix in the salinity range of 2–7 parts per thousand. (Moyle 2002.)	Absent	No rivers or streams are present in the BSA.

Table 3-3. Continued

Common and Scientific Name	Legal Status <sup>a</sup> (Federal/State /CNPS)	General Habitat Description	Habitat Present/ Absent	Rationale
<b>Amphibians</b>				
California tiger salamander <i>Ambystoma californiense</i>	T/T	Found in Central Valley, including Sierra Nevada foothills, up to approximately 1,000 feet, and coastal region from Butte County south to northeastern San Luis Obispo County.  Occur in small ponds, lakes, or vernal pools in grasslands and oak woodlands for larvae; rodent burrows, rock crevices, or fallen logs for cover for adults and for summer dormancy.	Absent	The BSA is outside the southern limit of the native range of this species (Jennings 2007).
Western spadefoot <i>Spea hammondi</i>	--/SSC	Found in Sierra Nevada foothills, Central Valley, Coast Ranges, coastal counties in southern California  Occur in shallow streams with riffles and seasonal wetlands, such as vernal pools in annual grasslands and oak woodlands.	Absent	The two seasonal pools in the BSA are low quality isolated pools located along a major road and a highway.
California red-legged frog <i>Rana draytonii</i>	T/SSC	Found along the coast and coastal mountain ranges of California from Marin County to San Diego County and in the Sierra Nevada from Tehema County to Fresno County  Occur in permanent and semipermanent aquatic habitats, such as creeks and cold-water ponds, with emergent and submergent vegetation. May estivate in rodent burrows or cracks during dry periods.	Absent	Believed to be extirpated from the valley floor (USFWS 2002:5)
<b>Reptiles</b>				
Western pond turtle <i>Actinemys marmorata</i>	--/SSC	Occurs throughout California west of the Sierra-Cascade crest; found from sea level to 6,000 ft; does not occur in desert regions except for along the Mojave River and its tributaries; occupies ponds, marshes, rivers, streams, and irrigation canals with muddy or rocky bottoms and with watercress, cattails, water lilies, or other aquatic vegetation in woodlands, grasslands, and open forests	Absent	Irrigation ditches have steep sides, minimal vegetation, and fluctuating water levels; there is no suitable surrounding upland habitat for deposition of eggs.

Table 3-3. Continued

Common and Scientific Name	Legal Status <sup>a</sup> (Federal/State /CNPS)	General Habitat Description	Habitat Present/ Absent	Rationale
Blunt-nosed leopard lizard <i>Gambelia sila</i>	E/E, FP	San Joaquin Valley from Stanislaus County through Kern County and along the eastern edges of San Luis Obispo and San Benito Counties  Open habitats with scattered low bushes on alkali flats, and low foothills, canyon floors, plains, washes, and arroyos; substrates may range from sandy or gravelly soils to hardpan	Absent	Suitable habitat not present.
Giant garter snake <i>Thamnophis gigas</i>	T/T	Central Valley from the vicinity of Burrell in Fresno County north to near Chico in Butte County; has been extirpated from areas south of Fresno.  Species found in sloughs, canals, low gradient streams and freshwater marsh habitats where there is a prey base of small fish and amphibians; also found in irrigation ditches and rice fields; requires grassy banks and emergent vegetation for basking and areas of high ground protected from flooding during winter	Absent	BSA is outside of subspecies known range.
<b>Birds</b>				
Northern harrier <i>Circus cyaneus</i>	--/SSC	Occurs throughout lowland California. Has been recorded in fall at high elevations.  Occurs in grasslands, meadows, marshes, and seasonal and agricultural wetlands	Present	Marginally suitable nesting habitat is present; BSA contains suitable foraging habitat.
White-tailed kite <i>Elanus leucurus</i>	--/FP	Lowland areas west of Sierra Nevada from the head of the Sacramento Valley south, including coastal valleys and foothills to western San Diego County at the Mexico border.  Low foothills or valley areas with valley or live oaks, riparian areas, and marshes near open grasslands for foraging.	Present	Suitable nesting habitat present; may forage in or adjacent to the BSA.

Table 3-3. Continued

Common and Scientific Name	Legal Status <sup>a</sup> (Federal/State /CNPS)	General Habitat Description	Habitat Present/ Absent	Rationale
Swainson's hawk <i>Buteo swainsoni</i>	--/T	Lower Sacramento and San Joaquin Valleys, the Klamath Basin, and Butte Valley. Highest nesting densities occur near Davis and Woodland, Yolo County.  Nests in oaks or cottonwoods in or near riparian habitats. Forages in grasslands, irrigated pastures, and grain fields.	Present	Suitable nesting habitat present; may forage in or adjacent to the BSA.
Western burrowing owl <i>Athene cunicularia hypugea</i>	--/SSC	Lowlands throughout California, including the Central Valley, northeastern plateau, southeastern deserts, and coastal areas. Rare along south coast.  Level, open, dry, heavily grazed or low stature grassland or desert vegetation with available burrows.	Present	Suitable nesting and foraging habitat present
Tricolored blackbird <i>Agelaius tricolor</i>	--/SSC	Permanent resident in the Central Valley from Butte County to Kern County. Breeds at scattered coastal locations from Marin County south to San Diego County; and at scattered locations in Lake, Sonoma, and Solano Counties. Rare nester in Siskiyou, Modoc, and Lassen Counties.  Nests in dense colonies in emergent marsh vegetation, such as tules and cattails, or upland sites with blackberries, nettles, thistles, and grainfields. Habitat must be large enough to support 50 pairs. Probably requires water at or near the nesting colony.	Present	No suitable breeding habitat; only suitable foraging habitat present in BSA.
Mountain plover <i>Charadrius montanus</i>	PT/SSC	Does not breed in California; in winter, found in the Central Valley south of Yuba County, along the coast in parts of San Luis Obispo, Santa Barbara, Ventura, and San Diego Counties; parts of Imperial, Riverside, Kern, and Los Angeles Counties.  Occupies open plains or rolling hills with short grasses or very sparse vegetation; nearby bodies of water are not needed; may use newly plowed or sprouting grainfields.	Absent	Suitable habitat not present in BSA.

Table 3-3. Continued

Common and Scientific Name	Legal Status <sup>a</sup> (Federal/State /CNPS)	General Habitat Description	Habitat Present/ Absent	Rationale
<b>Mammals</b>				
Greater western mastiff bat <i>Eumops perotis californicus</i>	--/SSC	Occurs along the western Sierra primarily at low to mid elevations and widely distributed throughout the southern coast ranges. Recent surveys have detected the species north to the Oregon border.  Found in a wide variety of habitats from desert scrub to montane conifer. Roosts and breeds in deep, narrow rock crevices, but may also use crevices in trees, buildings, and tunnels.	Absent	Suitable habitat not present in the BSA.
Pallid bat <i>Antrozous pallidus</i>	--/SSC	Occurs throughout California except the high Sierra from Shasta to Kern County and the northwest coast, primarily at lower and mid elevations.  Occurs in a variety of habitats from desert to coniferous forest. Most closely associated with oak, yellow pine, redwood, and giant sequoia habitats in northern California and oak woodland, grassland, and desert scrub in southern California. Relies heavily on trees for roosts	Absent	Suitable habitat not present in the BSA.
Fresno kangaroo rat <i>Dipodomys nitratooides exilis</i>	E/E	Historically found from Merced Co. south to Central Fresno Co.  Found at elevations from 200 to 300 feet in alkali sink habitats.	Absent	BSA is outside of known range for this subspecies.
Tipton kangaroo rat <i>Dipodomys nitratooides nitratooides</i>	E/E	Occurs in the Tulare Lake Basin in portions of Fresno, Tulare, King and Kern Counties.  Found at elevations from 200 to 300 feet in arid grassland and alkali desert scrub communities with sparsely scattered shrubs; soil is usually finely textured and alkaline; may use areas that flood in winter and spring	Absent	Suitable habitat not present in the BSA.

Table 3-3. Continued

Common and Scientific Name	Legal Status <sup>a</sup> (Federal/State /CNPS)	General Habitat Description	Habitat Present/ Absent	Rationale
American badger <i>Taxidea taxus</i>	--/SSC	In California, badgers occur throughout the state except in humid coastal forests of northwestern California in Del Norte and Humboldt Counties  Badgers occur in a wide variety of open, arid habitats but are most commonly associated with grasslands, savannas, mountain meadows, and open areas of desert scrub; the principal habitat requirements for the species appear to be sufficient food (burrowing rodents), friable soils, and relatively open, uncultivated ground	Absent	BSA is surrounded by human disturbance and does not provide adequate open uncultivated ground for this species.
San Joaquin kit fox <i>Vulpes macrotis mutica</i>	E/T	Principally occurs in the San Joaquin Valley and adjacent open foothills to the west; records exist from 15 counties extending from Kern County north to Contra Costa County  Saltbush scrub, grassland, oak, savanna, and freshwater scrub	Present	Unlikely to den in BSA; may occasionally forage in or move through the BSA.

<sup>a</sup> Status explanations:

**Federal**

- E = listed as endangered under the federal Endangered Species Act.
- T = listed as threatened under the federal Endangered Species Act.
- PT = proposed for listing as threatened.
- C = candidate for listing as threatened or endangered.
- = no listing.

**State**

- E = listed as endangered under the California Endangered Species Act.
- T = listed as threatened under the California Endangered Species Act.
- FP = fully protected under the California Fish and Game Code.
- SSC = species of special concern in California.
- = no listing.

**California Native Plant Society (CNPS)**

- 1A = List 1A species: presumed extirpated in California.
- 1B = List 1B species: rare, threatened, or endangered in California and elsewhere.
- 2 = List 2 species: rare, threatened, or endangered in California but more common elsewhere.
- 3 = List 3 species: more information is needed about this plant.
- 4 = List 4 species: limited distribution and on a watch list.
- 0.1 = seriously endangered in California.
- 0.2 = fairly endangered in California.
- \* = presumed extirpated from that County.

# Chapter 4 Results: Biological Resources, Discussion of Impacts and Mitigation

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## 4.1 Natural Communities of Special Concern

The biological conditions in the BSA are the result of the history of human activities, particularly agricultural practices but also development associated with and located adjacent to the SR 99–Cartmill Avenue interchange. The seasonal pools, irrigation ditches, and the detention basin located west of SR 99 that has open water and supports cattails represent the only natural communities in the BSA that could potentially be considered sensitive.

### 4.1.1 Discussion of Seasonal Pools

The four seasonal pools described in Section 3.1.3.4 occur in the portion of the BSA west of SR 99 (Figure 3-1). This community is not included on the CDFG list of California terrestrial communities recognized by the CNDDDB (California Department of Fish and Game 2003).

#### 4.1.1.1 Survey Results

During the wetland delineation fieldwork, data points were taken within each of the four seasonal pools to determine if positive indicators of the three USACE wetland criteria (i.e., hydrophytic vegetation, hydric soils, and wetland hydrology) were present in each seasonal pool (Appendix E).

Seasonal pool SP-1 is located south of Cartmill Avenue between the Cartmill Avenue overpass and the southbound SR 99 on-ramp. Plant species observed in SP-1 were Italian ryegrass, turkey mullein, Mexican tea, puncture vine, and Russian thistle. SP-1 was found to support aquatic invertebrates including seed shrimp, water fleas, versatile fairy shrimp (*Branchinecta lindahli*), and copepods. Evidence of wading shore birds was also observed.

Seasonal pool SP-2 is a small detention basin located west of SR 99, north of Cartmill Avenue adjacent to the AM/PM gas station. Representative species observed in SP-2 were Bermuda grass (*Cynodon dactylon*), hyssop loosestrife (*Lythrum hyssopifolium*), rabbitsfoot grass (*Polypogon monspeliensis*), Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*), and purslane speedwell (*Veronica peregrina* ssp. *xalapensis*). Seed shrimp, one immature fairy shrimp, and Pacific treefrog eggs were observed in this seasonal pool.

SP-3 is also west of SR 99 and is in the agricultural land north of Cartmill Avenue. Representative plant species observed in SP-3 were Bermuda grass, tall flatsedge (*Cyperus eragrostis*), rigput brome, and horseweed. This seasonal pool did not appear to hold standing water and therefore was not considered habitat for vernal pool invertebrates.

Seasonal pool SP-4 is located just east of North J Road within the BSA (Figure 3-1). SP-4 is located within an essentially unvegetated area. A new overpass was recently constructed over North J Road, such that SP-4 has been removed or is located between the project area and the eastern soil mound of the overpass. Therefore, this pool would not be permanently or temporarily affected.

All seasonal pools showed positive indicators of wetland hydrology, but not of hydrophytic vegetation or hydric soils. Through the preliminary jurisdictional determination process, the USACE has verified that these features are not wetlands. Additionally, the four seasonal pools do not meet the definition of waters of the state, regulated by the Central Valley Regional Water Quality Control Board (RWQCB) under the Porter-Cologne Water Quality Control Act.

#### **4.1.1.2 Avoidance and Minimization Efforts**

##### ***Avoid and Minimize Direct Effects on SP-2 by Implementing Erosion Control Measures***

Avoidance and minimization efforts would not be feasible for seasonal pools SP-1 and SP-3 because they will be removed during construction of the proposed improvements. Additionally, SP-2 may be temporarily impacted during construction (direct impact). The erosion control measures will be placed in areas that are upslope of and/or when work is within 50 feet of the seasonal pool. The locations of erosion control features will be reviewed by a qualified biologist and identified on the final grading plans and construction specifications. Natural/biodegradable erosion control measures (i.e., coir rolls, straw wattles, straw placement over disturbed areas) will be used. Plastic monofilament netting (erosion control matting) will not be allowed because small wildlife can become entangled in this type of erosion control material. Previously disturbed areas will be hydroseeded with native plant species upon project completion.

#### **4.1.1.3 Project Impacts**

Construction of Alternatives 1 and 2 would result in permanent and temporary direct impacts on SP-1, SP-2, and SP-3 (Table 4-1; Figures 4-1 and 4-2). No permanent or temporary impacts on SP-4 would result from the proposed project because the construction of the Cartmill Avenue at Union Pacific Railroad Grade Separation project has altered the topography of the area between the project and North J Street such that it slopes toward the project. Therefore there is no potential for project construction activities to result in permanent or temporary impacts, including drainage of any materials to SP-4. Avoidance and minimization efforts for SP-2, described above, applies to both alternatives.



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**Figure 4-1**  
**Impacts to Communities from Alternative 1**



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**Figure 4-2**  
**Impacts to Communities from Alternative 2**

Table 4-1. Impacts on Seasonal Pools (acres)

Seasonal Pool	Alternative 1		Alternative 2	
	Permanent	Temporary	Permanent	Temporary
<b>Direct Impacts</b>				
SP-1	0.071	0	0.071	0
SP-2	0	0.11	0	0.11
SP-3	0.23	0	0.012	0.18
Total Impacts	0.302	0.11	0.083	0.29

#### 4.1.1.4 Compensatory Mitigation

No compensatory mitigation is necessary. Because SP-1 and SP-2 are assumed to be occupied by vernal pool fairy shrimp, compensation for the effects on these pools will be provided through the ESA Section 10 process (see Section 4.3.1.4 and Chapter 5).

#### 4.1.1.5 Cumulative Impacts

There would be no net loss of habitat functions and values for waters of the state. As such, no cumulative impacts on waters of the state would result from construction of the proposed project.

### 4.1.2 Discussion of Irrigation Ditches

Two irrigation ditches are located east of the SR 99/Cartmill Avenue interchange and are described in Section 3.1.3.4. This community is not included on the CDFG list of California terrestrial communities that are recognized by the CNDDDB (California Department of Fish and Game 2003).

#### 4.1.2.1 Survey Results

The irrigation ditches were dry at the time of the May 4 and August 7, 2007 site visits but appear to convey water during other times of the year. The majority of each irrigation ditch channel was unvegetated, although small patches of charlock (*Sinapsis arvensis*) and Russian thistle (*Salsola tragus*) were observed.

The irrigation ditches are channels excavated in uplands for the purposes of agriculture that do not appear to replace a previously existing natural feature. No surface connection between the ditches and a natural feature is visible and there are no natural drainages in the project vicinity. However, these ditches drain to the Tulare Lake Bed, which is considered a traditional navigable water based on past use for commerce, and therefore would be subject to regulation under CWA Section 404. Through the preliminary jurisdictional determination process, the USACE will treat

the irrigation ditches as potential waters of the U.S and assume jurisdiction under Section 404 of the CWA (Appendix E).

#### 4.1.2.2 Avoidance and Minimization Efforts

Avoidance and minimization efforts would not be feasible for the proposed project because both permanent and temporary direct impacts on the irrigation ditches would occur under Alternatives 1 and 2. No indirect effects would occur on irrigation ditches outside of the construction zone.

#### 4.1.2.3 Project Impacts

Construction of the proposed improvements would result in both permanent and temporary impacts on the three irrigation ditches (Table 4-2; Figures 4-1 and 4-2).

**Table 4-2. Impacts on Irrigation Ditches**

	Alternative 1		Alternative 2	
	Permanent	Temporary	Permanent	Temporary
Irrigation Ditch	0.082	0.031	0.082	0.031

#### 4.1.2.4 Compensatory Mitigation

As part of the permitting process, the City will compensate for permanent impacts on waters of the state and potential waters of the U.S. to ensure there is no net loss of habitat functions and values. Compensation ratios will be a minimum of 1:1 (1 acre of mitigation for every 1 acre of impact) and will be based on site-specific information and determined through coordination with the Central Valley RWQCB through the Section 401 Water Quality Certification process and the USACE through the Section 404 permitting process. Compensation for the loss of waters may be through credits purchased from an approved mitigation bank or in-lieu fee program and/or permittee responsible on-site or off-site aquatic habitat restoration/creation.

#### 4.1.2.5 Cumulative Impacts

With the implementation compensatory mitigation measures described above under section 4.1.1.4, there would be no net loss of habitat functions and values for waters. As such, no cumulative impacts on waters would result from construction of the proposed project.

#### 4.1.3 Discussion of Created Detention Basins

Three constructed detention basins are present in the BSA. The detention basin adjacent to the southern irrigation ditch (Figure 3-1) was not present at the time of the May 4, 2007 site visit but had been constructed by the December 19, 2007 site visit, and was unvegetated at the time of the March 24, 2009 site visit. Only the detention basin located west of SR 99 contained open water

and supported cattails at the time of the supplemental wetland delineation. Therefore, it is the only created detention basin in the BSA that could potentially be considered a sensitive natural community. Detention basins would not be filled during construction of the proposed project.

#### **4.1.3.1 Survey Results**

The created detention basin was observed to contain open water and cattails at the time of the supplemental wetland delineation. The detention basin was excavated to drain uplands and does not appear to replace a previously existing natural feature. This detention basin would likely be considered a hydrologically isolated feature (and thus not likely subject to USACE regulation). The USACE concurred with this recommendation through the preliminary jurisdiction determination process. This detention basin appears to meet the definition of waters of the state and would be subject to regulation by the Central Valley RWQCB under Porter-Cologne.

#### **4.1.3.2 Avoidance and Minimization Efforts**

None of the three detention basins would be filled during construction of the proposed project. Indirect effects on the detention basin located west of SR 99 will be avoided by implementing erosion control measures in the adjacent areas to prevent soil or other materials from entering the detention basin. The erosion control measures will be placed in areas that are upslope of or within 50 feet of this detention basin. The locations of erosion control features will be reviewed by a qualified biologist and identified on the final grading plans and construction specifications. Natural/biodegradable erosion control measures (i.e., coir rolls, straw wattles, use of straw over disturbed areas) will be used. Plastic monofilament netting (erosion control matting) will not be allowed because small wildlife can become entangled in this type of erosion control material. Previously disturbed areas will be hydroseeded with native plant species upon project completion.

#### **4.1.3.3 Project Impacts**

Avoidance and minimization efforts described above will avoid indirect impacts on the detention basin located west of SR 99.

#### **4.1.3.4 Compensatory Mitigation**

No compensatory mitigation is necessary because there would be no direct impacts (i.e., placement of fill) on this detention basin and implementation of the above avoidance and minimization efforts would prevent indirect impacts.

## 4.2 Special Status Plant Species

As indicated in Chapter 3, information obtained from the CNDDDB, CNPS, and USFWS was used to compile a list of the nine sensitive plant species known to occur in the project region (Table 3-3). Of these nine sensitive plant species, six species occur in natural communities that are not present in the BSA (e.g., vernal pools, chaparral, meadows and seeps) or occur outside of the elevation range of the BSA. No sensitive plant species were observed in the BSA during spring and summer botanical surveys conducted on May 4, 2007 and August 7, 2007, respectively. The timing of the surveys coincided with the blooming periods of eight of the nine sensitive plant species.

The blooming period of San Joaquin adobe sunburst is from March through April and ended just prior to the May 4, 2007 survey; however, this species has specific microhabitat requirements (i.e., adobe clay soils) that have not been documented in the BSA (California Native Plant Society 2010; Natural Resources Conservation Service 2008). Although this species was documented in the project vicinity, the data is based on an 1897 collection that, based on soil conditions and historic date of collection and the actual occurrence location, may actually be further east near Porterville (California Natural Diversity Database 2012a). Additionally, the ruderal annual grassland in the project area has been substantially disturbed by human activities (e.g. development, disking) and is dominated by non-native, ruderal species. Thus, the botanists concluded that the BSA does not contain suitable habitat for San Joaquin adobe sunburst. No sensitive plant species have been previously reported in the BSA (California Natural Diversity Database 2012a).

The botanists concluded that the BSA does not support sensitive plant species based on the lack of suitable habitat or microhabitat, the negative results of the May 2007 and August 2007 botanical surveys, and the poor habitat quality within the small areas of ruderal annual grassland. Thus, the proposed project would not result in impacts on sensitive plant species.

## 4.3 Special Status Animal Species Occurrences

As described in Chapter 2, sensitive animal species that could potentially occur in the BSA were identified after a review of existing information, coordination with agency personnel, and biological field surveys. Table 3-3 lists all sensitive wildlife species (including fish) that were identified during the prefield investigation with the potential to occur in the project region. After biological field surveys were conducted and additional information was obtained from the resource agencies, the biologist determined that the following sensitive wildlife species could occur in or adjacent to the project area or may be affected by construction activities.

### 4.3.1 Discussion of Vernal Pool Fairy Shrimp

Vernal pool fairy shrimp is a federally-listed threatened species. The species is found from Shasta County in the north throughout the Central Valley and west to the central Coast Ranges, at elevations of 30 to 4,000 feet. Additional populations have been reported from the Agate Desert region of Oregon near Medford, and disjunct populations occur in San Luis Obispo, Santa

Barbara, and Riverside Counties. However, most known locations are in the Sacramento and San Joaquin Valleys and along the eastern margin of the central Coast Ranges (Eng et al. 1990:255-258).

Vernal pool fairy shrimp inhabit vernal pools that form in depressions, usually in grassland habitats (Eng et al. 1990:255–258). Pools must remain inundated long enough for the species to complete its life cycle. Vernal pool fairy shrimp also occur in other wetlands that provide habitat similar to vernal pools, such as alkaline rain pools, ephemeral drainages, rock outcrop pools, ditches, stream oxbows, stock ponds, vernal swales, and some seasonal wetlands (Helm 1998: 137). Occupied wetlands range in size from as small as several square feet to more than 10 acres. Vernal pool fairy shrimp and other fairy shrimp have been observed in artificial depressions and drainages where water ponds for a sufficient duration (Helm 1998:134–138). Examples of such areas include roadside ditches and ruts left behind by off-road vehicles or heavy equipment. Soil compaction from construction activity can sometimes create an artificial hardpan, or restrictive layer, which allows water to pond and form suitable habitat for vernal pool fairy shrimp.

#### 4.3.1.1 Survey Results

Vernal pool fairy shrimp was reported to occur approximately 8 miles from the project site, 0.3 mile northwest of Road J32 at Road J19, directly north of Eagle Snacks Site. This record is from 1992 in which one male was observed (California Natural Diversity Database 2012a). Three of the four seasonal pools located onsite (SP-1, SP-2, and SP-4), described under Section 4.4.1 above, provide suitable habitat for vernal pool fairy shrimp. Pool SP-1 is a relatively large shallow pool with sparse vegetation. Pool SP-2 is a small detention basin with a moderate amount of vegetation. Pool SP-4 is a large unvegetated, disturbed pool. Pool SP-3 is heavily vegetated throughout and does not pond water to an adequate depth or duration to support vernal pool fairy shrimp.

One year of protocol-level wet-season surveys were conducted in pools SP-1 and SP-2 between November 2007 and March 2008. One common fairy shrimp species, the versatile fairy shrimp (*Branchinecta lindahli*), was observed in SP-1. A single unidentifiable immature fairy shrimp was observed in SP-2, however, this individual is believed to be the result of an accidental transfer of a cyst or individual from SP-1 during the wet season surveys since this individual was the only fairy shrimp observed in this pool during the 2007–2008 surveys.

A protocol-level dry season survey was conducted on June 11, 2008. Soil collected from pools SP-1 and SP-2 was processed and analyzed for cysts. Soil samples from pool SP-1 contained 10s to 1,000s of cysts of the genus *Branchinecta* per 100 milliliters (ml) of soil. No vernal pool branchiopod cysts were found in soil samples collected from pool SP-2. At least two morphologically distinct types of *Branchinecta* species cysts were found in the soil samples collected from pool 1. The two types of cysts most closely resembled cysts of two non-listed *Branchinecta* species (the versatile fairy shrimp and the alkali fairy shrimp [*B. mackini*]). In addition, some of the *Branchinecta* cysts were similar in appearance to the federally listed vernal pool fairy shrimp but a positive identification could not be made because the cyst morphology of that genus can be quite variable (Balfour pers.comm). Cysts of the versatile fairy shrimp, which

were observed during the wet season surveys, can occasionally resemble those of listed species (Balfour pers. comm).

It was determined from the field survey that pool SP-4 likely ponds to an adequate depth and for an adequate duration to support vernal pool fairy shrimp. At the time of the March 17, 2009 site visit, the pool contained roadside trash, and the surface of the pool was covered with an oily film likely associated with road runoff. It appeared that the area is used to turn vehicles around as evidenced by the numerous vehicle tracks through the pool. Based on the location and conditions of the pool, the lack of suitable natural habitat in the project vicinity, and that the surrounding lands have been in agricultural production for many years, the pool has a low potential to support vernal pool fairy shrimp.

#### **4.3.1.2 Avoidance and Minimization Efforts**

Avoidance and minimization efforts would not be feasible for SP-1 for Alternatives 1 and 2 because it would be removed during construction of the proposed improvements. The avoidance and minimization measure discussed under Section 4.1.1.2 would avoid and minimize potential impacts on pool SP-2.

#### **4.3.1.3 Project Impacts**

Because the results of the protocol-level surveys have elements that are inconclusive, it was assumed that vernal pool fairy shrimp is present in SP-1 and SP-2. Construction associated with interchange improvements would result in the direct permanent loss of SP-1 (0.071 acre) and direct temporary impacts on SP-2 (0.11 acre). Direct temporary impacts during construction could include fuel or oil leaks or spills adjacent to the pool could result in injury or mortality of vernal pool fairy shrimp and vernal pool tadpole shrimp and further degradation of habitat (this habitat is already degraded). Dirt could also be inadvertently placed in the pool, filling the habitat or burying cysts. These impacts would occur under either alternative (Table 4-3).

SP-4 (if still present) is located at the far western portion of the BSA, outside the project area. A new overpass has been constructed just west of this area and the land rises to the west, thus sloping toward the project area. Because of its location on the other side of the rise of the overpass, it would not be directly or indirectly affected by the project.

Because the project would remove potentially occupied habitat and may result in the loss of individual shrimp, the proposed project is likely to adversely affect vernal pool fairy shrimp.

**Table 4-3. Impacts to Special Status Wildlife by Alternative**

Species	Alternative 1		Alternative 2	
	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)
<b>Direct Impacts</b>				
Vernal pool fairy shrimp	0.071	0.11	0.071	0.11
Vernal pool tadpole shrimp	0	0	0	0
Burrowing owl	33.25	16.80	25.98	24.01
Swainson's hawk (foraging)	33.25	16.80	25.98	24.01
White tailed kite, northern harrier, and other migratory birds (foraging)	33.25	16.80	25.98	24.01
San Joaquin kit fox	35.65	17.91	27.40	24.79

#### 4.3.1.4 Compensatory Mitigation

Compensation for the permanent loss of 0.071 acre and temporary loss 0.11 acre of habitat (SP-1 and SP-2, respectively) for vernal pool fairy shrimp will be determined during the Section 10 consultation with USFWS. Typically, direct effects are mitigated at a 2:1 or 3:1 ratio (acres preserved: acres affected). At the time this NES was signed, the Low-Effect Habitat Conservation Plan indicates that the City of Tulare will purchase preservation credits equal to 0.43 acre of vernal pool habitat for vernal pool fairy shrimp at the Deadman Creek Conservation Bank. The acreage or location of this compensatory mitigation may change based on final revisions to the project design and/or further coordination with the U.S. Fish and Wildlife Service.

#### 4.3.2 Discussion of Vernal Pool Tadpole Shrimp

Vernal pool tadpole shrimp is a federally-listed endangered species. This species is a California Central Valley endemic species, with the majority of populations in the Sacramento Valley. This species has also been reported from the Sacramento River Delta east of San Francisco Bay and from scattered localities in the San Joaquin Valley from San Joaquin to Madera Counties (Rogers 2001:1002).

Vernal pool tadpole shrimp occur in a wide variety of seasonal habitats including vernal pools, ponded clay flats, alkaline pools, ephemeral stock tanks, and roadside ditches (Helm 1998:137–138; Rogers 2001:1002–1005). Habitats where vernal pool tadpole shrimp have been observed range in size from small (<25 square feet), clear, vegetated vernal pools to highly turbid alkali scald pools to large (>100-acre) winter lakes (Helm 1998: 134–138; Rogers 2001:1002–1005). These pools and other ephemeral wetlands must dry out and be inundated again for the vernal pool tadpole shrimp cysts to hatch. This species has not been reported in pools that contain high concentrations of sodium salts, but may occur in pools with high concentrations of calcium salts (Helm 1998:134–138; Rogers 2001:1002–1005).

#### **4.3.2.1 Survey Results**

The project is within the current range for this species but there are no recorded occurrences of this species within 10 miles. The closest occurrence is approximately 13 miles northwest of the project site approximately 0.75 mile east of SR 99 (California Natural Diversity Database 2012b). The record is from 1998 and is for hundreds of tadpole shrimp observed in a vernal pool complex. Vernal pool tadpole shrimp was also observed in a vernal pool about 13.5 miles northwest of the project area during March– May 2011 (California Natural Diversity Database 2012b). Three of the four seasonal pools in the BSA (SP-1, SP-2, and SP-4) provide suitable habitat for vernal pool tadpole shrimp. Pool SP-3 is heavily vegetated throughout and does not pond water to an adequate depth or duration to support vernal pool tadpole shrimp. As described above for vernal pool fairy shrimp, wet-season and dry-season surveys were conducted in SP-1 and SP-2 during 2007–2008. No vernal pool tadpole shrimp were observed during the wet-season surveys and no vernal pool tadpole cysts were found in soil samples collected from pools SP-1 and SP-2.

It was determined from the field survey that pool SP-4 likely ponds to an adequate depth and for an adequate duration to support vernal pool tadpole shrimp. At the time of the March 17, 2009 site visit, the pool contained roadside trash and the surface of the pool was covered with an oily film likely associated with road runoff. It appeared that the area is used to turn vehicles around as evidenced by the numerous vehicle tracks through the pool. Based on the location and conditions of the pool, the lack of suitable natural habitat in the project vicinity, and that the surrounding lands have been in agricultural production for many years, this pool is unlikely to support vernal pool tadpole shrimp.

#### **4.3.2.2 Avoidance and Minimization Efforts**

Based on the results of protocol-level wet and dry season surveys, vernal pool tadpole shrimp are not present in pools SP-1 and SP-2 and therefore vernal pool tadpole shrimp would not be impacted by construction activities that affect these pools. Vernal pool tadpole shrimp is unlikely to occur in pool SP-4. The avoidance and minimization measure discussed under Section 4.1.1.2 would avoid and minimize potential impacts on pool SP-2.

#### **4.3.2.3 Project Impacts**

Based on the results of protocol-level wet and dry season surveys, vernal pool tadpole shrimp are not present in pools SP-1 and SP-2 and therefore project activities that impact these pools would not impact the species. As noted above, a new overpass has been constructed between the project area and SP-4 and because of its location on the other side of the rise of the overpass, would not be directly or indirectly affected by the project.

#### **4.3.2.4 Compensatory Mitigation**

No compensatory mitigation is necessary.

### 4.3.3 Discussion of Western Burrowing Owl

Western burrowing owl is a state species of special concern, and is protected during its nesting season under the MBTA and the California Fish and Game Code Section 3503.5. Burrowing owl is a ground-nesting raptor that typically uses the burrows of other species, such as ground squirrels, for nesting, protection, and shelter. Burrowing owls are a year-long resident in a variety of grasslands, as well as in scrublands with a low density of trees and shrubs and low-growing vegetation. Burrowing owls that nest in the Central Valley may winter elsewhere. The primary habitat requirement of the burrowing owl is burrows appropriate for nesting. Burrowing owls usually nest in abandoned burrows, although they have been known to construct their own burrows in softer soils. In urban and agricultural areas, burrowing owls often use artificial burrows, such as cement culverts; cement, asphalt, or wood debris piles; or openings beneath cement or asphalt pavement, particularly pipes. This semi-colonial owl breeds from March through August and is most active while hunting during dawn and dusk. (California Department of Fish and Game 1995:2,3)

#### 4.3.3.1 Survey Results

No CNDDDB (California Natural Diversity Database 2012a) occurrences for burrowing owl are known from the project vicinity. The nearest reported breeding record for this species is approximately 11 miles southwest of the project site from 2000. A burrow search was conducted in the BSA on June 11, 2008. Numerous active ground squirrel burrows were observed but no burrowing owls or burrowing owl sign (white wash, feathers, or pellets) were observed. Burrows in ruderal annual grassland areas, and along margins of agricultural lands in the BSA provide potential breeding or wintering sites for burrowing owls. Based on the presence of suitable habitat, there is a moderate potential for burrowing owl to nest in or adjacent to the project site.

#### 4.3.3.2 Avoidance and Minimization Efforts

##### ***Conduct Surveys for Burrowing Owls and Implement the Mitigation Methods in California Department of Fish and Game Guidelines, if Necessary***

Burrowing owls surveys and take avoidance surveys will be conducted prior to project construction. Burrowing owl surveys are recommended whenever burrowing owl habitat is present on or within 500 feet of a project site. Breeding season and non-breeding season surveys will be conducted in accordance with the methodology described in CDFG's *Staff Report on Burrowing Owl Mitigation* (Staff Report) (California Department of Fish and Game 2012: 28-29). Breeding season surveys will consist of four surveys: 1) one survey between February 15 and April 15, and 2) a minimum of three surveys, at least 3 weeks apart, between April 15 and July 15, with at least one survey after June 15. Non-breeding season surveys will consist of four surveys spread evenly throughout the non-breeding season (September 1–January 31).

A survey report will be prepared at the conclusion of surveys for submission to CDFG. The report will include but is not limited to a description of the proposed project or proposed activity,

proposed project start and end dates, and a description of disturbances or other activities occurring on-site or nearby (additional information is in Appendix D of the Staff Report).

If burrowing owls are found during any of the surveys, the City will implement compensatory mitigation best practices as described below. Because ample lead time is necessary for implementing compensation, these efforts should begin as soon as possible after presence of burrowing owls is determined.

Regardless of results from the surveys described above, an initial take avoidance (preconstruction) survey will be conducted no less than 14 days prior to initiating ground disturbing activities (California Department of Fish and Game 2012:29). The City will retain qualified biologists to conduct preconstruction surveys for active burrows according to methodology in CDFG's Staff Report on Burrowing Owl Mitigation (California Department of Fish and Game 2012:28). Burrowing owls may re-colonize a site after only a few days. As such, subsequent take avoidance surveys including, but not limited to, a final survey within 24 hours prior to ground disturbance will be conducted if there are time lapses of a few days between project activities. If no burrowing owls are detected, no further mitigation is required. If burrowing owls are detected, the City will implement avoidance and minimization measures, and monitoring and reporting of such measures, as described in the "Mitigation Methods" section of the CDFG Staff Report, and summarized below. .

- Occupied burrows will not be disturbed during the breeding season (February 1–August 31).
- A 250-foot buffer where no construction will occur will be established around occupied burrows unless a qualified biologist determines through non-invasive methods that egg laying and incubation have not begun or that juveniles are foraging independently and are capable of independent survival.
- Avoid impacting burrows occupied during the non-breeding season by migratory or non-migratory resident burrowing owls.
- Avoid destruction of unoccupied burrows and place visible markers near burrows to ensure that they are not collapsed.
- Develop and implement a worker awareness program to increase the on-site worker's recognition of and commitment to burrowing owl protection.
- Conduct additional take avoidance surveys as needed, as described above.
- Conduct on-going surveillance of the project site for burrowing owls during project activities.
- Minimize impacts to burrowing owls and their habitat by using buffer zones, visual screens, and other measures during project activities. Recommended buffer distances in the CDFG's Staff Report will be implemented or site-specific buffers and visual screens will be determined through information collected during site-specific monitoring and consultation with CDFG.

#### **4.3.3.3 Project Impacts**

If burrowing owls are nesting in the BSA, construction activities, including grading and clearing activities within ruderal annual grasslands and non-orchard agricultural areas could result in nesting failure, death of nestlings, or destruction of eggs. These actions would be a violation of and California Fish and Game Code Section 3503.5 and the MBTA. Additionally, the removal or destruction of occupied burrows during the non-breeding would result in the loss of habitat for this species. Implementation of the avoidance and minimization measures identified above would ensure that the proposed project would not result in the loss or disturbance of western burrowing owls, their nests, eggs, or young.

Impacts associated with disturbance to active nests and loss of habitat described above for this species are applicable to Alternative 1 and 2. Construction of either of the alternatives would result in permanent loss and temporary disturbance to potential burrowing owl habitat (Table 4-3; Figures 4-1 and 4-2). Habitat loss and disturbance associated with each alternative are similar in magnitude. Avoidance and minimization efforts described above and compensatory mitigation described below apply to both alternatives.

#### **4.3.3.4 Compensatory Mitigation**

##### ***Compensate for Loss of Burrowing Owl Foraging and Burrow Habitat in Accordance with California Department of Fish and Game Guidelines***

If burrowing owls have been documented to occupy burrows at the project site in recent years (3 years), the current scientific literature supports the conclusion that the site should be considered occupied and mitigation is required. The current scientific literature indicates the following to be best practices. If these best practices cannot be implemented, the lead agency or lead investigator may consult with the CDFG to develop effective mitigation alternatives (California Department of Fish and Game 2012: 11-13).

1. Where habitat will be temporarily disturbed, restore the disturbed area to pre-project condition including decompacting soil and revegetating. Permanent habitat protection may be warranted if there is the potential that the temporary impacts may render a nesting site (nesting burrow and satellite burrows) unsustainable or unavailable depending on the time frame, resulting in reduced survival or abandonment. For the latter potential impact, see the permanent impact measures below.
2. Mitigate for permanent impacts to nesting, occupied and satellite burrows and/or burrowing owl habitat such that the habitat acreage, number of burrows and burrowing owls impacted are replaced based on site-specific conditions and an analysis of the factors influencing burrowing owls and burrowing owl population persistence in a particular area.
3. Mitigate for permanent impacts to nesting, occupied and satellite burrows and burrowing owl habitat with (a) permanent conservation of similar vegetation communities (grassland, scrublands, desert, urban, and agriculture) to provide for burrowing owl nesting, foraging, wintering, and dispersal (i.e., during breeding and non-breeding seasons) comparable to or

better than that of the impact area, and (b) sufficiently large acreage, and presence of fossorial mammals. The mitigation lands may require habitat enhancements including enhancement or expansion of burrows for breeding, shelter and dispersal opportunity, and removal or control of population stressors. If the mitigation lands are located adjacent to the impacted burrow site, ensure the nearest neighbor artificial or natural burrow clusters are at least within 690 feet.

4. Permanently protect mitigation land through a conservation easement deeded to a nonprofit conservation organization or public agency with a conservation mission, for the purpose of conserving burrowing owl habitat and prohibiting activities incompatible with burrowing owl use. If the project is located within the service area of a CDFG approved burrowing owl conservation bank, the project proponent may purchase available burrowing owl conservation bank credits.
5. Develop and implement a mitigation land management plan to address long-term ecological sustainability and maintenance of the site for burrowing owls (refer to the CDFG Staff Report for more information, if applicable). The management plan will include monitoring of and reporting on the mitigation site.
6. Fund the maintenance and management of mitigation land through the establishment of a long-term funding mechanism such as an endowment.
7. Habitat should not be altered or destroyed until mitigation lands have been legally secured and the endowment or other long-term funding mechanism is in place or security is provided.
8. Mitigation lands should be on, adjacent or proximate to the impact site where possible and where habitat is sufficient to support burrowing owls present.
9. Where there is insufficient habitat on, adjacent to, or near project sites where burrowing owls will be excluded, acquire mitigation lands with burrowing owl habitat away from the project site. The selection of mitigation lands should then focus on consolidating and enlarging conservation areas located outside of urban and planned growth areas, within foraging distance of other conserved lands. If mitigation lands are not available adjacent to other conserved lands, increase the mitigation land acreage requirement to ensure a selected site is of sufficient size. Offsite mitigation may not adequately offset the biological and habitat values impacted on a one to one basis. Consult with the CDFG when determining offsite mitigation acreages.
10. Evaluate and select suitable mitigation lands based on a comparison of the habitat attributes of the impacted and conserved lands, including but not limited to: type and structure of habitat being impacted or conserved; density of burrowing owls in impacted and conserved habitat; and significance of impacted or conserved habitat to the species range-wide. Mitigate for the highest quality burrowing owl habitat impacted first and foremost when identifying mitigation lands, even if a mitigation site is located outside of a lead agency's jurisdictional boundary, particularly if the lead agency is a city or special district.

11. Select mitigation lands taking into account the potential human and wildlife conflicts or incompatibility, including but not limited to, human foot and vehicle traffic, and predation by cats, loose dogs and urban-adapted wildlife, and incompatible species management.
12. Where a burrowing owl population appears to be highly adapted to heavily altered habitats such as golf courses, airports, athletic fields, and business complexes, permanently protecting the land, augmenting the site with artificial burrows, and enhancing and maintaining those areas may enhance sustainability of the burrowing owl population onsite. Maintenance includes keeping lands grazed or mowed with weedeaters or push mowers, free from trees and shrubs, and preventing excessive human and human-related disturbance (e.g., walking, jogging, off-road activity, dog-walking) and loose and feral pets (chasing and, presumably, preying upon owls) that make the environment uninhabitable for burrowing owls (#'s 4, 5 and 6 above still apply to this mitigation approach).
13. If there are no other feasible mitigation options available and a lead agency is willing to establish and oversee a Burrowing Owl Mitigation and Conservation Fund that funds on a competitive basis acquisition and permanent habitat conservation, the project proponent may participate in the lead agency's program.

#### **4.3.3.5 Cumulative Effects**

Burrowing owls are not currently known to occur within the BSA. Potential habitat within the BSA is highly disturbed, low quality habitat and therefore removal of this habitat or additional disturbance to this habitat would not result in cumulative effects to this species. If burrowing owls are found during surveys, implementation of avoidance, minimization, and compensatory mitigation measures described above would avoid and compensate for effects from the project, such that it would not contribute to cumulative effects on this species.

#### **4.3.4 Discussion of Swainson's Hawk**

Swainson's hawk is a state-listed threatened species. Swainson's hawks migrate annually from wintering areas as far south as South America to breeding locations in northwestern Canada, the western United States, and Mexico. In California, the distribution includes the Central Valley, the Klamath Basin, the northeastern plateau, Lassen County, and the Mojave Desert. Swainson's hawks nest in the Central Valley in large trees in riparian corridors, oak savannah, and juniper-sage flats in open tree stands. This species is also typically found nesting adjacent to agricultural fields. Swainson's hawks breed from late March to late August, with peak activity from late May through July. (Zeiner et al. 1990a:134.). In the Central Valley, Swainson's hawks forage in large, open agricultural habitats. Preferred foraging habitats include fallow fields, alfalfa, low growing row and field crops, dry rice land, and grain fields (California Department of Fish and Game 1994:6).

#### **4.3.4.1 Survey Results**

A total of seven Swainson's hawk nest occurrences have been recorded within a 10-mile radius of the project area (California Natural Diversity Database 2012a). The nearest reported nest site is located approximately 2 miles south of the project area. In addition, a Swainson's hawk was observed near the project area during the 2008 field surveys. Large trees in and near the project area provide suitable nesting habitat for Swainson's hawk and grasslands and non-orchard agricultural lands provide suitable foraging opportunities. Based on their known occurrence in the project vicinity and the presence of suitable nesting and foraging habitat, there is a moderate potential for Swainson's hawk to nest in or adjacent to the project area.

#### **4.3.4.2 Avoidance and Minimization Efforts**

##### ***Remove Trees and Shrubs during the Nonbreeding Season or Conduct Preconstruction Nest Surveys***

If necessary, vegetation removal will occur during the non-breeding season for most migratory birds (generally between September 15 and January 31) to the extent feasible.

If possible, construction activities will begin prior to the nesting season for most birds (generally, February 1 through September 14). Beginning construction prior to the breeding season will establish a level of noise disturbance that will dissuade noise-sensitive raptors and other birds from attempting to nest within or near the study area.

If beginning construction activities (including vegetation removal) prior to the breeding season is not possible, a qualified wildlife biologist with knowledge of the relevant species will conduct nesting surveys before the start of construction.

A minimum of three separate surveys will be conducted for migratory birds and raptors. Surveys will include a search of all trees and shrubs, and grassland/ruderal areas that provide suitable nesting habitat, in the project area. In addition, a 500-foot area (0.50 mile for Swainson's hawk) around the project area will be surveyed for nesting raptors. Surveys for white-tailed kite nests within a 0.50-mile area would be conducted concurrently with surveys for Swainson's hawk. Surveys should occur during the height of the breeding season (March 1 to June 1) with one survey occurring in each of two consecutive months within this peak period and the final survey occurring within 1 week of the start of construction. If no active nests are detected during these surveys, no additional measures are required.

If an active nest is found in the survey area, a no-disturbance buffer will be established around the site to avoid disturbance or destruction of the nest site until the end of the breeding season (September 14) or until after a qualified wildlife biologist determines that the young have fledged and moved out of the project area (this date varies by species). The extent of these buffers will be determined by the biologist in coordination with USFWS and CDFG and will depend on the level of noise or construction disturbance, line-of-sight between the nest and the disturbance, ambient levels of noise and other disturbances, and other topographical or artificial barriers. Suitable buffer distances may vary between species. No-disturbance buffers for fully

protected species may be as large as a 0.50 mile. If an active nest of a listed species is found after construction has begun, construction would stop in the area until consultation with the CDFG and the USFWS has been initiated and appropriate avoidance measures have been determined and implemented.

### **Conduct Preconstruction Surveys for Swainson's Hawk Nests**

If starting construction activities (including vegetation removal) before the breeding season is not possible, a qualified wildlife biologist with knowledge of Swainson's hawk biology and behavior will conduct nesting surveys in accordance with the *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (Swainson's Hawk Technical Advisory Committee 2000) before the start of construction. Surveys will include a search of all trees within a 0.50 mile radius of the project area. If no active nests are found during these surveys, no additional avoidance or minimization measures are required.

#### **4.3.4.3 Project Impacts**

Implementation of the proposed project could affect Swainson's hawk, if construction activities remove or otherwise disturb occupied nests during the breeding season (between February 1 and August 31). Construction activities (grading, clearing, excavation, and tree trimming and removal) during the breeding season that result in the death of adults or young, or the loss of reproductive potential would violate MBTA and CDFG codes 3503 and 3503.5.

Construction of either alternative would result in permanent loss and temporary disturbance of suitable Swainson's hawk foraging habitat (Table 4-3; Figures 4-1 and 4-2). Because the availability of foraging habitat has been closely tied to the breeding success of this species, projects within the vicinity of active nests that will adversely modify suitable Swainson's hawk foraging habitat are considered to have potential to adversely affect this species (California Department of Fish and Game 1994: 6). Implementation of the avoidance and minimization measures identified above, and the compensation measure described below, would ensure that the proposed project (either alternative) would not result in the loss or disturbance of Swainson's hawk adults, nests, eggs, or young.

#### **4.3.4.4 Compensatory Mitigation**

##### ***Mitigate for Loss of Swainson's Hawk Foraging Habitat in Accordance with CDFG Requirements.***

To mitigate for the loss of foraging habitat within the project area, the City will provide habitat management lands consistent with CDFG foraging habitat mitigation requirements for projects located within 10 miles of an active nest. An active nest is defined as one that has been active within the previous 5 years.

To determine appropriate mitigation, the City will contact the CDFG for recent records of nesting Swainson's hawks within 10 miles of the project area, conduct a records search of the

current version of the CNDDDB, and use the results of the preconstruction surveys for the project and surrounding area (if conducted), to determine if an active nest is located within 10 miles of the project area. If an active nest is located within 10 miles of the project area, the City will provide habitat management lands for each 1 acre of urban development at ratios defined in CDFG's 1994 *Staff Report Regarding Mitigation for Impacts to Swainson's Hawks in the Central Valley of California*. All habitat management lands protected under this requirement may be preserved by fee title or conservation easement on agricultural lands, or other suitable habitats (as approved by the CDFG) that provide foraging habitat for Swainson's hawk.

#### **4.3.4.5 Cumulative Effects**

No Swainson's hawks are currently known to nest in the BSA and loss of suitable foraging habitat will be mitigated for through offsite preservation in accordance with CDFG requirements. No cumulative impacts are expected to result from construction of the project.

#### **4.3.5 Discussion of White-tailed Kite, Northern Harrier, and Non-Sensitive Migratory Birds**

Two other sensitive birds, northern harrier and white-tailed kite, as well as non-sensitive migratory bird species, could nest in or adjacent to the project area.

Northern harrier is a state species of special concern. The breeding range includes most of the Central Valley, the Sacramento–San Joaquin Delta, the Suisun Marsh, and portions of San Francisco Bay (Zeiner et al. 1990a:124). Tall grasses and forbs in wetlands and field borders provide cover for northern harriers. Northern harriers nest on the ground in thick grass, shrubbery, or other vegetation, often near marshes. Their nests typically consist of a pile of sticks and grass. The breeding season for this species is between April and September, with peak activity in June and July. (Zeiner et al. 1990a:124.).

White-tailed kite is a fully protected species under California Fish and Game Code Section 3511. In California, white-tailed kites occur in coastal and valley lowlands. White-tailed kites nest in open canopy forests, especially cismontane forests; they are also known to nest in riparian areas. Nests typically occur near agricultural lands where foraging most often occurs. Foraging also occurs in open grasslands, meadows, and emergent wetlands. White-tailed kites use dense trees for cover. Breeding occurs from February to October, with peak activity from May through August. (Zeiner et al. 1990a:120.)

Several non-sensitive migratory birds, including raptors and swallows, could nest in and adjacent to the project area. The breeding season for most birds is generally from February 1 to August 31. The occupied nests and eggs of these birds are protected by federal and state laws, including the MBTA and California Fish and Game Code Sections 3503 and 3503.5. CDFG is responsible for overseeing compliance with the codes and makes recommendations on nesting bird and raptor protection.

#### **4.3.5.1 Survey Results**

No northern harriers were observed in or near the BSA during the 2007 or 2008 field surveys. There are no recorded occurrences of northern harrier within the project vicinity (California Natural Diversity Database 2012a) but the project area is within the range for this species. The BSA contains marginally suitable nesting habitat for the species; however, northern harriers may forage in grasslands and non-orchard agricultural lands within the BSA. No white-tailed kites were observed in or near the BSA during the 2007 or 2008 field surveys. There are no recorded occurrences of white-tailed kites within the project vicinity (California Natural Diversity Database 2012a) but the BSA is within the range for this species. The BSA contains potentially suitable nesting habitat for the species and white-tailed kites may forage in ruderal annual grasslands and agricultural lands within the BSA.

The Cartmill Avenue overcrossing provides suitable nesting substrate for swallows. The underside of the overcrossing was not examined due to safety concerns, but no swallows were observed flying in the vicinity of the overcrossing. No other migratory birds were observed nesting in or adjacent to the BSA during the 2007 and 2008 surveys.

#### **4.3.5.2 Avoidance and Minimization Efforts**

Avoidance and minimization measures described under section 4.3.3.2 will be implemented for northern harrier, white-tailed kite, and non-sensitive migratory birds. In addition, the following measures will be implemented to avoid impacts on nesting swallows, if present on the Cartmill Avenue overcrossing.

#### ***Conduct Preconstruction Survey for Swallow Nests and Implement Measures to Deter Nesting***

To avoid impacts on nesting swallows and other bridge-nesting migratory birds that are protected under the MBTA and CFGC, the City will implement the following measures.

- The City will hire a qualified wildlife biologist to inspect the Cartmill Avenue overcrossing during the swallows' non-breeding season (September 1 through February 28). If nests are found and are abandoned, they may be removed. To avoid damaging active nests, removal of nests will occur before the breeding season begins (March 1).
- If possible, demolition of the Cartmill Avenue overcrossing should occur during the non-breeding season (September 1 through February 28). If this is not possible, after nests are removed, the undersides of the overcrossing will be covered with 0.5- to 0.75-inch mesh net by a qualified contractor. All net installation will occur before March 1 and will be monitored by a qualified biologist throughout the breeding season (typically several times a week). The netting will be anchored so that swallows cannot attach their nests to the bridge through gaps in the net.
- If netting of the bridges does not occur by March 1 and swallows colonize the bridge, demolition of the structure will not begin before August 31 of that year or until a qualified biologist has determined that the young have fledged and all nest use has been completed.

- If appropriate steps are taken to prevent swallows from constructing new nests, work can proceed at any time of the year.

#### **4.3.5.3 Project Impacts**

Implementation of the project could affect sensitive and non-sensitive nesting migratory birds, including raptors, if construction activities remove or otherwise disturb occupied nests during the breeding season (generally between February 1 and September 14). Construction activities (grading, clearing, excavation, and tree trimming and removal) during the breeding season that result in the death of adults or young, or loss of reproductive potential would violate MBTA and CDFG codes 3503 and 3503.5. Additionally, construction of the project would result in the conversion of suitable foraging habitat to non-suitable land uses. Implementation of the avoidance and minimization measures identified under Section 4.3.3.2 would ensure that the project would not result in the loss or disturbance of sensitive and non-sensitive migratory bird and raptor nests, eggs, or young.

Potential disturbance to active nests and loss of foraging habitat would occur under both alternatives. Construction of either alternative would result in permanent loss and temporary disturbance to foraging habitat (Table 4-3; Figures 4-1 and 4-2). Habitat loss and disturbance associated with Alternatives 1 and 2 are similar in magnitude. Avoidance and minimization efforts described above apply to both alternatives.

#### **4.3.5.4 Compensatory Mitigation**

No compensatory mitigation is required for these species. Compensatory mitigation for Swainson's hawk would benefit northern harrier, white-tailed kite, and other migratory birds.

#### **4.3.5.5 Cumulative Effects**

The BSA contains limited suitable nesting habitat and foraging habitat for sensitive and non-sensitive migratory birds. The habitat being removed as part of the project is considered low quality and similar habitat is abundant within the project vicinity. Therefore, the loss of foraging habitat for these species is not expected to result in cumulative effects.

#### **4.3.6 Discussion of San Joaquin Kit Fox**

San Joaquin kit fox is listed as endangered under ESA and is state listed as threatened under CESA. The current known range of San Joaquin kit fox extends from central Contra Costa County south through Kern County and to the northeastern edge of Santa Barbara County (U.S. Fish and Wildlife Service 1998)

In the central portion of the range, San Joaquin kit fox is associated with the following natural vegetation communities: valley sink scrub, interior coast range saltbush scrub, upper Sonoran

subshrub scrub, annual grassland, and the remaining native grasslands. Kit foxes in the central region also use grazed non-irrigated grasslands, tilled or fallow fields, irrigated row crops, orchards, and vineyards because of the predominance of these cover types in the region. (U.S. Fish and Wildlife Service 1998:122–132.)

Kit foxes prefer loose-textured and deeper soils, but have been found on a wide range of soil types. Kit foxes may construct their own dens, but where soils make digging difficult, foxes frequently use and modify burrows built by other animals, particularly those of California ground squirrels. Structures such as culverts, abandoned pipelines, and well casings may also be used as den sites. The breeding season begins during September and October when adult females begin to clean and enlarge natal or pupping dens. Mating and conception occur between late December and March. Gestation is 48–52 days, and litters of two to six pups are born sometime between late February and late March. (U.S. Fish and Wildlife Service 1998:122–132.)

#### **4.3.6.1 Survey Results**

The BSA is located within the current range of San Joaquin kit fox (U.S. Fish and Wildlife Service 1998:125; California Natural Diversity Database 2012a). There are ten CNDDDB occurrence records for San Joaquin kit fox within a 10-mile radius of the project site (California Natural Diversity Database 2012a). Nine of these records are from 1975 or earlier. The tenth and closest record is from 1992 for a kit fox population observed in the vicinity of Tulare. No recent surveys have been conducted in this area to confirm this population.

Within the BSA, potential foraging and denning habitat is present in ruderal annual grasslands. Agricultural lands also provide suitable foraging habitat for San Joaquin kit fox. Areas that would allow for kit fox movement through the BSA include ruderal annual grasslands, orchards, and row crops. Numerous small mammal burrows, particularly those of California ground squirrel, were observed within the BSA in annual grasslands and could provide a source of prey for San Joaquin kit fox. A burrow search was conducted on June 11, 2008 within ruderal annual grassland areas and along margins of agricultural areas to determine if burrows suitable for kit fox were present. Numerous burrows were observed that were large enough for kit fox (at least 3 inches in diameter) but all appeared to be occupied by ground squirrels based on the presence of individuals entering or exiting these burrows and/or the presence of ground squirrel prints, scat, or remnants of nut shells. All areas searched were located in disturbed areas and/or along busy roads. Therefore, the likelihood that an active San Joaquin kit fox den is present within the BSA is low because of the high amount of disturbance associated with roadside habitats. The BSA is considered a low-quality movement corridor because movement through the BSA would require movement across busy roads. Movement corridors along canals located outside of the BSA are much more likely to be used by dispersing kit foxes traveling north-south in the vicinity of the BSA (east-west travel is precluded by the presence of SR 99).

Though the BSA consists of busy roadways and a freeway, there is a potential for San Joaquin kit fox to occur in the BSA.

#### 4.3.6.2 Avoidance and Minimization Efforts

##### ***Minimize and Avoid Temporary Construction Disturbances to San Joaquin Kit Fox***

The City or its contractor(s) will implement the following construction and operational requirements identified in the *Standardized Recommendations for the Protection of San Joaquin kit fox Prior To or During Ground Disturbance* (Standardized Recommendations) (U.S. Fish and Wildlife Service 1999):

- Mandatory contractor/worker awareness training will be conducted for all construction personnel. The awareness training will include a description of San Joaquin kit fox and representative photographs of the species, the species' legal status and protection under the federal and California ESAs, and the penalties for not complying with biological mitigation requirements.
- The contractor shall clearly delineate the project boundaries and prohibit any off-road traffic outside these boundaries.
- At the end of each working day, the contractor will ensure that all excavated, steep-walled holes or trenches more than 2 feet deep be covered by plywood or similar materials, or provided with 1 or more escape ramps constructed of earth fill or wooden planks. Before such holes or trenches are filled, they will be thoroughly inspected by the biological monitor for trapped animals.
- The contractor will provide closed garbage containers for the disposal of all food-related trash items such as wrappers, cans, bottles, and food scraps. All garbage shall be removed daily from the project site.
- No pets will be allowed on the project site.
- The contractor will immediately notify the City if a dead, injured, or entrapped kit fox is found in the construction area. All work will be temporarily halted until the California Department of Fish and Game and/or USFWS are contacted to determine the appropriate course of action.

### **Avoid San Joaquin Kit Fox Dens by Conducting Preconstruction Den Searches and Implementing Protection Measures, if Necessary**

The City will retain a qualified biologist (as determined by USFWS [U.S. Fish and Wildlife Service 1999]) to conduct a preconstruction survey no fewer than 14 days and no more than 30 days before the beginning of ground disturbance or any activity likely to impact the San Joaquin kit fox. The biologist will survey the proposed construction work area and a 200-foot area outside of the construction work area to identify suitable burrow sites. The biologist will conduct den searches by systematically walking 30-foot-wide transects through the survey area. If a den is found during the survey, the biologist will measure the size; evaluate the shape of the den entrances; and note tracks, scat, prey remains, and recent excavations at the den site. The biologist will also determine the status of the dens and map the features. Dens will be classified in one of the following four den status categories defined by the USFWS (U.S. Fish and Wildlife Service 1999):

- **Potential den:** Any subterranean hole within the species' range that has entrances of appropriate dimensions for which available evidence is sufficient to conclude that it is being used or has been used by a kit fox. Potential dens shall include the following: (1) any suitable subterranean hole; or (2) any den or burrow of another species (e.g., coyote, badger, red fox, or ground squirrel) that otherwise have appropriate characteristics for kit fox use.
- **Known den:** Any existing natural den or manmade structure that is used or has been used at any time in the past by a San Joaquin kit fox. Evidence of use may include historical records, past or current radiotelemetry or spotlighting data, kit fox sign such as tracks, scat, and/or prey remains, or other reasonable proof that a given den is being or has been used by a kit fox.
- **Natal or pupping den:** Any den used by kit foxes to whelp and/or rear their pups. Natal/pupping dens may be larger with more numerous entrances than dens occupied exclusively by adults. These dens typically have more kit fox tracks, scat, and prey remains in the vicinity of the den, and may have a broader apron of matted dirt and/or vegetation at 1 or more entrances. A natal den, defined as a den in which kit fox pups are actually whelped but not necessarily reared, is a more restrictive version of the pupping den. In practice, however, it is difficult to distinguish between the two; therefore, for purposes of this definition either term applies.
- **Atypical den:** Any manmade structure that has been or is being occupied by a San Joaquin kit fox. Atypical dens may include pipes, culverts, and diggings beneath concrete slabs and buildings.

Qualified biologists will monitor potential dens within the construction area for 3 days with tracking media or remote-sensor cameras. If determined to be vacant, these vacant dens will be removed by careful hand excavation or under the supervision of qualified biologists.

Written results of the surveys must be received by USFWS and CDFG within 5 days after the completion of surveys and prior to the beginning of ground disturbance and/or construction activities likely to impact San Joaquin kit fox. The City will implement the mitigation specified below for each habitat feature within the 200-foot buffer area that is found during the preconstruction survey.

### **Avoid San Joaquin Kit Fox Dens by Establishing and Observing Exclusion Zones**

After preconstruction den searches have been conducted and before construction activities begin, a qualified biologist/monitor will establish and maintain the following exclusion zones measured in a radius outward from the entrance or cluster of entrances of each den within the 200-foot buffer.

- **Potential and Atypical dens:** A total of 4–5 flagged stakes shall be placed 50 feet from the den entrance(s) to identify the den location.
- **Known den:** Orange construction barrier fencing shall be installed between the construction work area and the known den site at a minimum distance of 100 feet from the den. The fencing shall be maintained until all construction related disturbances have been terminated. At that time, all fencing shall be removed to avoid attracting subsequent attention to the den.
- **Natal/pupping den:** USFWS must be contacted immediately if a natal or pupping den is discovered at or within 200 feet from the boundary of the construction area.

Construction and other project activities will be prohibited or greatly restricted within these exclusion zones. Only essential vehicular operation on existing roads and foot traffic should be permitted. If these exclusion zones cannot be followed, USFWS must be contacted.

If a known den or potential den that is later determined to be used by kit fox and cannot be avoided, a “take” authorization/permit from USFWS and CDFG would be required.

#### **4.3.6.3 Project Impacts**

Construction of the project would result in permanent and temporary loss of suitable habitat (ruderal annual grassland and agricultural land) for San Joaquin kit fox. Although the potential is considered low, construction activities could result in disturbance, injury, or mortality of San Joaquin kit foxes. Potential direct effects include damage to or destruction of dens, direct mortality from construction vehicles or heavy equipment, direct mortality from den collapse and subsequent suffocation, temporary disturbance from noise and human presence associated with construction activities, and harassment by construction personnel. In addition, exposed pipes, large excavated holes, or trenches that are left open after construction has finished for the day could entrap San Joaquin kit foxes moving through the construction area. Construction activities could also affect kit foxes by reducing prey populations through temporary and permanent habitat losses and habitat disturbance.

In some portions of the project area, the project would result in a wider roadway for San Joaquin kit foxes to cross. A portion of the roadway is raised, and animals cannot cross this section of the roadway. Road widening adjacent to grassland and agricultural areas could increase the potential for vehicle strikes in these areas. However, the project area is not considered a substantial movement corridor for kit foxes and the potential for kit foxes to occur in the project vicinity is considered low. Therefore, impacts on movement corridors for San Joaquin kit foxes are not substantial and no mitigation is proposed.

Impacts associated with permanent and temporary habitat loss for this species, described above, are applicable to Alternatives 1 and 2. Construction of either alternative would result in permanent loss and temporary disturbance to suitable habitat for this species (Table 4-3; Figures 4-1 and 4-2). Avoidance and minimization efforts described above, and the compensation measure discussed below, would ensure that the proposed project would not result in the loss or disturbance of San Joaquin kit fox and would mitigate for the loss of foraging habitat.

#### **4.3.6.4 Compensatory Mitigation**

##### ***Compensate for the Loss of Foraging Habitat for San Joaquin Kit Fox***

The City will compensate for permanent and temporary losses of San Joaquin kit fox foraging habitat resulting from construction of the project. At the time this NES was signed, the Low-Effect Habitat Conservation Plan indicates that the City of Tulare will purchase preservation credits equal to 76.41 acres of suitable habitat at the Sand Creek or Kreyenhagen Hills Conservation Bank. The acreages or location of compensatory mitigation may change based on final project design and/or further negotiation with the U.S. Fish and Wildlife Service.

#### **4.3.6.5 Cumulative Effects**

The permanent loss of suitable foraging habitat for San Joaquin kit fox would contribute to the loss of foraging habitat in the project region. Compensation for permanent and temporary losses of suitable foraging habitat will partially offset this permanent loss, but a residual cumulative loss of habitat would remain.

### **4.4 Other Biological Issues**

#### **4.4.1 Invasive Plant Species**

Invasive species are species listed by CDFA and invasive plants identified by Cal-IPC. Roads, highways, and related construction projects are some of the principal dispersal vectors for invasive plants and their seeds. The introduction and spread of invasive plants adversely affect natural plant communities by displacing native plant species that provide shelter and forage for wildlife species.

##### **4.4.1.1 Survey Results**

Table 3-2 identifies invasive plant species identified by CDFA and Cal-IPC that were observed within the BSA. The distribution of these species within the BSA is concentrated in the small areas of annual grassland, ruderal areas, and along the edges of agricultural land.

#### **4.4.1.2 Avoidance and Minimization Efforts**

Implementation of the following measures would avoid and minimize the introduction of new invasive species into the project area and the spread of invasive plant species to uninfested areas. Specifically, the City's contractor will do the following.

- Educate construction supervisors and managers on weed identification and the importance of controlling and preventing the spread of noxious weed infestations.
- Coordination with the Tulare County Agricultural Commissioner and/or the Tulare Weed Management Area (WMA) to ensure that the appropriate best management practices (BMPs) are implemented for the duration of project construction.
- Small, isolated infestations will be treated with eradication methods that have been approved by or developed in conjunction with the Tulare County Agricultural Commissioner and/or Tulare Weed Management Area to prevent and/or destroy viable plant parts or seed.
- Minimize surface disturbance to the greatest extent feasible to complete the work.
- Use native, noninvasive species or non-persistent hybrids in erosion-control plantings to stabilize site conditions and prevent invasive species from colonizing.
- Use certified, weed-free, imported erosion-control materials (or rice straw in upland areas).

#### **4.4.1.3 Project Impacts**

The majority of the invasive plant species in the BSA occur in the small areas of annual grassland, ruderal areas, and along the edges of agricultural land. The proposed project has the potential to create additional disturbed areas for a temporary period and would increase the area regularly subject to disturbance by vehicular traffic. However, the implementation of the avoidance and minimization measures described above would avoid and minimize the introduction and spread of invasive plants as the result of the proposed project. No further mitigation is proposed.

#### **4.4.1.4 Cumulative Effects**

The ground disturbance and construction vehicle traffic associated with constructing proposed project has the potential to cumulatively contribute to the introduction and spread of invasive plant species if the appropriate prevention measures are not implemented. With implementation of the proposed avoidance and minimization measures, the proposed project would not contribute to a cumulative effect.

# Chapter 5 Results: Permits and Technical Studies for Special Laws or Conditions

Applicable federal and state permits and approvals that could be required prior to construction of the proposed project are listed in Table 5-1.

**Table 5-1. Permits and Approvals Potentially Required for the Proposed Project**

Permit/Approval	Approving Agency	Permit/Approval Required?		Comments
		Yes	No	
Endangered Species Act Section 10: Consultation and Incidental Take Permit	U.S. Fish and Wildlife Service	X		Impacts on vernal pool fairy shrimp and San Joaquin kit fox are anticipated.
Section 401, Clean Water Act (Water Quality Certification)	Central Valley Regional Water Quality Control Board	X		Irrigation ditches and detention basins are potential waters of the U.S. assumed to be jurisdictional during preliminary jurisdictional determination approach.
Section 404, Clean Water Act (Nationwide 14)	U.S. Army Corps of Engineers	X		Irrigation ditches and detention basins are potential waters of the U.S. assumed to be jurisdictional during preliminary jurisdictional determination approach.
California Endangered Species Act	California Department of Fish and Game	X		Impacts on state listed species are anticipated.
Wastewater Discharge Requirements (WDRs)	Central Valley Regional Water Quality Control Board	X		WDRs needed for fill of seasonal pools and portions of irrigation ditches
California Fish and Game Code Section 1602	California Department of Fish and Game		X	
Executive Order 13112: Prevention and Control of Invasive Species	Federal Highway Administration	X		Mitigation identified in Chapter 4 satisfies requirement.
Executive Order 13186: Migratory Bird Treaty Act	Federal Highway Administration	X		Mitigation identified in Chapter 4 satisfies requirement.

## 5.1 Federal Endangered Species Act Consultation Summary

Consultation with USFWS under Section 10 of the ESA was initiated because at the time of initiation, there was no federal nexus for the proposed project (which would allow for consultation under Section 7). Consultation with the USACE was initiated after Section 10 consultation had begun. While it may have been possible for the USACE to have provided the federal nexus, the waters of the U.S. in question do not provide habitat for any federally listed

species. A Low Effect HCP has been submitted to USFWS to address potential direct temporary and permanent effects on vernal pool fairy shrimp and San Joaquin kit fox, and describe conservation measures that avoid, minimize, and mitigate the project's impacts.

## **5.2 Federal Fisheries and Essential Fish Habitat Consultation Summary**

No habitat for fish occurs within the BSA and therefore no consultation is required for take of federally listed fish or impacts to essential fish habitat.

## **5.3 California Endangered Species Act Consultation Summary**

State-listed species including San Joaquin kit fox and Swainson's hawk have potential to occur in the BSA. Consultation with CDFG for potential impacts to these species would be required to ensure that potential impacts are minimized and appropriately compensated. CDFG provided written comments on the draft environmental document. Minor changes in language and mitigation measures were made to the final environmental document. The Low Effect HCP will be submitted to CDFG for their review and comments. No other contact or discussions with CDFG have occurred to date.

## **5.4 Wetlands and Other Waters Coordination Summary**

Two segments of irrigation ditch that drain to the Tulare Lake Bed are located within the project area. These features are regulated water of the State and potential waters of the United States (per the USACE preliminary jurisdictional determination). Therefore, the ditches are regulated by USACE under Section 404 of the Clean Water Act and the RWQCB under Section 401, as well as the State Water Code. Because segments of these irrigation ditches would be affected by construction of the proposed project, the applicant will obtain a Section 404 from the USACE and a Water Quality Certification<sup>1</sup> from RWQCB before discharging fill or excavating within the irrigation ditches.

## **5.5 Invasive Species (Executive Order 13112)**

With implementation of the mitigation described in Chapter 4, the proposed project would not result in severe infestations of invasive plant species.

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<sup>1</sup> The Water Quality Certification from RWQCB also fulfills Waste Discharge Requirements required under the State Water Code.

# Chapter 6      References Cited

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## Appendix A CNDDDB Records Search

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California Department of Fish and Game

Natural Diversity Database

Cartmill Avenue - communities

Topos searched: Tulare, Paige, Goshen, Visalia, Cairns Corner, Exeter, Taylor Weir, Tipton, and Woodville

Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
1 Great Valley Valley Oak Riparian Forest	CTT61430CA			G1	S1.1	
2 Valley Sacaton Grassland	CTT42120CA			G1	S1.1	

California Department of Fish and Game

Natural Diversity Database

State Route 99/Cartmill Avenue Interchange Project

Topos searched: Tulare, Paige, Goshen, Visalia, Cairns Corner, Exeter, Taylor Weir, Tipton, and Woodville

Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
1 American badger <i>Taxidea taxus</i>	AMAJF04010			G5	S4	SC
2 An andrenid bee <i>Andrena macswaini</i>	IIHYM35040			G1G3	S1S3	
3 Hopping's blister beetle <i>Lytta hoppingi</i>	IICOL4C010			G1G2	S1S2	
4 Moody's gnaphosid spider <i>Talanites moodyae</i>	ILARA98020			G1G2	S1S2	
5 Morrison's blister beetle <i>Lytta morrisoni</i>	IICOL4C040			G1G2	S1S2	
6 San Joaquin kit fox <i>Vulpes macrotis mutica</i>	AMAJA03041	Endangered	Threatened	G4T2T3	S2S3	
7 Swainson's hawk <i>Buteo swainsoni</i>	ABNKC19070		Threatened	G5	S2	
8 Tipton kangaroo rat <i>Dipodomys nitratooides nitratooides</i>	AMAFD03152	Endangered	Endangered	G3T1	S1	
9 blunt-nosed leopard lizard <i>Gambelia sila</i>	ARACF07010	Endangered	Endangered	G1	S1	
10 burrowing owl <i>Athene cunicularia</i>	ABNSB10010			G4	S2	SC
11 mountain plover <i>Charadrius montanus</i>	ABNNB03100	Proposed Threatened		G2	S2?	SC
12 pallid bat <i>Antrozous pallidus</i>	AMACC10010			G5	S3	SC
13 tricolored blackbird <i>Agelaius tricolor</i>	ABPBXB0020			G2G3	S2	SC
14 valley elderberry longhorn beetle <i>Desmocerus californicus dimorphus</i>	IICOL48011	Threatened		G3T2	S2	
15 vernal pool fairy shrimp <i>Branchinecta lynchi</i>	ICBRA03030	Threatened		G3	S2S3	
16 western mastiff bat <i>Eumops perotis californicus</i>	AMACD02011			G5T4	S3?	SC
17 western pond turtle <i>Emys marmorata</i>	ARAAD02030			G3G4	S3	SC
18 western spadefoot <i>Spea hammondi</i>	AAABF02020			G3	S3	SC

California Department of Fish and Game

Natural Diversity Database

State Route 99/Cartmill Avenue Interchange - plants

Topos searched: Tulare, Paige, Goshen, Visalia, Cairns Corner, Exeter, Taylor Weir, Tipton, and Woodville

Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
1 California jewel-flower <i>Caulanthus californicus</i>	PDBRA31010	Endangered	Endangered	G1	S1	1B.1
2 California satintail <i>Imperata brevifolia</i>	PMPOA3D020			G2	S2.1	2.1
3 Earlimart orache <i>Atriplex cordulata var. erecticaulis</i>	PDCHE042V0			G3T2	S2.2	1B.2
4 San Joaquin adobe sunburst <i>Pseudobahia peirsonii</i>	PDAST7P030	Threatened	Endangered	G1	S1	1B.1
5 brittlescale <i>Atriplex depressa</i>	PDCHE042L0			G2Q	S2.2	1B.2
6 heartscale <i>Atriplex cordulata var. cordulata</i>	PDCHE040B0			G3T2	S2.2?	1B.2
7 lesser saltscale <i>Atriplex minuscula</i>	PDCHE042M0			G1	S1.1	1B.1
8 recurved larkspur <i>Delphinium recurvatum</i>	PDRAN0B1J0			G3	S3	1B.2
9 spiny-sepaled button-celery <i>Eryngium spinosepalum</i>	PDAP10Z0Y0			G2	S2.2	1B.2
10 subtle orache <i>Atriplex subtilis</i>	PDCHE042T0			G2	S2.2	1B.2



## Appendix B USFWS List

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**United States Department of the Interior**  
**FISH AND WILDLIFE SERVICE**

Sacramento Fish and Wildlife Office  
2800 Cottage Way, Room W-2605  
Sacramento, California 95825



July 20, 2012

Document Number: 120720010322

Jennifer Haire  
ICF International  
630 K Street, Suite 400  
Sacramento, CA 95814

Subject: Species List for Cartmill Avenue/State Route 99 Interchange Project

Dear: Ms. Haire

We are sending this official species list in response to your July 20, 2012 request for information about endangered and threatened species. The list covers the California counties and/or U.S. Geological Survey 7½ minute quad or quads you requested.

Our database was developed primarily to assist Federal agencies that are consulting with us. Therefore, our lists include all of the sensitive species that have been found in a certain area *and also ones that may be affected by projects in the area*. For example, a fish may be on the list for a quad if it lives somewhere downstream from that quad. Birds are included even if they only migrate through an area. In other words, we include all of the species we want people to consider when they do something that affects the environment.

Please read Important Information About Your Species List (below). It explains how we made the list and describes your responsibilities under the Endangered Species Act.

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be October 18, 2012.

Please contact us if your project may affect endangered or threatened species or if you have any questions about the attached list or your responsibilities under the Endangered Species Act. A list of Endangered Species Program contacts can be found [here](#).

Endangered Species Division



**U.S. Fish & Wildlife Service**  
**Sacramento Fish & Wildlife Office**

**Federal Endangered and Threatened Species that Occur in  
or may be Affected by Projects in the Counties and/or  
U.S.G.S. 7 1/2 Minute Quads you requested**

Document Number: 120720010322

Database Last Updated: September 18, 2011

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Quad Lists

Listed Species

Invertebrates

*Branchinecta conservatio*

Conservancy fairy shrimp (E)

*Branchinecta lynchi*

Critical habitat, vernal pool fairy shrimp (X)

vernal pool fairy shrimp (T)

*Desmocerus californicus dimorphus*

valley elderberry longhorn beetle (T)

*Lepidurus packardii*

vernal pool tadpole shrimp (E)

Fish

*Hypomesus transpacificus*

delta smelt (T)

Amphibians

*Ambystoma californiense*

California tiger salamander, central population (T)

*Rana draytonii*

California red-legged frog (T)

Reptiles

*Gambelia (=Crotaphytus) sila*

blunt-nosed leopard lizard (E)

*Thamnophis gigas*

giant garter snake (T)

Mammals

*Dipodomys nitratooides exilis*

Fresno kangaroo rat (E)

*Dipodomys nitratooides nitratooides*

Tipton kangaroo rat (E)

*Vulpes macrotis mutica*

San Joaquin kit fox (E)

Plants

*Caulanthus californicus*

California jewelflower (E)

*Pseudobahia peirsonii*

San Joaquin adobe sunburst (T)

## Quads Containing Listed, Proposed or Candidate Species:

CAIRNS CORNER (310B)

WOODVILLE (310C)

TULARE (311A)

PAIGE (311B)

TAYLOR WEIR (311C)

TIPTON (311D)

EXETER (333C)

GOSHEN (334C)

VISALIA (334D)

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## County Lists

No county species lists requested.

**Key:**(E) *Endangered* - Listed as being in danger of extinction.(T) *Threatened* - Listed as likely to become endangered within the foreseeable future.(P) *Proposed* - Officially proposed in the Federal Register for listing as endangered or threatened.(NMFS) Species under the Jurisdiction of the National Oceanic & Atmospheric Administration Fisheries Service. Consult with them directly about these species.*Critical Habitat* - Area essential to the conservation of a species.(PX) *Proposed Critical Habitat* - The species is already listed. Critical habitat is being proposed for it.(C) *Candidate* - Candidate to become a proposed species.(V) *Vacated* by a court order. Not currently in effect. Being reviewed by the Service.(X) *Critical Habitat* designated for this species

## Important Information About Your Species List

### How We Make Species Lists

We store information about endangered and threatened species lists by U.S. Geological Survey 7½ minute quads. The United States is divided into these quads, which are about the size of San Francisco.

The animals on your species list are ones that occur within, **or may be affected by** projects within, the quads covered by the list.

- Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them.
- Amphibians will be on the list for a quad or county if pesticides applied in that area may be carried to their habitat by air currents.
- Birds are shown regardless of whether they are resident or migratory. Relevant birds on the county list should be considered regardless of whether they appear on a quad list.

### Plants

Any plants on your list are ones that have actually been observed in the area covered by the list. Plants may exist in an area without ever having been detected there. You can find out

what's in the surrounding quads through the California Native Plant Society's online [Inventory of Rare and Endangered Plants](#).

## Surveying

Some of the species on your list may not be affected by your project. A trained biologist and/or botanist, familiar with the habitat requirements of the species on your list, should determine whether they or habitats suitable for them may be affected by your project. We recommend that your surveys include any proposed and candidate species on your list. See our [Protocol](#) and [Recovery Permits](#) pages.

For plant surveys, we recommend using the [Guidelines for Conducting and Reporting Botanical Inventories](#). The results of your surveys should be published in any environmental documents prepared for your project.

## Your Responsibilities Under the Endangered Species Act

All animals identified as listed above are fully protected under the Endangered Species Act of 1973, as amended. Section 9 of the Act and its implementing regulations prohibit the take of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any such animal.

Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR §17.3).

Take incidental to an otherwise lawful activity may be authorized by one of two procedures:

- If a Federal agency is involved with the permitting, funding, or carrying out of a project that may result in take, then that agency must engage in a formal [consultation](#) with the Service.

During formal consultation, the Federal agency, the applicant and the Service work together to avoid or minimize the impact on listed species and their habitat. Such consultation would result in a biological opinion by the Service addressing the anticipated effect of the project on listed and proposed species. The opinion may authorize a limited level of incidental take.

- If no Federal agency is involved with the project, and federally listed species may be taken as part of the project, then you, the applicant, should apply for an incidental take permit. The Service may issue such a permit if you submit a satisfactory conservation plan for the species that would be affected by your project.

Should your survey determine that federally listed or proposed species occur in the area and are likely to be affected by the project, we recommend that you work with this office and the California Department of Fish and Game to develop a plan that minimizes the project's direct and indirect impacts to listed species and compensates for project-related loss of habitat. You should include the plan in any environmental documents you file.

## Critical Habitat

When a species is listed as endangered or threatened, areas of habitat considered essential to its conservation may be designated as critical habitat. These areas may require special management considerations or protection. They provide needed space for growth and normal behavior; food, water, air, light, other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, rearing of offspring, germination or seed dispersal.

Although critical habitat may be designated on private or State lands, activities on these lands are not restricted unless there is Federal involvement in the activities or direct harm to listed wildlife.

Sacramento Fish & Wildlife Office Species Lists Page 7 of 7

If any species has proposed or designated critical habitat within a quad, there will be a separate line for this on the species list. Boundary descriptions of the critical habitat may be found in the Federal Register. The information is also reprinted in the Code of Federal Regulations (50 CFR 17.95). See our [Map Room](#) page.

## Candidate Species

We recommend that you address impacts to candidate species. We put plants and animals on our candidate list when we have enough scientific information to eventually propose them for listing as threatened or endangered. By considering these species early in your planning process you may be able to avoid the problems that could develop if one of these candidates was listed before the end of your project.

## Species of Concern

The Sacramento Fish & Wildlife Office no longer maintains a list of species of concern. However, various other agencies and organizations maintain lists of at-risk species. These lists provide essential information for land management planning and conservation efforts. [More info](#)

## Wetlands

If your project will impact wetlands, riparian habitat, or other jurisdictional waters as defined by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, you will need to obtain a permit from the U.S. Army Corps of Engineers. Impacts to wetland habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6520.

## Updates

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be October 18, 2012.



Appendix C Plant Species Observed in the SR  
99/Cartmill Avenue Interchange  
Project Study Area

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# Appendix C Plant Species Observed in the SR 99/Cartmill Avenue Interchange Project Study Area

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Scientific Name	Common Name
Ailanthus altissima	tree-of-heaven
Amsinckia menziesii	common fiddleneck
Avena barbata	slender wild oats
Avena fatua	wild oat
Bromus diandrus	ripgut brome
Centromadia fitchii	Fitch's spikeweed
Centromadia pungens	common spikeweed
Chamaesyce sp.	spurge
Chenopodium ambrosioides	Mexican tea
Conyza sp.	horseweed
Cynodon dactylon	Bermuda grass
Cyperus eragrostis	tall flatsedge
Datura wrightii	jimson weed
Distichlis spicata	saltgrass
Eremocarpus setigerus	turkey mullein
Erodium botrys	big heronbill
Erodium cicutarium	red-stemmed filaree
Eucalyptus sp.	gum tree
Hordeum marinum ssp. gussoneanum	Mediterranean barley
Hordeum murinum ssp. leporinum	foxtail barley
Lepidium oblongum var. oblongum	veiny peppergrass
Leptochloa fascicularis	bearded sprangletop
Lolium multiflorum	Italian ryegrass
Lythrum hyssopifolium	hyssop loosestrife
Malvella leprosa	alkali mallow
Nerium oleander	oleander
Poa annua	annual bluegrass
Polygonum arenastrum	prostate knotweed
Polypogon monspeliensis	rabbitsfoot grass
Populus sp.	cottonwood
Quercus lobata	valley oak
Raphanus raphanistrum	jointed charlock
Salsola tragus	Russian thistle
Senecio vulgaris	common groundsel
Setaria pumila [S. glauca]	yellow bristlegrass
Sinapsis arvensis	charlock
Sorghum halepense	johnson grass
Tribulus terrestris	puncture vine
Triticum aestivum	wheat
Veronica peregrina ssp. xalapensis	purslane speedwell



Appendix D Wildlife Species Observed in the SR  
99/Cartmill Avenue Interchange  
Project Study Area

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# Appendix D Wildlife Species Observed in the SR 99/Cartmill Avenue Interchange Project Study Area

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Common Name	Scientific Name
<b>Reptiles</b>	
Western fence lizard	<i>Sceloporus occidentalis</i>
<b>Birds</b>	
American crow	<i>Corvus brachyrhynchos</i>
Brewer's blackbird	<i>Euphagus cyanocephalus</i>
European starling	<i>Sturnus vulgaris</i>
mourning dove	<i>Zenaida macroura</i>
red-tailed hawk	<i>Buteo jamaicensis</i>
Swainson's hawk	<i>Buteo swainsoni</i>
rock dove	<i>Columba livia</i>
turkey vulture	<i>Cathartes aura</i>
<b>Mammals</b>	
California ground squirrel	<i>Spermophilus beecheyi</i>
Black-tailed jackrabbit	<i>Lepus californicus</i>



## Appendix E Wetland Delineation

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# **DELINEATION OF WETLANDS AND OTHER WATER BODIES FOR THE STATE ROUTE 99/CARTMILL AVENUE INTERCHANGE IMPROVEMENTS PROJECT**

**PREPARED FOR:**

City of Tulare  
411 E. Kern Avenue  
Tulare, CA 93274  
Contact: Mark Kielty  
559.684.4200

**PREPARED BY:**

ICF International  
630 K Street, Suite 400  
Sacramento, CA 95814  
Contact: Shahira Ashkar  
916.737.3000

**July 2012**



ICF International. 2012. *Delineation of Wetlands and Other Water Bodies for the Interstate 99/Cartmill Avenue Interchange Improvements Project*. July. (ICF 06890.06). Sacramento, CA. Prepared for: City of Tulare, Tulare, CA.

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# Acronyms and Abbreviations

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Arid West Supplement	Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region
CFR	Code of Federal Regulations
Corps	U.S. Army Corps of Engineers
CWA	Clean Water Act
GPS	global positioning system
OHWM	ordinary high water mark
RGL	Regulatory Guidance Letter
SR	State Route



# Delineation of Wetlands and Other Water Bodies for the State Route 99/Cartmill Avenue Interchange Improvements Project

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## Summary

This report presents the results of the delineation of wetlands and other water bodies conducted for the proposed State Route (SR) 99/Cartmill Avenue Interchange Improvements Project (proposed project) in Tulare County, California. The delineation was conducted to assist the City of Tulare in determining the type and extent of wetlands and other water bodies in the delineation area that are waters of the United States and subject to regulation by the U.S. Army Corps of Engineers (Corps) under Section 404 of the Clean Water Act (CWA).

Wetlands and other water bodies were delineated using the routine onsite determination method described in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and, where applicable, the criteria specified in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (U.S. Army Corps of Engineers 2008). Data were gathered during field surveys conducted on August 7, 2007 and March 17 and 24, 2009.

The delineation area encompasses 275 acres and includes all areas that could be directly or indirectly disturbed during construction of the proposed project.

Based on the data gathered during the field surveys, the delineation area contains 5.739 acres of potential other (i.e., non-wetland) waters of the U.S.. No other water bodies meeting the definition of waters of the U.S. or waters of the State were identified.

A description of the wetlands mapped in the delineation area is provided in the *Results* section of this report, and their locations are shown on Exhibit A. This delineation report was prepared to support the submission of a preliminary jurisdictional determination to the Corps' Sacramento District, Regulatory Division.

## Introduction

This report presents the results of ICF International's delineation of wetlands and other water bodies conducted for the State Route 99/Cartmill Avenue Interchange Improvements Project in Tulare County, California (Figures 1 and 2).

Two alternatives are being considered. Alternative 1 would include the construction of a new Cartmill Avenue overcrossing structure, hook on-ramps to northbound and southbound State Route 99, and the realignment of Akers Street (Road 100) and Drive 103 (Figure 3). Alternative 2 would include the construction of a new Cartmill Avenue overcrossing structure, a hook on-ramp to northbound State Route 99, a new intersection at the on- and off-ramps to southbound State Route 99 and Cartmill Avenue, and the realignment of Akers Street (Road 100) and Drive 103 (Figure 4).

The project applicant is the City of Tulare. The contact person for the project applicant is as follows:

Mark Kielty  
City of Tulare  
411 E. Kern Avenue  
Tulare, CA 93274  
559-684-4200

## Site Location and Driving Directions

The delineation area is located in west-central Tulare County, California, approximately two miles north of downtown Tulare. Figures 1 shows the location of the delineation area and its relationship to the surrounding towns and highways and Figure 2 shows the topography and other geographic features of the delineation area and immediate vicinity .

The delineation area is located on the Visalia U.S. Geological Survey 7.5-minute quadrangle. The center of the delineation area is approximately at 36.2407° north latitude and 119.3312° west longitude.

To reach the delineation area from downtown Sacramento, travel south on SR 99 for approximately 214 miles. Exit at the Cartmill Avenue exit. Turn right onto West Cartmill Avenue and park near the intersection of West Cartmill Avenue and M Street.

## Site Description

### General

The 275-acre delineation area is situated in an area of nearly level alluvial fans and floodplains. Most of the delineation area is cultivated. The remaining areas consist of suburban development and SR 99 right-of-way.

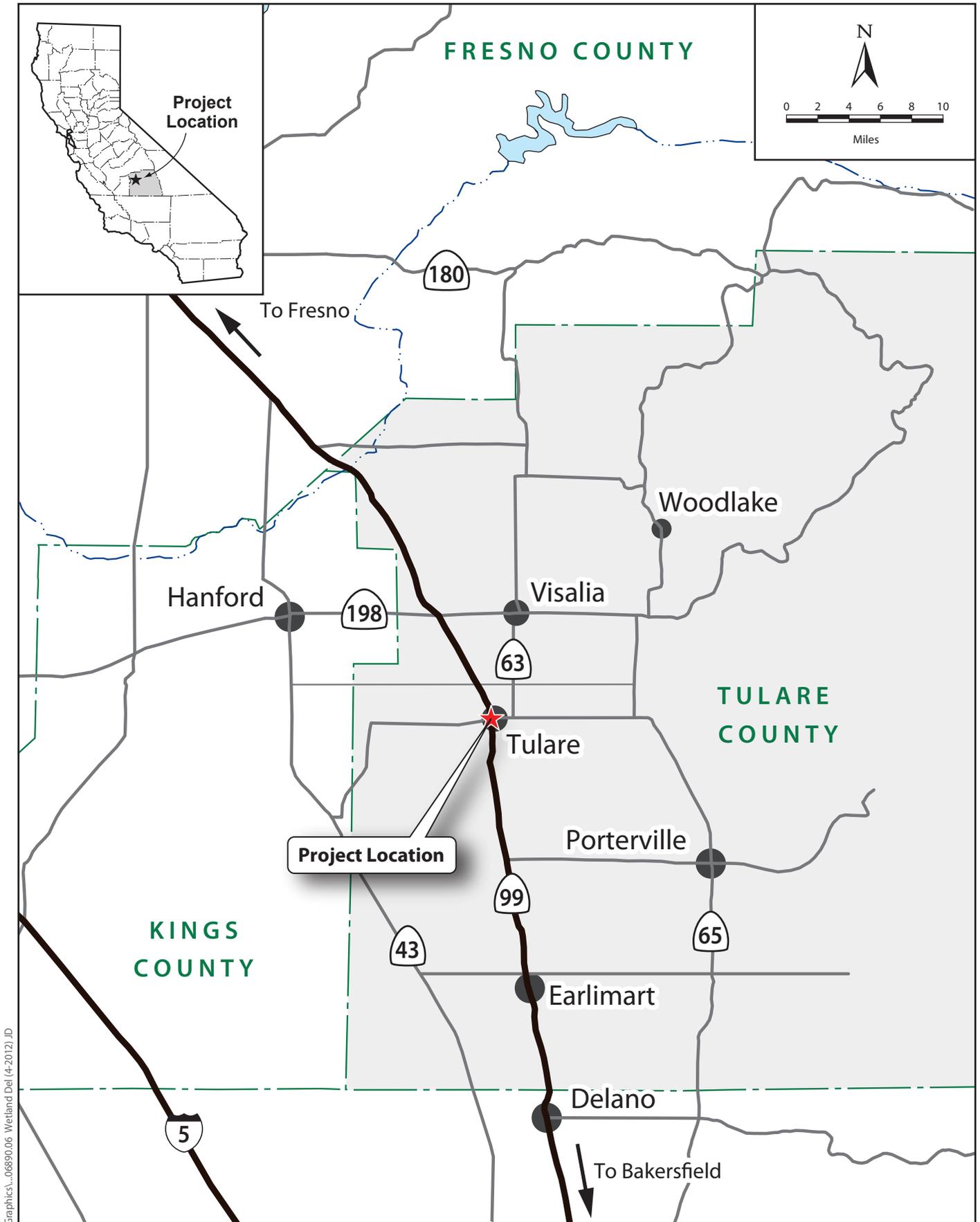
Elevations in the delineation area range from approximately 290 feet in the western part to approximately 298 feet in the eastern part. Slopes range from nearly level to approximately two percent.

### Hydrology

The delineation area is located in the Tulare-Buena Vista Lake hydrologic unit (HUC 18030012) (U.S. Geological Survey 2012).

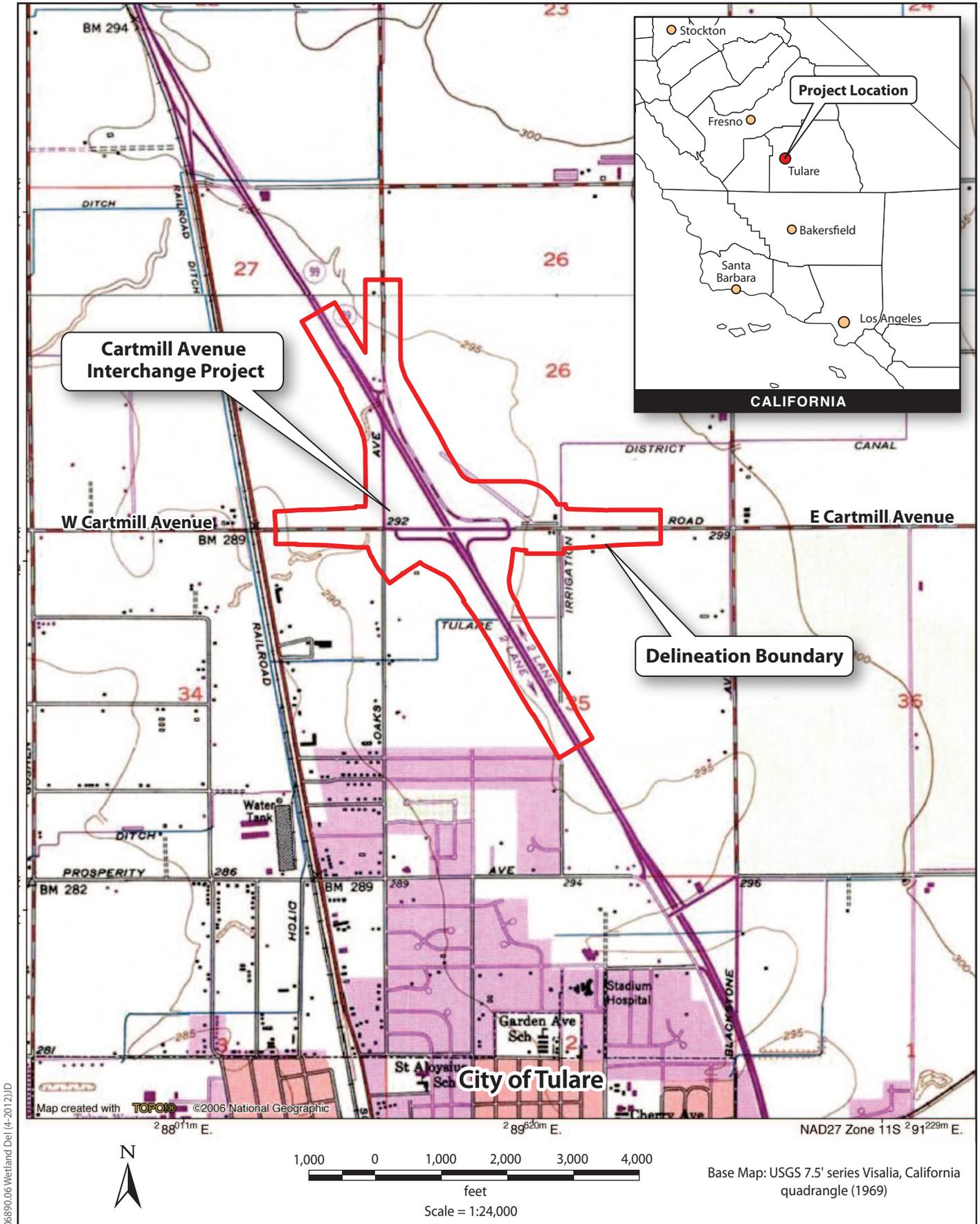
The delineation area drains westerly. The irrigation ditches in the delineation area indirectly drain to the Tulare Lake Basin, which is considered a traditional navigable water that was used historically for interstate or foreign commerce. Periodic overflow from the Tulare Lake Basin enters the the San Joaquin River. The San Joaquin River from its mouth to a point seven miles downstream from SR 99 (in Fresno) where it is considered a navigable water by the U.S. Army Corps of Engineers, Sacramento District (2012a).

No evidence of “leaky ditch” wetlands (U.S. Army Corps of Engineers 2004), which are caused by seepage of water from canals and ditches, were observed during the delineation field surveys.



Graphics\...06890.06 Wetland Del (4-2012) JD

**Figure 1**  
**Project Site Vicinity Map**



06890.06 Wetland Del (4-2012)JD

**Figure 2**  
**Project Site Location Map**

## Soils

The U.S. Department of Agriculture, Natural Resources Conservation Service (Soil Survey Staff 2012) has mapped the delineation area as being underlain by Colpien, Nord, and Tagus series soils. All the soils formed from alluvium and are weakly to moderately developed; no subsurface restrictive layer is present. Other salient characteristics of the soil map units are summarized in Table 1.

**Table 1. Summary of Soil Characteristics in the Delineation Area**

Soil Map Symbol	Soil Map Unit Name	Landform	Natural Drainage Class	Hydric Status of Primary Component and Inclusions of Map Unit*
109	Colpien loam, 0 to 2 percent slopes	Fan remnants	Moderately well	Primary component: non-hydric Inclusions: all non-hydric
130	Nord fine sandy loam, 0 to 2 percent slopes	Floodplains, alluvial fans	Well	Primary component: non-hydric Inclusions: all but one non-hydric
137	Tagus loam, 0 to 2 percent slopes	Fan remnants	Well	Primary component: non-hydric Inclusions: all non-hydric

Source: Soil Survey Staff 2012.

\* "Primary Component" refers to the soil that makes up approximately 85% or more of the map unit. The remaining soils in the map unit are inclusions.

A map of the soils in the delineation area and associated hydric soil information are provided in Appendix A.

## Precipitation and Growing Season

The climate in the delineation area is characterized by hot, dry summers and cool, moist winters. National Weather Service cooperative weather station number CA 9367 (Visalia) is the closest weather station to the delineation area, located approximately six miles to the northeast. Average annual precipitation at this weather station is approximately 11 inches, with most falling as rain between the months of November and March (U.S. Department of Agriculture, Natural Resources Conservation Service 2012). (See WETS table in Appendix B).

Prior to the delineation field survey on March 17, 2009, the previous precipitation event recorded at the nearby Visalia weather station was 0.14 inch, occurring earlier that month.

The length of the growing season at the Visalia weather station in 5 years out of 10 at 28 degrees air temperature averages 365 days (U.S. Department of Agriculture, Natural Resources Conservation Service 2012).

## Vegetation

The delineation area is within the Great Valley Floristic Province (Baldwin et al. 2012:41). The vegetation types observed in the delineation area are agricultural, landscape, ruderal, and seasonal wetland. The seasonal wetland vegetation is the only vegetation type that is considered a wetland plant community and is discussed in the *Results* section. A list of the plant species observed while

conducting the delineation field surveys and the wetland indicator status of each is provided in Appendix C.

## Methods

Field work for the delineation was conducted by ICF botanists/wetland ecologists Jessica Hughes and Joy Nishida on August 7, 2007 and March 17 and 24, 2009 using the routine onsite determination method described in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and, where applicable, the criteria specified in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Arid West Supplement)(U.S. Army Corps of Engineers 2008).

Jessica Hughes holds an M.S. in Botany and Plant Pathology from Michigan State University, East Lansing (2004) and a B.S. in Biology from Central Michigan University, Mount Pleasant (2000) and has 7 years of experience conducting wetland delineations in California. Joy Nishida holds an M.S. in Biological Sciences from California Polytechnic State University, Pomona (1988) and a B.S. in Environmental & Systematic Biology and Natural Resources Management from California Polytechnic State University, San Luis Obispo (1983) and has 3 years of experience conducting wetland delineations in California.

As detailed in the Arid West Supplement, data on vegetation, soil, and hydrology characteristics used as the basis for wetland boundary determinations were collected and recorded on Arid West Supplement data forms (Appendix D). Data forms were completed at four sample plots (data points).

The wetland indicator status of each plant species was based on the *National Wetland Plant List for the Arid West Region* (U.S. Army Corps of Engineers 2012b)). Common and scientific plant names are taken from the second edition of the *Jepson Manual* (Baldwin et al. 2012).

A Trimble GeoXT global positioning system (GPS) receiver, typically accurate to less than one horizontal meter, was used to record the location of the data points and jurisdictional area boundaries. The GPS data were plotted and overlain to the aerial photograph/topographic base map to generate the delineation map at a scale of 1 inch = 100 feet.

The boundaries of the irrigation ditches (other waters) in the delineation area were identified by locating the ordinary high water mark (OHWM), which represents the lateral limit of Corps jurisdiction over nontidal, non-wetland waters in the absence of adjacent wetlands (33 Code of Federal Regulations [CFR] 328.4[c]). The OHWM was identified using the field indicators provided in 33 CFR 328.3(e) and 329.11(a)(1) and in guidance issued by USACE in 2005 (U.S. Army Corps of Engineers 2005).The boundaries of detention basins were mapped by aerial photo interpretation.

The resulting delineation map and this report were prepared in accordance with U.S. Army Corps of Engineers Sacramento District guidelines (U.S. Army Corps of Engineers 2001).

## Results

The potential waters of the U.S. identified in the delineation area consist of the irrigation ditches and detention basins (Exhibit A). In accordance with a preliminary jurisdictional determination, these features were determined to be subject to regulation by the Corps under CWA Section 404.

Additionally, data sampling was conducted in four depressions observed in the delineation area to determine if they exhibited positive indicators for all three federal wetland criteria (see Data Forms 1–4 in Appendix D). Representative photographs taken of the delineation area are provided in Appendix E.

## Potential Waters of the U.S.

### Irrigation Ditches

Three irrigation ditch segments (OW-1a, OW-1b, and OW-1c) were identified during the field surveys in the eastern part of the delineation area (Exhibit A). The width of both OW-1a and OW-1b at the OHWM is nine feet, and OW-1c is five feet wide at the OHWM. The OHWM of the irrigation ditches was identified based on the absence of terrestrial vegetation. The vegetative cover in the ditches is less than 5%. The ditches appear to have been excavated in dry land (i.e., uplands) for the purpose of agricultural use and do not appear to have replaced a natural drainage feature. As discussed above under 'Hydrology', the irrigation ditches drain indirectly the Tulare Lake Basin, which is considered a traditional navigable water, and periodic overflow from the basin enters the the San Joaquin River.

### Detention Basins

Three detention basins encompassing a total of 5.515 acres were identified during the field surveys in the southern part of the delineation area (Exhibit A). The basins on the east side of SR 99 were unvegetated and the basin on the west side of SR 99 contained cattail (*Typha* sp.) on March 24, 2009. The detention basins appear to have been excavated on dry land to collect runoff and do not appear to have replaced a previously existing natural aquatic feature.

## Other Areas Sampled

The delineation area contains four depressions located west of SR 99 that were sampled to determine if positive indicators for all three federal wetland criteria (i.e., hydrophytic vegetation, hydric soils, and wetland hydrology) were present. The data forms for the areas sampled are provided in Appendix D and their locations are depicted on Exhibit A.

Three of the depressions met the Corps threshold for being vegetated (i.e., 5 % cover) (U.S. Army Corps of Engineers 2008: 88). The dominant vegetation in two of the depressions was Bermuda grass (*Cynodon dactylon*), which was previously assigned a wetland indicator status of FAC but was recently designated as a FACU species (Data Forms DP- 2 & DP-3) (U.S. Army Corps of Engineers 2012b). The third depression, which was dominated by turkey mullein (*Croton setigerus*; UPL) and Italian ryegrass (*Festuca perennis*; FAC), did not exhibit a positive indicator for hydrophytic vegetation (Data Form DP-1). The fourth depression did not meet the Corps cover threshold for being vegetated (Data Form DP- 4). As such, none of the areas sampled exhibited positive indicators for hydrophytic vegetation. The soils in the areas sampled did not contain any indicators for hydric soil (e.g., redoximorphic features). Accordingly, none of the areas sampled were determined to have hydric soils. The only federal wetland criterion that was observed in all the depressions was wetland hydrology. Indicators of wetland hydrology that were observed were surface soil cracks (Data Forms DP-1, DP-2, & DP-4), sediment deposits (Data Form DP-3), surface water (Data Forms DP-2 &

DP-4), and inundation visible on aerial imagery (Data Form DP-4), and the presence of aquatic invertebrates (i.e., seed shrimp) (Data Form DP-4).

Therefore, based on the lack of more than one positive wetland indicator at the areas sampled, none of the depressions met the state or federal wetland definition and therefore, are not potential waters of the U.S. or waters of the state.

## References Cited

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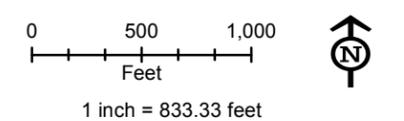
U.S. Geological Survey. 2012. Boundary Descriptions and Names of Regions, Subregions, Accounting Units and Cataloging Units. Last revised: March 16, 2011. Available: <http://water.usgs.gov/wsc/cat/18030012.html>. Accessed: April 25, 2012.



**Exhibit A**  
**Delineation of Potential Waters**  
**of the US,**  
**State Route 99 / Cartmill Ave**  
**Interchange Improvement Project**

July 2012

Other Waters	Acres
 Irrigation Ditch	
OW-1a	0.106
OW-1b	0.082
OW-1c	0.036
 Detention Basins	
OW-2	2.076
OW-3	1.814
OW-4	1.625
<b>Total 5.739</b>	



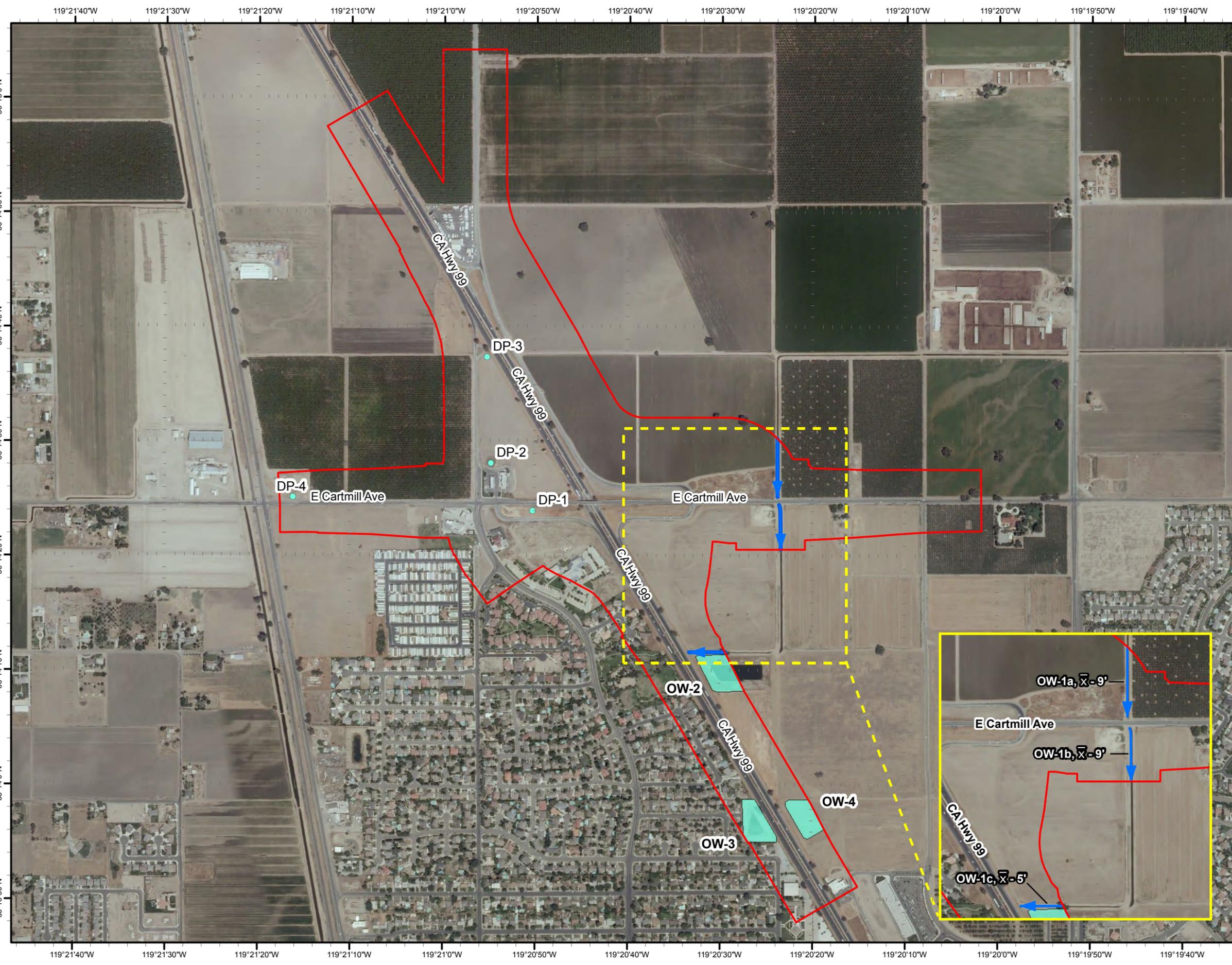
- Legend**
-  Delineation Area = 275 acres
  -  Data Point

- NOTES:**
1. Base map Source: ICF
  2. Aerial Source: NAIP 2010
  3. US GS Topo Quad: Tulare and Visalia
  4. PLS S: Section 26, T19S R24E

Delineated By:	MARCH 2009
J. Hughes, J Nishida	
Drawn By: Alex Angier	July 2012

REV.	DATE	Description	BY	APP'D

Prepared For:	Contact:
City of Tulare	ICF Internatioal
411 E Kern Avenue	630 K Street, Suite 400
Tulare, CA 93274	Sacramento, CA 95814
Contact Mark Kielty	Contact: Shahira Ashkar
559-684-4200	916-737-3000
	SHEET: 1 OF 1



K:\Projects\_1\Omni\_Means\06890\_06\mapdoc\Figures\Welland\_delin\_20120709.mxd AA 7/12/2012

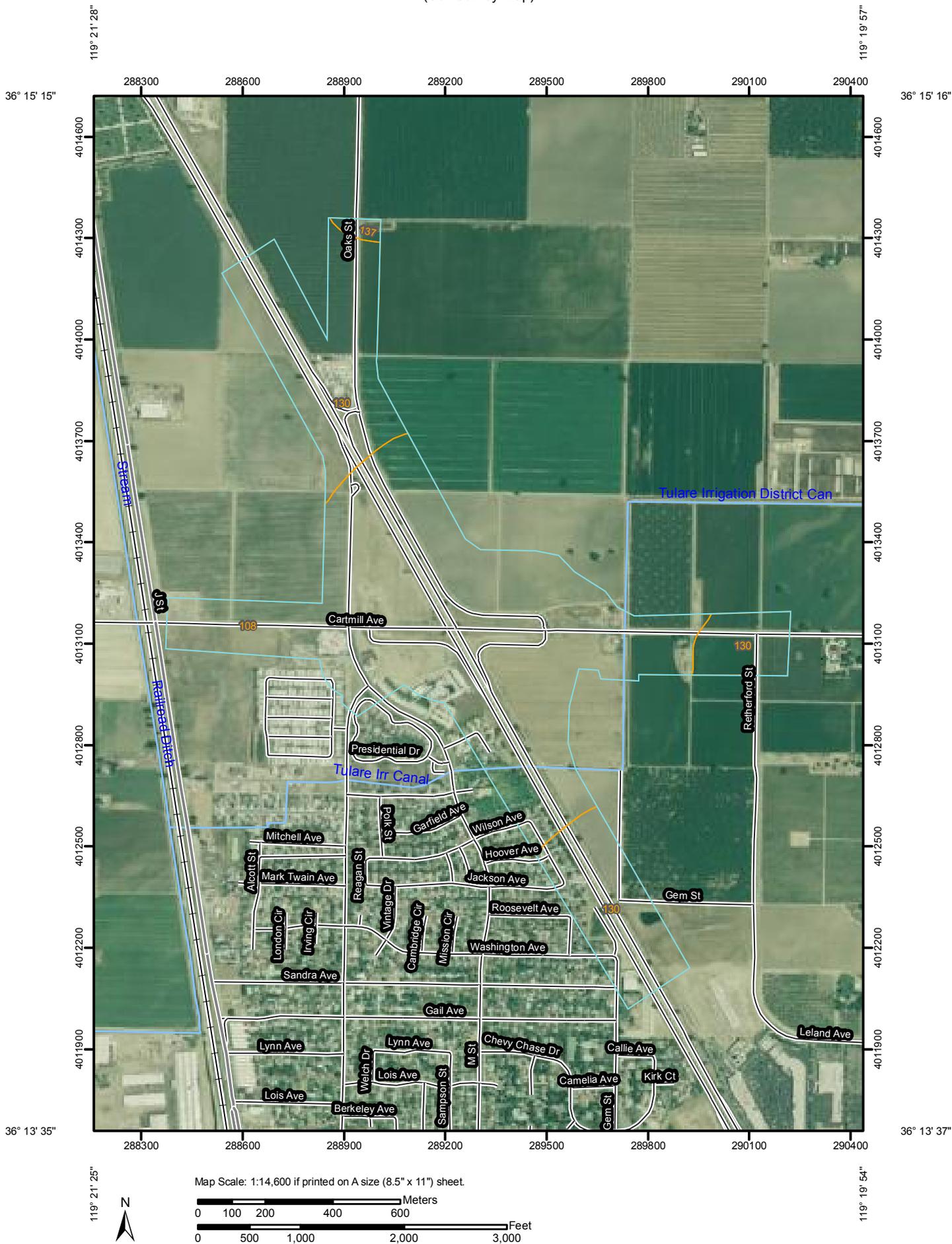


Appendix A  
**Soil Survey Information**

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Soil Map—Tulare County, Western Part, California  
(Soil Survey Map)



Soil Map—Tulare County, Western Part, California  
(Soil Survey Map)

### MAP LEGEND

#### Area of Interest (AOI)

 Area of Interest (AOI)

#### Soils

 Soil Map Units

#### Special Point Features

-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot
-  Spoil Area
-  Stony Spot

-  Very Stony Spot
-  Wet Spot
-  Other

#### Special Line Features

-  Gully
-  Short Steep Slope
-  Other

#### Political Features

-  Cities

#### Water Features

-  Streams and Canals

#### Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

### MAP INFORMATION

Map Scale: 1:14,600 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service  
Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>  
Coordinate System: UTM Zone 11N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Tulare County, Western Part, California  
Survey Area Data: Version 6, Aug 31, 2009

Date(s) aerial images were photographed: 7/1/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Tulare County, Western Part, California (CA659)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
108	Colpien loam, 0 to 2 percent slopes	169.2	64.0%
130	Nord fine sandy loam, 0 to 2 percent slopes	93.2	35.3%
137	Tagus loam, 0 to 2 percent slopes	1.8	0.7%
<b>Totals for Area of Interest</b>		<b>264.2</b>	<b>100.0%</b>



## Hydric Soils (CA)

This table lists the map unit components and their hydric status in the survey area. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (National Research Council, 1995; Hurt and others, 2002).

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Cowardin and others, 1979; U.S. Army Corps of Engineers, 1987; National Research Council, 1995; Tiner, 1985). Criteria for all of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

Map units that are dominantly made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units dominantly made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

The criteria for hydric soils are represented by codes in the table (for example, 2B3). Definitions for the codes are as follows:

1. All Histels except for Folistels, and Histosols except for Folist.
2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that:
  - A. are somewhat poorly drained and have a water table at the surface (0.0 feet) during the growing season, or
  - B. are poorly drained or very poorly drained and have either:
    - i. a water table at the surface (0.0 feet) during the growing season if textures are coarse sand, sand, or fine sand in all layers within a depth of 20 inches, or
    - ii. a water table at a depth of 0.5 foot or less during the growing season if saturated hydraulic conductivity (Ksat) is equal to or greater than 6.0 in/hr in all layers within a depth of 20 inches, or
    - iii. a water table at a depth of 1.0 foot or less during the growing season if saturated hydraulic conductivity (Ksat) is less than 6.0 in/hr in any layer within a depth of 20 inches.
3. Soils that are frequently ponded for long or very long duration during the growing season.
4. Soils that are frequently flooded for long or very long duration during the growing season.

Hydric Condition: Food Security Act information regarding the ability to grow a commodity crop without removing woody vegetation or manipulating hydrology.

References:

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- United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

## Report—Hydric Soils (CA)

Hydric Soils (CA)– CA659 - Tulare County, Western Part, California							
Map symbol and map unit name	Component/ Local Phase	Hydric status	Landform	Hydric criteria met (code)	Farmable condition	Comp. pct.	Altered hydrology notes
108: Colpien loam, 0 to 2 percent slopes	(C) - Colpien-	No	Fan remnants	—	—	85	—
	(I) - Hanford-	No	Flood plains, alluvial fans	—	—	0-3	—
	(I) - Biggriz-	No	Fan remnants	—	—	0-3	—
	(I) - Gambogy-	No	Flood plains, alluvial fans	—	—	0-3	—
	(I) - Tujunga-	No	Flood plains	—	—	0-2	—
	(I) - Nord-	No	Flood plains, alluvial fans	—	—	0-2	—
	(I) - Akers-saline-sodic	No	Fan remnants	—	—	0-2	—
130: Nord fine sandy loam, 0 to 2 percent slopes	(C) - Nord-	No	Flood plains, alluvial fans	—	—	85	—
	(I) - Grangeville-saline-sodic	Yes	Flood plains, alluvial fans	4	Farmable under natural conditions	0-3	—
	(I) - Hanford-	No	Flood plains, alluvial fans	—	—	0-3	—
	(I) - Tujunga-	No	Flood plains	—	—	0-3	—
	(I) - Tagus-	No	Fan remnants	—	—	0-2	—
	(I) - Akers-	No	Fan remnants	—	—	0-2	—
	(I) - Colpien-	No	Fan remnants	—	—	0-2	—
137: Tagus loam, 0 to 2 percent slopes	(C) - Tagus-	No	Fan remnants	—	—	85	—
	(I) - Tujunga-	No	Flood plains	—	—	0-5	—
	(I) - Hanford-	No	Flood plains, alluvial fans	—	—	0-5	—
	(I) - Grangeville-	No	Flood plains, alluvial fans	—	—	0-3	—
	(I) - Colpien-	No	Fan remnants	—	—	0-2	—

## Data Source Information

Soil Survey Area: Tulare County, Western Part, California

Survey Area Data: Version 6, Aug 31, 2009

Appendix B  
**WETS Table**

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**Appendix B. WETS Table for Visalia Station, CA9367**

WETS Station : VISALIA, CA9367  
 Latitude: 3620 Longitude: 11918  
 State FIPS/County(FIPS): 06107  
 Start yr. - 1971 End yr. - 2000

Creation Date: 08/29/2002  
 Elevation: 00330  
 County Name: Tulare

Month	Temperature (Degrees F.)			Precipitation (Inches)				
	avg daily max	avg daily min	avg	avg	30% chance will have		avg # of days	avg total
					less than	more than	w/.1 or more	snow fall
January	54.3	38.3	46.3	2.03	0.81	2.50	5	0.1
February	61.8	41.9	51.8	1.95	0.79	2.37	4	0.0
March	67.0	45.7	56.3	2.15	0.94	2.66	4	0.0
April	74.0	49.0	61.5	0.82	0.25	1.02	2	0.0
May	82.0	54.9	68.4	0.38	0.00	0.43	1	0.0
June	89.9	60.9	75.4	0.14	0.00	0.00	0	0.0
July	94.6	65.5	80.0	0.01	0.00	0.00	0	0.0
August	93.2	64.0	78.6	0.02	0.00	0.00	0	0.0
September	87.8	59.7	73.8	0.25	0.00	0.21	0	0.0
October	78.9	52.2	65.6	0.65	0.08	0.79	1	0.0
November	64.5	42.9	53.7	1.13	0.46	1.44	3	0.0
December	54.5	37.0	45.8	1.49	0.78	1.88	3	0.0
Annual	-----	-----	-----	-----	8.70	12.59	--	-----
Average	75.2	51.0	63.1	-----	-----	-----	--	-----
Total	-----	-----	-----	11.04	-----	-----	23	0.1







97	4.59	0.15	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.15	2.83	1.66
9.69												
98	3.53	4.62	4.09	2.03	1.60	1.25	0.00	0.00	0.99	0.26	0.95	0.62
19.94												
99M3.91	1.00	0.79	1.74	0.00	0.00	0.00	0.00	0.00	0.35	0.00	0.73	0.00
8.52												
0	2.17	4.44	1.45	1.03	0.50	0.95	0.00	0.10	0.00	2.07	0.00	0.10
12.81												
1	2.18	3.82	0.44	1.44	0.00	0.00	0.00	0.00	0.00	0.48	2.04	4.89
15.29												
2												

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**Plant Species Observed During Delineation Fieldwork**

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Scientific Name	Common Name	Wetland Indicator Status‡
<b>Trees</b>		
<i>Quercus lobata</i>	valley oak	FAC
<b>Forbs</b>		
<i>Conyza</i> sp.	horseweed	undetermined
<i>Croton setigerus</i> ( <i>Eremocarpus setigerus</i> )	turkey mullein	UPL
<i>Dysphania ambrosioides</i> ( <i>Chenopodium ambrosioides</i> )	Mexican tea	UPL
<i>Salsola tragus</i>	Russian thistle	UPL
<i>Senecio vulgaris</i>	groundsel	NI
<i>Tribulus terrestris</i>	puncture vine	UPL
<i>Veronica peregrina</i> ssp. <i>xalapensis</i>	purslane speedwell	OBL
<b>Grasses &amp; Grass-like Plants</b>		
<i>Bromus diandrus</i>	ripgut brome	UPL
<i>Cynodon dactylon</i>	Bermuda grass	FAC
<i>Cyperus eragrostis</i>	umbrella sedge	FACW
<i>Leptochloa fusca</i> ssp. <i>fascicularis</i> ( <i>L. fascicularis</i> )	bearded sprangletop	OBL
<i>Festuca perennis</i> ( <i>Lolium multiflorum</i> )	Italian ryegrass	FAC
<i>Setaria pumila</i>	yellow bristlegrass	UPL
<i>Typha</i> sp.	cattail	OBL

Notes: Wetland indicator status follows Reed (1988); nomenclature follows Reed (1988) and *The Jepson Manual* (Hickman 1993) and online updates.

\* indicates that the species is not native

‡ Wetland Indicator Status for Region 0, California:

OBL (obligate)—almost always occurs in wetlands (99% probability of occurrence in wetlands).

FAC (facultative)—equally likely to occur in wetlands or nonwetlands (34–66% probability).

FACU (facultative upland)—usually occurs in nonwetlands but occasionally occurs in wetlands (1–33% probability).

FACW (facultative wetland)—usually occurs in wetlands (67–99% probability).

UPL (obligate upland)—almost never occurs in wetlands (1% probability); in general, species that are not listed on the wetland plant list are assumed to be obligate upland species.

NI (no indicator)—no indicator status assigned because regional status information is lacking; the indicator status assigned to the species in the nearest adjacent region is applied, in this case, Region 9 (Northwest).

Undetermined—cannot be assigned an indicator status because plant could not be identified to species.

A plus (+) modifier indicates more frequently found in wetlands, a minus (-) modifier indicates less frequently found in wetlands; however, although these modifiers are used in Reed (1988), **they are not used in the Regional Supplements.** For example, FAC-, FAC, and FAC+ plants are all considered to be FAC.



Appendix D  
**Data Forms**

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# WETLAND DETERMINATION FORM - Arid West Region

Project/Site: **SR 99/Cartmill Avenue Interchange** City/County: **Tulare/Tulare** Data Point: **DP-1**

Applicant/Owner: **City of Tulare** State: **CA** Date: **08/07/07**

Investigator(s): **J. Nishida, J. Hughes** Section, Township, Range: **35, 19S, 24E**

Landform (hillslope, terrace, etc.): **plain** Local relief (concave, convex, none): **slightly concave** Slope (%): **<1**

Subregion (LRR): **C** Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_

Soil Map Unit Name: **Colpien loam, 0 to 2 percent slopes (108)** NWI classification: \_\_\_\_\_

Are climatic / hydrologic conditions on the site typical for this time of year? Yes \_\_\_\_\_ No \_\_\_\_\_ (If no, explain in Remarks)

Are Vegetation \_\_\_\_\_ Soil **X** or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present?  YES  NO

Are Vegetation \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No <b>X</b>	<b>Is the Sampled Area within a wetland?</b> Yes _____ No <b>X</b>
Hydric Soil Present?	Yes _____	No <b>X</b>	
Wetland Hydrology Present?	Yes <b>X</b>	No _____	
Remarks:			
Area sampled is located south of Cartmill Avenue between the Cartmill Avenue overpass and the southbound SR 99 on-ramp. The soils have been disturbed and contain fill material that was likely deposited when the interchange was constructed.			

## VEGETATION

Tree Stratum (scientific names) woody plants >3" dbh	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
				Number of Dominant Species That are OBL, FACW, or FAC: <b>1</b> (A)
				Total Number of Dominant Species Across All Strata: <b>2</b> (B)
				Percent of Dominant Species that are OBL, FACW, or FAC: <b>50%</b> (A/B)
Total Cover: _____				<b>Prevalence index worksheet</b> Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = <b>0</b> FACW species _____ x 2 = <b>0</b> FAC species _____ x 3 = <b>0</b> FACU species _____ x 4 = <b>0</b> UPL species _____ x 5 = <b>0</b> Column Total: <b>0</b> (A) <b>0</b> (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (woody plants <3" dbh)				
				<b>Hydrophytic vegetation indicators</b> _____ Dominance test is >50% _____ Prevalence index is ≤ 3.0 <sup>1</sup> _____ Morphological adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soils and wetland hydrology must be present
Total Cover: _____				
Herb Stratum (non-woody plants, regardless of size)				
<i>Festuca perennis</i> (formerly <i>Lolium multiflorum</i> )	20	Y	FAC	
<i>Croton setigerus</i>	8	Y	UPL	
<i>Dysphania ambrosioides</i> *	5	N	FAC	
<i>Tribulus terrestris</i>	<2	N	UPL	
<i>Salsola tragus</i>	<2	N	FACU	
				<b>Hydrophytic Vegetation Present?</b> Yes _____ No <b>X</b>
Total Cover: <b>35</b>				
Woody Vine Stratum (regardless of size)				
				% Bare ground in Herb Stratum <b>65</b> % Cover of Biotic Crust _____
Total Cover: _____				
Remarks:				
*formerly <i>Chenopodium ambrosioides</i>				

**SOIL**

Data point: **DP-1**

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)**

Depth (inches)	Matrix		Redox Features					Texture	Comments
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Contrast <sup>3</sup>		
0-2	10YR 3/2	100	none					ls	
2-5	10YR 3/3	100	none					ls	
5-12	10YR 2/2	100	none					l	

<sup>1</sup>Type: C=Concentration; D=Depletion; RM=Reduced Matrix

<sup>2</sup>Location: PL=Pore Lining, RC=Root Channel, M=Matrix

<sup>3</sup>Contrast: f=faint; d=distinct; p=prominent (see Table A1 for definitions)

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils:<sup>4</sup>

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR C)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pool (F9)

- 1 cm Muck (A9) (LRR C)
- 2 cm Muck (A 10) (LRR B)
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

Listed on National/Local Hydric Soils List

<sup>4</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present

Restrictive Layer (if present):

Type: \_\_\_\_\_  
Depth (inches): \_\_\_\_\_

**Hydric Soil Present?** Yes  No

Remarks: Soil appears to be fill material b/c it contains many small rocks and asphalt pieces.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary indicators (any one indicator is sufficient)

Secondary Indicators (2 or more required)

- Surface Water (A1)
- High Water Table (A2) (w/in 12")
- Saturation (A3)
- Water Marks (B1) (Nonriverine)
- Sediment Deposits (B2) (Nonriverine)
- Drift Deposits (B3) (Nonriverine)
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Biotic Crust (B12)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1) (w/in 12")
- Oxidized Rhizospheres along Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Plowed Soil (C6)
- Other (Explain in Remarks)

- Water Marks (B1) (Riverine)
- Sediment Deposits (B2) (Riverine)
- Drift Deposits (B3) (Riverine)
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Thin Muck Surface (C7)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): \_\_\_\_\_  
 Water Table Present? Yes  No  Depth (inches): \_\_\_\_\_  
 Saturation Present? Yes  No  Depth (inches): \_\_\_\_\_  
 (includes capillary fringe) (12 inch determination)

**Wetland Hydrology Present?** Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Although dry at the time of sampling, ponding was observed within the area sampled earlier in the year by J&S wildlife biologist J. Haire.

**Texture and Rock Fragment Content**

**Texture**

- cos - coarse sand
- s - sand
- fs - fine sand
- vfs - very fine sand
- lcos - loamy coarse sand
- ls - loamy sand
- lfs - loamy fine sand
- lvfs - loamy very fine sand
- cosl - coarse sandy loam

- sl - sandy loam
- fsl - fine sandy loam
- vfsl - very fine sandy loam
- l - loam
- sil - silt loam
- si - silt

- scl - sandy clay loam
- cl - clay loam
- sicl - silty clay loam
- sc - sandy clay
- sic - silty clay
- c - clay

**Rock Fragments**

- gr - gravelly
- vgr - very gravelly
- xgr - extremely gravelly
- cb - cobbly
- vcb - very cobbly
- xcb - extremely cobbly
- st - stony
- vst - very stony
- xst - extremely stony

# WETLAND DETERMINATION FORM - Arid West Region

Project/Site:	<b>SR 99/Cartmill Avenue Interchange</b>	City/County:	<b>Tulare/Tulare</b>	Data Point:	<b>DP-2</b>
Applicant/Owner:	<b>City of Tulare</b>	State:	<b>CA</b>	Date:	<b>08/07/07</b>
Investigator(s):	<b>J. Nishida, J. Hughes</b>	Section, Township, Range:	<b>26, 19S, 24E</b>		
Landform (hillslope, terrace, etc.):	<b>basin</b>	Local relief (concave, convex, none):	<b>concave</b>	Slope (%):	<b>2</b>
Subregion (LRR):	<b>C</b>	Lat:		Long:	
Soil Map Unit Name:	<b>Colpien loam, 0 to 2 percent slopes (108)</b>			NWI classification:	

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks)

Are Vegetation  Soil  or Hydrology  significantly disturbed? Are "Normal Circumstances" present?  YES  NO

Are Vegetation  Soil  or Hydrology  naturally problematic? (If needed, explain any answers in Remarks)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	<b>Is the Sampled Area within a wetland?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	

Remarks:

Area sampled is located at the south end of an agricultural field located west of SR 99 between Cartmill Avenue and the northbound SR 99 off-ramp just north of the AM/PM gas station. The soils in the area sampled have been significantly disturbed by disking for agricultural purposes and excavation and therefore are not an accurate representation of the naturally occurring soil conditions.

### VEGETATION

Tree Stratum (scientific names) woody plants >3" dbh	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
				Number of Dominant Species That are OBL, FACW, or FAC: <u>0</u> (A)
				Total Number of Dominant Species Across All Strata: <u>1</u> (B)
Total Cover:				Percent of Dominant Species that are OBL, FACW, or FAC: <u>0%</u> (A/B)
Sapling/Shrub Stratum (woody plants <3" dbh)				Prevalence index worksheet
				Total % Cover of:      Multiply by:
				OBL species <input type="checkbox"/> x 1 = <u>0</u>
				FACW species <input type="checkbox"/> x 2 = <u>0</u>
				FAC species <input type="checkbox"/> x 3 = <u>0</u>
				FACU species <input type="checkbox"/> x 4 = <u>0</u>
				UPL species <input type="checkbox"/> x 5 = <u>0</u>
Total Cover:				Column Total: <u>0</u> (A) <u>0</u> (B)
				Prevalence Index = B/A = _____
Herb Stratum (non-woody plants, regardless of size)				Hydrophytic vegetation indicators
<i>Cynodon dactylon</i>	90	Y	FACU	<input type="checkbox"/> Dominance test is >50%
<i>Veronica peregrina ssp. xalapensis</i>	<5	N	OBL	<input type="checkbox"/> Prevalence index is ≤ 3.0 <sup>1</sup>
<i>Setaria pumila</i>	<5	N	FAC	<input type="checkbox"/> Morphological adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
<i>Leptochloa fusca</i>	<5	N	FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
				<sup>1</sup> Indicators of hydric soils and wetland hydrology must be present
Total Cover:	100			
Woody Vine Stratum (regardless of size)				
Total Cover:				
% Bare ground in Herb Stratum <input type="checkbox"/>		% Cover of Biotic Crust <input type="checkbox"/>		<b>Hydrophytic Vegetation Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>

Remarks:

**SOIL**

Data point: **DP-2**

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)**

Depth (inches)	Matrix		Redox Features					Texture	Comments
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Contrast <sup>3</sup>		
0-5	10YR 3/2	80	none					siCl	
0-5	10YR 5/4	20	none					siCl	
5-12	10YR 5/4	100	none					siCl	

<sup>1</sup>Type: C=Concentration; D=Depletion; RM=Reduced Matrix

<sup>2</sup>Location: PL=Pore Lining, RC=Root Channel, M=Matrix

<sup>3</sup>Contrast: f=faint; d=distinct; p=prominent (see Table A1 for definitions)

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils:<sup>4</sup>

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR C)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)

- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pool (F9)

- 1 cm Muck (A9) (LRR C)
- 2 cm Muck (A 10) (LRR B)
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

Listed on National/Local Hydric Soils List

<sup>4</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present

Restrictive Layer (if present):

Type: \_\_\_\_\_  
Depth (inches): \_\_\_\_\_

**Hydric Soil Present?** Yes  No

Remarks: Lower horizon has been mixed with upper horizon through artificial means (e.g., disking, excavation).

Soil is moist. No redox features observed.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary indicators (any one indicator is sufficient)

Secondary Indicators (2 or more required)

- Surface Water (A1)
- High Water Table (A2) (w/in 12")
- Saturation (A3)
- Water Marks (B1) (Nonriverine)
- Sediment Deposits (B2) (Nonriverine)
- Drift Deposits (B3) (Nonriverine)
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)

- Salt Crust (B11)
- Biotic Crust (B12)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1) (w/in 12")
- Oxidized Rhizospheres along Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Plowed Soil (C6)
- Other (Explain in Remarks)

- Water Marks (B1) (Riverine)
- Sediment Deposits (B2) (Riverine)
- Drift Deposits (B3) (Riverine)
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Thin Muck Surface (C7)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): 0.25  
 Water Table Present? Yes  No  Depth (inches): \_\_\_\_\_  
 Saturation Present? Yes  No  Depth (inches): \_\_\_\_\_  
 (includes capillary fringe) (12 inch determination)

**Wetland Hydrology Present?** Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Surface water present in the form of small ponded areas immediately adjacent to the area sampled within the basin. Area sampled appears to be a retention basin excavated to capture runoff.

**Texture and Rock Fragment Content**

**Texture**

- cos - coarse sand
- s - sand
- fs - fine sand
- vfs - very fine sand
- lcos - loamy coarse sand
- ls - loamy sand
- lfs - loamy fine sand
- lvfs - loamy very fine sand
- cosl - coarse sandy loam

- sl - sandy loam
- fsl - fine sandy loam
- vfsl - very fine sandy loam
- l - loam
- sil - silt loam
- si - silt

- scl - sandy clay loam
- cl - clay loam
- siCl - silty clay loam
- sc - sandy clay
- sil - silty loam
- c - clay

**Rock Fragments**

- gr - gravelly
- vgr - very gravelly
- xgr - extremely gravelly
- cb - cobbly
- vcb - very cobbly
- xcb - extremely cobbly
- st - stony
- vst - very stony
- xst - extremely stony

# WETLAND DETERMINATION FORM - Arid West Region

Project/Site:	<b>SR 99/Cartmill Avenue Interchange</b>	City/County:	<b>Tulare/Tulare</b>	Data Point:	<b>DP-3</b>
Applicant/Owner:	<b>City of Tulare</b>	State:	<b>CA</b>	Date:	<b>08/07/07</b>
Investigator(s):	<b>J. Nishida, J. Hughes</b>	Section, Township, Range:	<b>26, 19S, 24E</b>		
Landform (hillslope, terrace, etc.):	<b>plain</b>	Local relief (concave, convex, none):	<b>slightly concave</b>	Slope (%):	<b>&lt;1</b>
Subregion (LRR):	<b>C</b>	Lat:		Long:	
Soil Map Unit Name:	<b>Colpien loam, 0 to 2 percent slopes (108)</b>			NWI classification:	

Are climatic / hydrologic conditions on the site typical for this time of year?    Yes     No  (If no, explain in Remarks)

Are Vegetation  Soil  or Hydrology  significantly disturbed? Are "Normal Circumstances" present?     YES     NO

Are Vegetation  Soil  or Hydrology  naturally problematic?    (If needed, explain any answers in Remarks)

**SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<b>Is the Sampled Area within a wetland?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks:  <p style="text-align: center; font-size: small;">Area sampled is located at the north end of an agricultural field located west of SR 99 between Cartmill Avenue and the northbound SR 99 off-ramp. The soils in the area sampled have been significantly disturbed by recent disking for agricultural purposes and are not an accurate representation of the naturally occurring soil conditions.</p>	

**VEGETATION**

Tree Stratum (scientific names) woody plants >3" dbh	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
				Number of Dominant Species That are OBL, FACW, or FAC: <u>1</u> (A)
				Total Number of Dominant Species Across All Strata: <u>1</u> (B)
				Percent of Dominant Species that are OBL, FACW, or FAC <u>100%</u> (A/B)
Total Cover: _____				<b>Prevalence index worksheet</b> Total % Cover of:    _____    Multiply by:
Sapling/Shrub Stratum (woody plants <3" dbh)				
				OBL species    _____ x 1 = <u>0</u>
				FACW species    _____ x 2 = <u>0</u>
				FAC species    _____ x 3 = <u>0</u>
				FACU species    _____ x 4 = <u>0</u>
				UPL species    _____ x 5 = <u>0</u>
Total Cover: _____				Column Total: <u>0</u> (A) <u>0</u> (B)
Herb Stratum (non-woody plants, regardless of size)				Prevalence Index = B/A = _____
<i>Cynodon dactylon</i>	75	Y	FACU	<b>Hydrophytic vegetation indicators</b> <input checked="" type="checkbox"/> Dominance test is >50% <input type="checkbox"/> Prevalence index is ≤ 3.0 <sup>1</sup> <input type="checkbox"/> Morphological adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soils and wetland hydrology must be present
<i>Cyperus eragrostis</i>	5	N	FACW	
<i>Bromus diandrus</i>	5	N	UPL	
<i>Conyza sp.</i>	<5	N	N/A	
Total Cover: <u>85</u>				<b>Hydrophytic Vegetation Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Woody Vine Stratum (regardless of size)				
Total Cover: _____				
% Bare ground in Herb Stratum	<u>15</u>	% Cover of Biotic Crust _____		
Remarks:				



# WETLAND DETERMINATION FORM - Arid West Region

Project/Site: **SR 99/Cartmill Avenue Interchange** City/County: **Tulare/Tulare** Data Point: **DP-4**  
 Applicant/Owner: **City of Tulare** State: **CA** Date: **03/17/09**  
 Investigator(s): **J. Hughes** Section, Township, Range: **27, 19S, 24E**  
 Landform (hillslope, terrace, etc.): **plain** Local relief (concave, convex, none): **slightly concave** Slope (%): **<1**  
 Subregion (LRR): **C** Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: **Colpien loam, 0 to 2 percent slopes (108)** NWI classification: \_\_\_\_\_

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No \_\_\_\_\_ (If no, explain in Remarks)  
 Are Vegetation \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present?  YES  NO  
 Are Vegetation \_\_\_\_\_ Soil  or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks)

**SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	<b>Is the Sampled Area within a wetland?</b> Yes _____ No <input checked="" type="checkbox"/>
Remarks:  <p style="text-align: center; font-size: small;">Area sampled is located west of the Cartmill Avenue overpass on the north side of Cartmill Avenue.</p>	

**VEGETATION**

Tree Stratum (scientific names) woody plants >3" dbh	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
				Number of Dominant Species That are OBL, FACW, or FAC: _____ (A)
				Total Number of Dominant Species Across All Strata: _____ (B)
				Percent of Dominant Species that are OBL, FACW, or FAC _____ (A/B)
Total Cover: _____				<b>Prevalence index worksheet</b> Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>0</u> x 3 = <u>0</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column Total: <u>0</u> (A) <u>0</u> (B) Prevalence Index = B/A = _____
Total Cover: _____				
Total Cover: _____				<b>Hydrophytic vegetation indicators</b> <input type="checkbox"/> Dominance test is >50% <input type="checkbox"/> Prevalence index is ≤ 3.0 <sup>1</sup> <input type="checkbox"/> Morphological adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soils and wetland hydrology must be present
Total Cover: <b>4</b>				
Total Cover: _____				<b>Hydrophytic Vegetation Present?</b> Yes _____ No <input checked="" type="checkbox"/>
Total Cover: _____				
Total Cover: _____				Remarks:  <p style="text-align: center; font-size: small;">The area sampled was considered unvegetated because there was less than 5% plant cover that consisted almost exclusively of Bermuda grass (<i>Cynodon dactylon</i>).</p>
Total Cover: _____				
Total Cover: _____				% Bare ground in Herb Stratum <u>96</u> % Cover of Biotic Crust _____

**SOIL**

Data point: **DP-4**

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)**

Depth (inches)	Matrix		Redox Features					Texture	Comments
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Contrast <sup>3</sup>		
0-12	10YR 4/1	100	none					scl	

<sup>1</sup>Type: C=Concentration; D=Depletion; RM=Reduced Matrix

<sup>2</sup>Location: PL=Pore Lining, RC=Root Channel, M=Matrix

<sup>3</sup>Contrast: f=faint; d=distinct; p=prominent (see Table A1 for definitions)

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils:<sup>4</sup>

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A 10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Listed on National/Local Hydric Soils List
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<sup>4</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Vernal Pool (F9)	

Restrictive Layer (if present):

Type: \_\_\_\_\_  
Depth (inches): \_\_\_\_\_

**Hydric Soil Present?** Yes  No

Remarks: Although tire tracks are present in the area sampled, the disturbance appears to be confined to the soil surface.

No redoximorphic features or indicators of matrix depletion were present.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary indicators (any one indicator is sufficient)

Secondary Indicators (2 or more required)

<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Water Marks (B1) (Riverine)
<input type="checkbox"/> High Water Table (A2) (w/in 12")	<input type="checkbox"/> Biotic Crust (B12)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input type="checkbox"/> Saturation (A3)	<input checked="" type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1) (w/in 12")	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Thin Muck Surface (C7)
<input checked="" type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soil (C6)	<input type="checkbox"/> Crayfish Burrows (C8)
<input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Shallow Aquitard (D3)
		<input type="checkbox"/> FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): 6\*\*  
 Water Table Present? Yes  No  Depth (inches): \_\_\_\_\_  
 Saturation Present? Yes  No  Depth (inches): \_\_\_\_\_  
 (includes capillary fringe) (12 inch determination)

**Wetland Hydrology Present?** Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: \*Scattered areas of ponded water were present in the vicinity of the area sampled.  
 \*\*The depth observed in the deepest area of ponded water was ~6 inches.  
 The area appears to receive supplemental hydrological input from runoff both from the adjacent roads and from a nearby orchard.

**Texture and Rock Fragment Content**

**Texture**

cos - coarse sand      lcos - loamy coarse sand  
 s - sand                      ls - loamy sand  
 fs - fine sand              lfs - loamy fine sand  
 vfs - very fine sand      lvfs - loamy very fine sand  
   cosl - coarse sandy loam

sl - sandy loam  
 fsl - fine sandy loam  
 vfsl - very fine sandy loam  
 l - loam  
 sil - silt loam  
 si - silt

scl - sandy clay loam  
 cl - clay loam  
 sicl - silty clay loam  
 sc - sandy clay  
 sic - silty clay  
 c - clay

**Rock Fragments**

gr - gravelly                      xcb - extremely cobbly  
 vgr - very gravelly              st - stony  
 xgr - extremely gravelly        vst - very stony  
 cb - cobbly                        xst - extremely stony  
 vcb - very cobbly

Appendix E  
**Photographs of the Delineation Area**

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Photo 1. Depression sampled at Data Point 2 (facing southeast).



Photo 2. Depression sampled at Data Point 3 (facing southeast).



Photo 3. Depression sampled at Data Point 1 (facing northeast).



Photo 4. Irrigation ditch segment located north of Cartmill Road (facing north).



Photo 5. Depression sampled at Data Point 4 (facing west).



## Appendix F Section 106, NHPA documentation



**HISTORICAL RESOURCES COMPLIANCE REPORT****1. PROJECT / ACTIVITY DESCRIPTION AND LOCATION**

District	County	Route (Local Agency)	Local Assistance Project Prefix	Post Miles (Project No.)	Charge Unit (Agreement)	Expenditure Authorization (Location)
06	TUL	99		31.3/32.6		06-33220

**Project Description:**

The State Route 99 (SR 99)/Cartmill Avenue Interchange Improvement project is located in the City of Tulare on SR 99 at the Cartmill Avenue interchange (PM 31.9). The vicinity and location of the project is shown in Figures 1 and 2 (see Attachment A). SR 99 through the project area is a four-lane freeway with a 42-foot-wide median. Cartmill Avenue crosses over SR 99 at a 30-degree skew. The overcrossing is a two-span structure with closed abutments, and it is constructed to a width of 38 feet, with a paved width of 28 feet from one face of curb to the other. The purpose of this project is to improve safety, provide additional capacity, improve east-west circulation, and improve local access with SR 99 at Cartmill Avenue to correct current traffic congestion and to accommodate planned future growth, including significant commercial development proposed adjacent to the interchange, within the northern area of Tulare.

**2. PROJECT AREA LIMITS**

The Project Area limits for the project were established in consultation with Caltrans District 6 PQS, Phillip Vallejo, Principal Architectural Historian, and Bob Hull, Project Manager, on June 1, 2009. The Project Area Limits map is located in Figure 3 of Attachment A in this Historical Resources Compliance Report (HRCR). The Project Area Limits include all existing right-of-way (ROW) and those parcels from which new ROW will be acquired where proposed project activities will take place. Drawings of project alternatives are located in Figures 4a through 4b (Attachment A).

**3. CONSULTING PARTIES / PUBLIC PARTICIPATION**

- Local Government (*Head of local government, Preservation Office / Planning Department*)
- Native American Tribes, Groups and Individuals
  - Consultation letters were sent to all individuals/groups listed by the Native American Heritage Commission (NAHC) in December 2008. Follow-up telephone calls will be made to non-responders. Received return phone call from John Sartuche of the Wukchumni Tribe who had no particular concerns or information but wanted to be kept informed on the progress of this project. See Appendix C of Attachment C.
- Native American Heritage Commission
  - In November 2008, ICF Jones & Stokes requested a search of the Sacred Lands File and a list of local Native American contacts from the NAHC. The NAHC response was negative for Native American cultural resources in the immediate project area and provided a list of Native American individuals/groups to contact regarding the Project area. See Appendix C of Attachment C.
- Local Historical Society / Historic Preservation Group (*also if applicable, city archives, etc.*)
  - Tulare County Historical Society; letter sent November 18, 2008. As of the date of this report (December 2008) no response to ICF Jones & Stokes has been received (Appendix C of Attachment B).
  - Tulare County Museum; letter sent November 18, 2008. As of the date of this report (December 2008) no response to ICF Jones & Stokes has been received (Appendix C of Attachment B).

## HISTORICAL RESOURCES COMPLIANCE REPORT

### 4. SUMMARY OF IDENTIFICATION EFFORTS

- |                                     |  |   |
|-------------------------------------|--|---|
| <input checked="" type="checkbox"/> | National Register of Historic Places   | Month & Year: 1979-2007                             |
| <input checked="" type="checkbox"/> | California Register of Historical Resources  | Year: 1992-June 2007                                |
| <input checked="" type="checkbox"/> | California Inventory of Historic Resources   | Year: 1976  |
| <input checked="" type="checkbox"/> | California Historical Landmarks  | Year: 1995-June 2007                                |
| <input checked="" type="checkbox"/> | California Points of Historical Interest   | Year: 1992-June 2007                                |
| -                                   | State Historic Resources Commission  | Year: 1980-present, minutes from quarterly meetings |
| <input checked="" type="checkbox"/> | Caltrans Historic Highway Bridge Inventory   | Year: 2006 & supplemental information to date       |
| <input checked="" type="checkbox"/> | Archaeological Site Records [ <i>List names of Institutions &amp; date below</i> ]   |   |
|                                     | <ul style="list-style-type: none"> <li>• Southern San Joaquin Valley Archaeological Information Center, CSU Bakersfield, RS#07-127, June 2007.</li> </ul>  |   |
| <input checked="" type="checkbox"/> | Other sources consulted [ <i>e.g., historical societies, city archives, etc. List names and dates below</i> ]  |   |
|                                     | <ul style="list-style-type: none"> <li>• Research was undertaken at the California State Library; California State Archives; San Joaquin District Office of the Department of Water Resources, City of Fresno; Tulare County Free Library, City of Visalia; Tulare Public Library, City of Tulare; and ICF Jones &amp; Stokes cultural library.</li> </ul>   |   |
| <input checked="" type="checkbox"/> | Results: ( <i>provide a brief summary of records search and research results, as well as inventory findings</i> )  |   |
|                                     | <ul style="list-style-type: none"> <li>• The records search resulted in the finding of no prehistoric or historic era sites having been recorded, reported or identified in, adjacent to or within 0.50 miles of the project area. In addition to the BRA study (Appendix A of Attachment C), three previous studies have been conducted that included portions of the project area. All of these earlier studies reported negative findings for cultural resources in the vicinity of the project.</li> </ul> |   |

### 5. EXEMPT FROM EVALUATION / NO CEQA HISTORICAL RESOURCES IDENTIFIED

- Not applicable.
- There are **no cultural resources** in the Project Area limits.
- The **only/only other cultural resources** present within the Project Area limits **are exempt from evaluation** because they meet the criteria set forth in the Section 106 Programmatic Agreement (Section 106 PA) Attachment 4 (Properties Exempt from Evaluation) and do not meet any criteria outlined in CEQA Guidelines §15064.5(a):
  - Kathryn Haley, Architectural Historian, who meets the Professionally Qualified Staff Standards in Section 106 Programmatic Agreement (Section 106 PA) Attachment 1 as a(n) Architectural Historian [*Indicate applicable PQS level*], has determined that the only resources present within the Project Area limits meet the criteria for Section 106 PA Attachment 4 (Properties Exempt from Evaluation).
  - Bridges listed as Category 5 in the Caltrans Historic Highway Bridge Inventory & updates and are not locally designated or otherwise identified as significant in a local survey meeting SHPO standards. Appropriate pages from the Caltrans Historic Bridge Inventory are attached.
- The following resources within the Project Area limits **previously were determined not eligible** for National Register inclusion, previously determined not to meet California Register eligibility criteria, and/or **previously determined not to be historical resources for purposes of CEQA** as outlined in CEQA Guidelines §15064.5(a)(1) - (3) (*include date of determination; identified State-owned cultural resources as such*):

## HISTORICAL RESOURCES COMPLIANCE REPORT

- Caltrans, pursuant to CEQA Guidelines §15064.5(a)(1) – (4), evaluated (see Haley 2008) the following resources within the Project Area limits and has determined that they are **not historical resources for purposes of CEQA**:

Assessor's Parcel Number (APN)	Street Address	Year Built	Figure 3 - Map Reference No.	CRHR Status
166-010-005	N/A	c. 1950	1	not eligible
N/A	Tulare Irrigation Canal (segment)	c. 1951	2	not eligible

### 6. CEQA HISTORICAL RESOURCES IDENTIFIED

- Not applicable.
- Caltrans, pursuant to CEQA Guidelines §15064.5(a), evaluated the following resources within the Project Area limits and determined that they **do not meet National Register criteria but ARE historical resources for purposes of CEQA** because they: are listed in the **California Register** or were determined eligible for the California Register by the State Historical Resources Commission [§15064.5(a)(1)], are included in a **local register** or identified as **significant in a local survey** meeting OHP standards [§15064.5(2)], or Caltrans, as the lead agency, has determined that they meet the criteria for listing in the California Register [§15064.5(a)(3) - (4)]:
  - Caltrans has determined that the following **archaeological sites shall be considered eligible for the National Register and/or the California Register** without conducting subsurface testing or surface collection within the Project Area limits, for which the **establishment of an ESA** will protect the sites from any potential effects. See attached documentation.
  - The following resources within the Project Area limits were **previously listed or determined eligible for inclusion in the National Register**, were automatically listed in the California Register and **are significant resources for the purposes of CEQA**, pursuant to CEQA Guidelines §15064.5(a)(1) (*include date of listing or determination*):
  - Caltrans, pursuant to CEQA Guidelines §15064.5(a)(3) – (4), evaluated the following resources within the Project Area limits and determined that they **meet National Register and the California Register criteria and are historical resources for purposes of CEQA**:
  - Caltrans has evaluated the following **State-owned historical buildings and structures** within the Project Area limits, meet the National Register and/or California Historical Landmark criteria and **are to be added to the Master List**, per PRC §5024(b) and (d):

### 7. CEQA IMPACT FINDINGS

- Not applicable; Caltrans is not the lead agency under CEQA.
- Caltrans has determined a **finding of no impact** is appropriate because there are no historical resources within the Project Area limits, or there are no impacts to historical resource(s), pursuant to CEQA Guidelines §15064.5(b)(3).
- Caltrans has determined a **finding of no substantial adverse change - ESAs**, because the impacts to the following historical resources within the Project Area limits will be mitigated to below the level of significance by using the *Secretary of the Interior's Standards for the Treatment of Historic Properties With Guidelines for Preserving, Rehabilitating, Restoring & Reconstructing Historic Buildings (Standards)* pursuant to CEQA Guidelines §15064.5(b). Establishment of Environmentally Sensitive Areas (ESA), enforcement measures and conditions that utilize the *Standards* are included in the attached documentation. \_\_\_\_\_ [Name], who meets the Professionally Qualified Staff Standards in Section 106 Programmatic Agreement (Section 106 PA) Attachment 1 as a(n) \_\_\_\_\_ [Indicate applicable PQS level], has reviewed the attached documentation and determined that it is adequate. (*Include description of*

## HISTORICAL RESOURCES COMPLIANCE REPORT

*ESAs and enforcement measures below; attach ESA Action Plan as appropriate.)*

- Caltrans has determined a **finding of no substantial adverse change – rehabilitation / repair / maintenance / direct or indirect alteration / transfer with protective easements, covenants and/or agreements** because the impacts to the following historical resources within the Project Area limits will be mitigated below the level of significant impact by using the *Secretary of the Interior's Standards for the Treatment of Historic Properties With Guidelines for Preserving, Rehabilitating, Restoring & Reconstructing Historic Buildings (Standards)*, pursuant CEQA Guidelines §15064.5(b). \_\_\_\_\_ [Name of Caltrans PQS], \_\_\_\_\_, who meets the Professionally Qualified Staff Standards in Section 106 PA Attachment 1 as a \_\_\_\_\_ [Indicate applicable PQS level: Principal Architectural Historian or Principal Investigator], and has the appropriate education and experience, has reviewed the documentation and determined that the measures meets the *Standards*. (Include description of rehabilitation below or indicate below the title of the HRCR attachment that contains the description.)
- Caltrans has determined that the project is a **Class 31 project and is categorically exempt** because the **project is limited to maintenance, repair, stabilization, rehabilitation, restoration, conservation or reconstruction** of the following historical resources in a manner consistent with the *Secretary of the Interior's Standards for the Treatment of Historic Properties With Guidelines for Preserving, Rehabilitating, Restoring & Reconstructing Historic Buildings*, pursuant to CEQA Guidelines §15331. See attached documentation.
- Caltrans has determined that a **finding of substantial adverse change to historical resources** is appropriate for this project, pursuant to CEQA Guidelines §15064.5(b) because the project will cause adverse change to the following historical resources within the Project Area limits. See attached documentation.

### 8. MITIGATION PLAN

- Not applicable.

### 9. STATE-OWNED HISTORICAL RESOURCES FINDINGS

- Not applicable; project does not involve Caltrans right-of-way or Caltrans-owned property.
- Caltrans has determined that there are **no State-owned cultural resources** within the project's APE.
- Caltrans has determined that **State-owned resources** (built environment and archaeological resources) within the project's APE **are exempt from evaluation** because they meet the criteria set forth in the Section 106 Programmatic Agreement (Section 106 PA) Attachment 4 (Properties Exempt from Evaluation) **or were previously determined not eligible** for inclusion in the National Register and/or registration as a California Historical Landmark and that determination is still valid.
- Caltrans has evaluated and determined that the following **State-owned buildings and structures** within the project's APE **do NOT meet National Register and/or California Historical Landmark** eligibility criteria; and is providing notice and summary to, and seeks comments from, SHPO pursuant to PRC §5024(b).
- Caltrans has evaluated and determined that the following **State-owned archaeological sites, objects, districts, landscapes** within the project's APE **do NOT meet the National Register and/or California Historical Landmark** eligibility criteria, and is providing notice and summary to, and seeks comments from, SHPO pursuant to PRC §5024(a) and (b):
- Caltrans has determined that the following **State-owned buildings and structures previously included in the Master List of Historical Resources** are within the project's APE.
- Caltrans has determined that the following **State-owned archaeological sites, objects, districts, landscapes** within the project's APE **previously were listed or determined eligible** for or listed in the National Register and/or eligible or registered as a California Historical

**HISTORICAL RESOURCES COMPLIANCE REPORT**

Landmark.

- Caltrans has evaluated and determined that the following **State-owned buildings and structures** that **meet National Register and/or the California Historical Landmarks** eligibility criteria are within the project's APE and **requests that SHPO add these resources to the Master List** of Historical Resources pursuant to PRC §5024(d).
- Caltrans has evaluated and determined that the following **State-owned archaeological sites, objects, districts, landscapes** within the project's APE **meet the National Register and/or California Historical Landmark** eligibility criteria, and is providing notice and summary to, and seeks comments from, SHPO pursuant to PRC §5024(a) and (b):
- Caltrans has determined that this project will have **no effect** to **state-owned archaeological sites, objects, districts, landscapes** within the project's APE that meet National Register and/or California Historical Landmarks eligibility criteria and is providing notice and summary to, and seeks comments from, SHPO pursuant to PRC §5024(f).
- Caltrans has determined that this project will have **no effect** on **state-owned buildings and structures** within the project's APE that meet National Register and/or California Historical Landmarks eligibility criteria and is providing notice and summary to, and seeks comments from, SHPO pursuant to PRC §5024(f).
- Caltrans has determined that this project will have **no adverse effect** to **state-owned archaeological sites, objects, districts, landscapes** within the project's APE that meet National Register and/or California Historical Landmarks eligibility criteria and is providing notice and summary to, and seeks comments from, SHPO pursuant to PRC §5024(f). *(Indicate reference to Standard Conditions – ESA above, or include description of proposed treatments, ESAs, conservation easements, protective covenants, etc., below or indicate below which HRCR attachment contains the description.)*
- Caltrans has determined that this project will have **no adverse effect** on **state-owned buildings and structures** within the project's APE that meet National Register and/or California Historical Landmarks eligibility criteria. \_\_\_\_\_ *[Name of Caltrans PQS]*, who meets the Professionally Qualified Staff Standards in Section 106 PA Attachment 1 as Principal Architectural Historian, and has the appropriate education and experience, has reviewed the documentation and determined that it meets the Secretary of the Interior's Standards for the Treatment of Historic Properties. Caltrans providing notice and summary to, and seeks comments from, SHPO pursuant to PRC §5024.5. *(Indicate reference to Standard Conditions – Rehabilitation above, or include description of proposed repairs, rehabilitation, ESAs, conservation easements, protective covenants, etc., below or indicate below, which HRCR attachment contains the description.)*
- Caltrans has determined that this project will have an **adverse effect** to **state-owned archaeological sites, objects, districts, landscapes** within the project's APE that meet National Register and/or California Historical Landmarks eligibility criteria. \_\_\_\_\_ *[Name of Caltrans PQS]*, \_\_\_\_\_ *[applicable PQS level: Principal Architectural Historian or Principal Investigator]* has reviewed the documentation and determined that it meets the Secretary of the Interior's Standards for the Treatment of Historic Properties. Caltrans providing notice and summary to, and seeks comments from, SHPO pursuant to PRC §5024(f). *(Include below a description of alternatives considered and proposed mitigation measures, or indicate below which HRCR attachment contains the description.)*
- Caltrans has determined that this project will have an **adverse effect** on **state-owned buildings and structures** within the project's APE that meet National Register and/or California Historical Landmarks eligibility criteria. Caltrans providing notice and summary to, and seeks comments from, SHPO pursuant to PRC §5024.5. *(Include below a description of alternatives considered and proposed mitigation measures, or indicate below which HRCR attachment contains the description.)*
- For **State-owned qualified historical buildings and properties** within the Project Area limits, Caltrans has **applied the California Historical Building Code (CHBC)** to relevant sections of the current code(s) and/or standards and, if applicable, has consulted with the State Historical Building Safety Board (SHBSB) through its Executive Director pursuant to Health and Safety Code Section 18961 and its implementing regulations at California Code of Regulations Title 24

**HISTORICAL RESOURCES COMPLIANCE REPORT**

Part 8 Section 8-103.2. [Indicate below whether use of current code(s) and standards adversely affected character-defining features of the property and describe the alternative solutions under the CHBC, or indicate below which HRCR attachment contains the description. If applicable, attach copies of correspondence with the SHBSB or its Executive Director.]

**10. LIST OF ATTACHED DOCUMENTATION**

- Project Vicinity, Location, and Project Area Limits Maps (Attachment A)
- California Historic Bridge Inventory sheet (Attachment B)
- Historical Resources Evaluation Report (HRER) (Attachment C)
  - Kathryn Haley, December 2008, peer reviewed by Madeline Bowen ICF Jones & Stokes Architectural Historian, December 2008
- Archaeological Survey Report (ASR) (Attachment D)
  - Traci O'Brien, December 2008; Peer reviewed by Barry Scott, M.A., R.P.A., ICF Jones & Stokes, December 2008.
- Archaeological Evaluation Report (CARIDAP, XPI, PII, PIII)
- Other (Specify below)
  - Historic Society Correspondence is located in Appendix B of Attachment C
  - Department of Parks and Recreation (DPR) 523 forms are located in Appendix C of Attachment C
  - Basin Research Associates Survey Report is located in Appendix B of Attachment D
  - Records Search Correspondence is located in Appendix C of Attachment D
  - Native American Correspondence is located in Appendix D of Attachment D

**11. HRCR PREPARATION AND CALTRANS APPROVAL**

Prepared by: (sign on line)

 DAVID LEMON  
FOR  
KATHRYN HALEY

12-7-11

Consultant / discipline:  
Affiliation

Kathryn Haley / Architectural Historian  
ICF Jones & Stokes

Date

Reviewed for approval by: (sign on line)

District 6 Caltrans PQS  
discipline/level:

Phillip Vallejo, D06 Co-HRC  
Caltrans PQS Principal Architectural Historian

Date

Approved by: (sign on line)

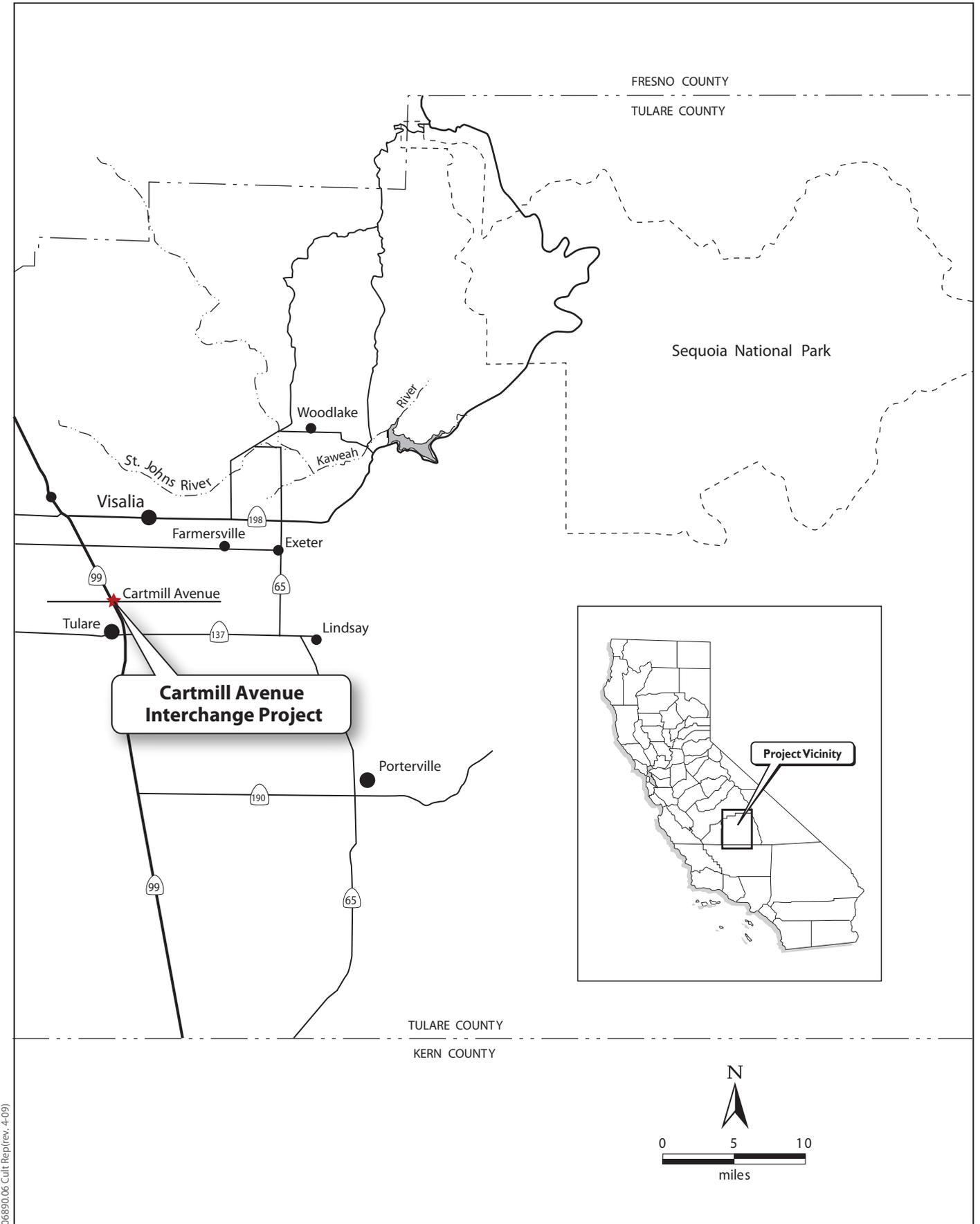
District 6 EBC:

Jeanne Binning, PQS Principal Prehistoric  
Archaeology, Branch Chief  
Central California Cultural Resources Branch

Date

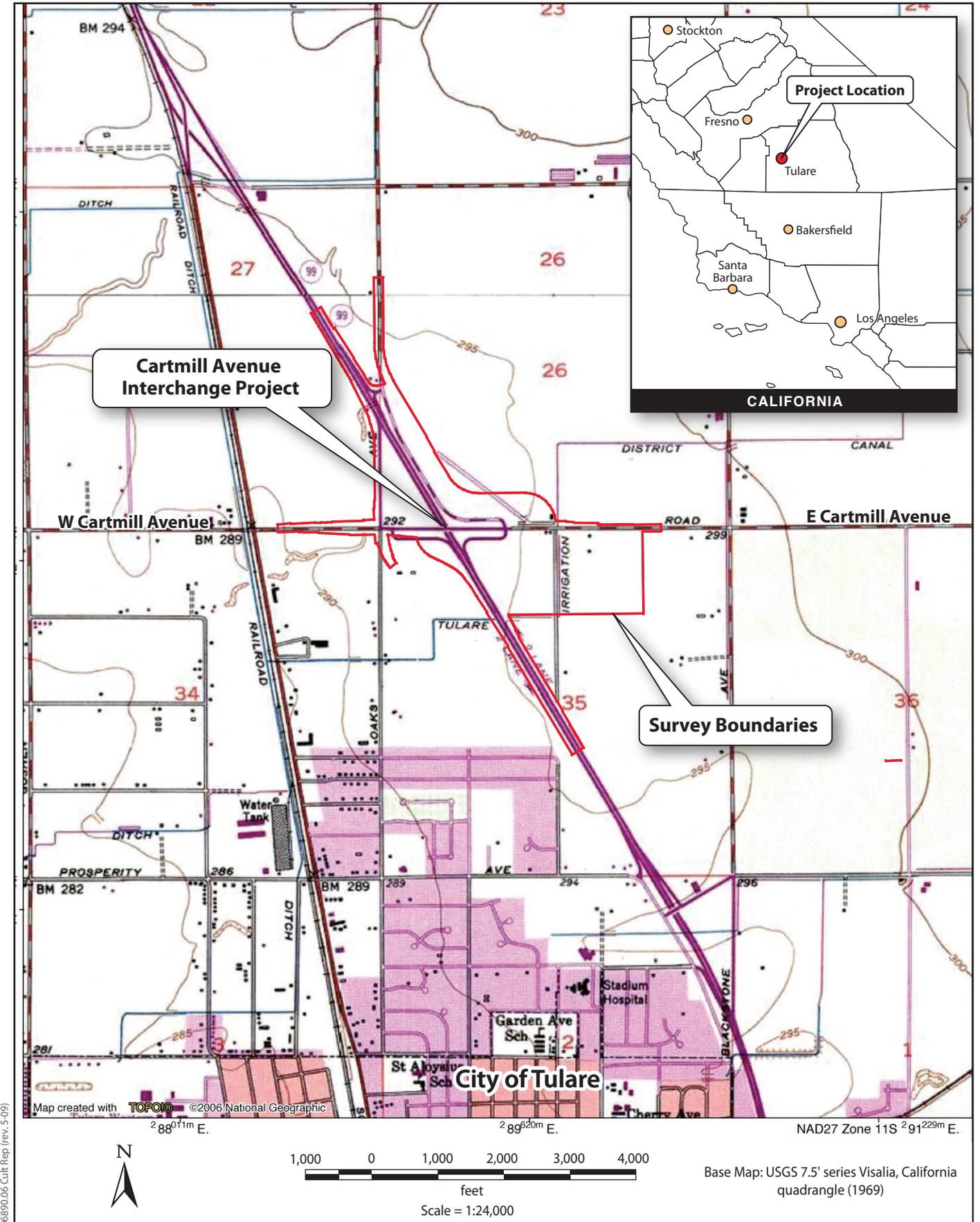
Attachment A  
**Figures**





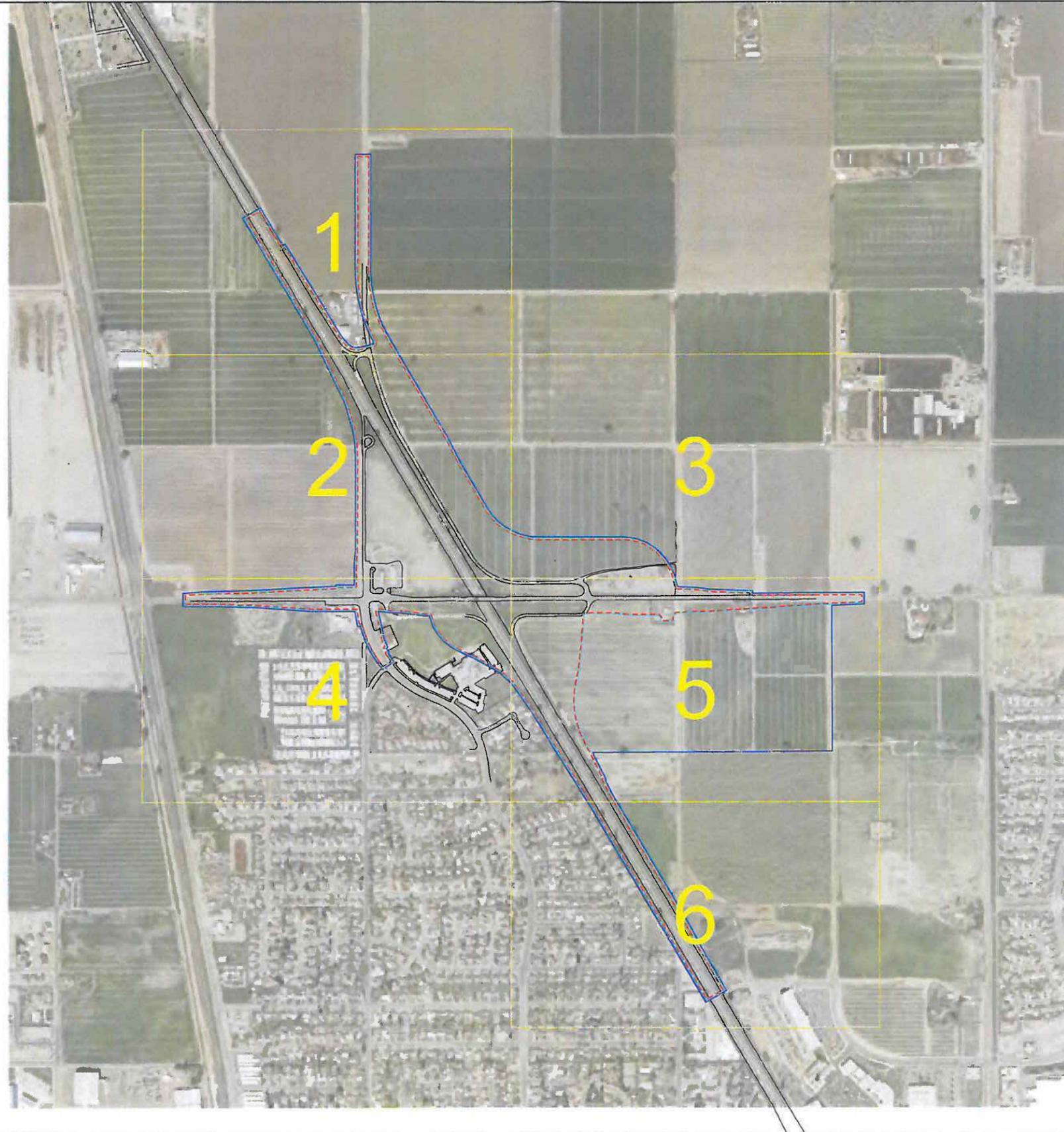
06890.06 Cult Rep(rev. 4-09)

**Figure 1**  
**Cartmill Avenue Interchange Project**  
 Post Mile 31.3/32.6  
 EA 06-33220



06890.06 Cult Rep (rev. 5-09)

**Figure 2**  
**Cartmill Avenue Interchange Project**  
**Post Mile 31.3/32.6**  
**EA 06-33220**



Project Area Limits Map  
 Cartmill Avenue/State Route 99 Interchange Project  
 Post Mile 31.3/32.6  
 EA 06-33220  
 Caltrans District 6  
 Tulare County, California  
 06-TUL-99

*Phillip Vallejo* 6/1/09  
 Phillip Vallejo, Caltrans PQS Principal Architectural Historian (date)

*Bob Hull* 6/1/09  
 Bob Hull, Project Manager (date)

**Legend**

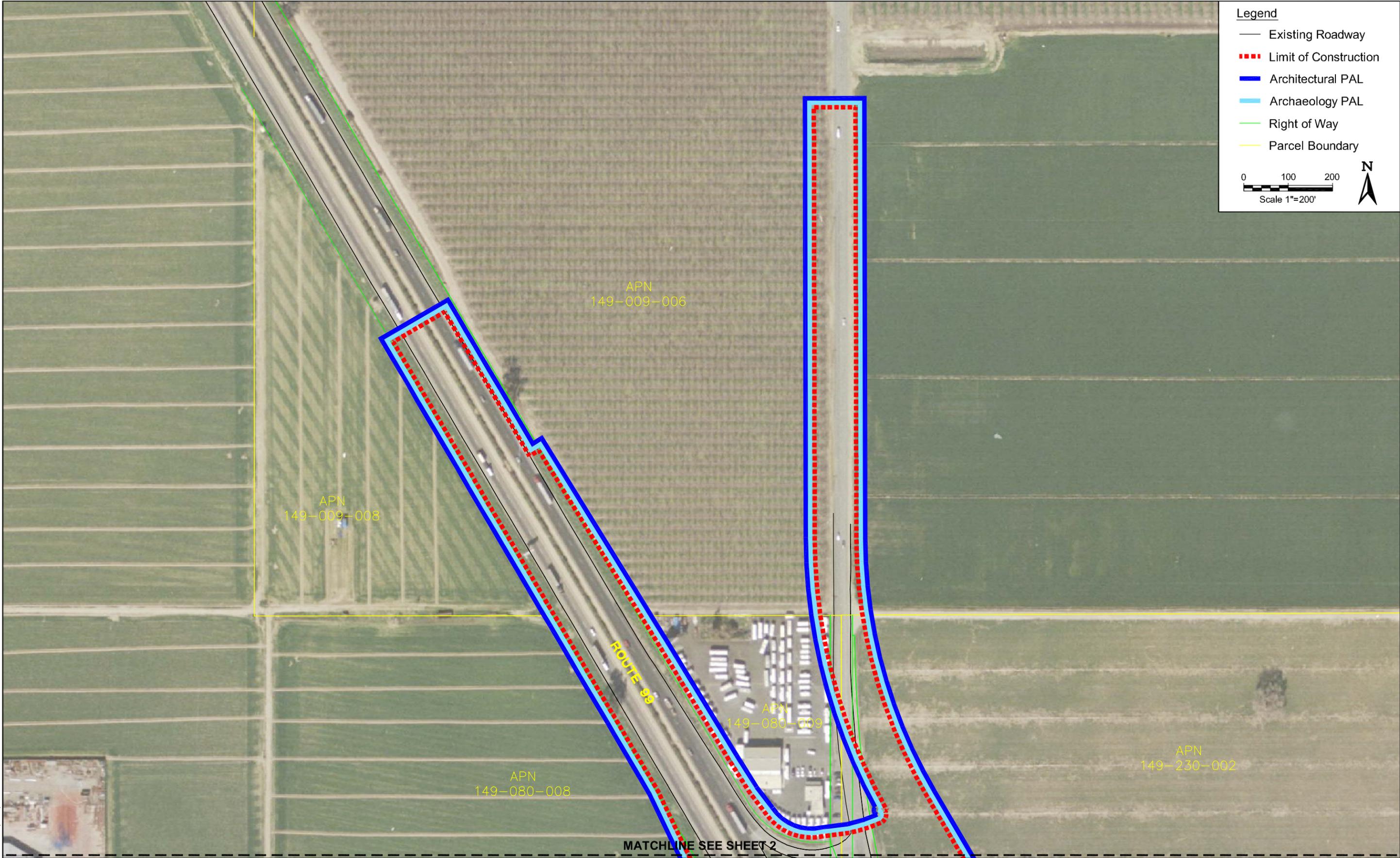
- Existing Roadway
- - - Limit of Construction
- Architectural PAL
- - - Archaeology PAL

0 500 1000  
 Scale 1"=1000'

N

06690.06 (05/09)

**Figure 3**  
**Project Area Limits Map Key**



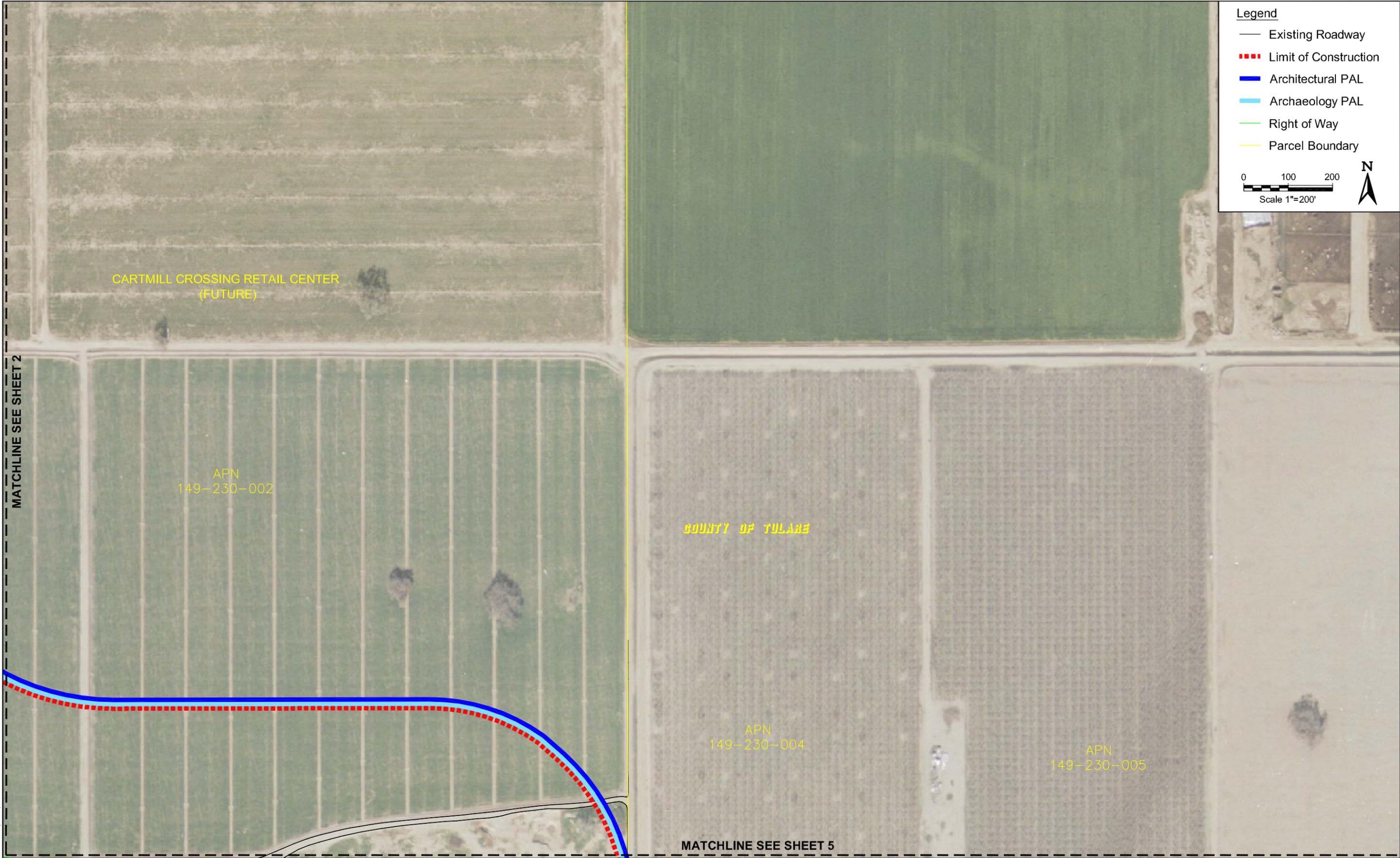
06890.06 (05/09)

**Figure 3**  
**Project Area Limits Map**  
**Sheet 1 of 6**



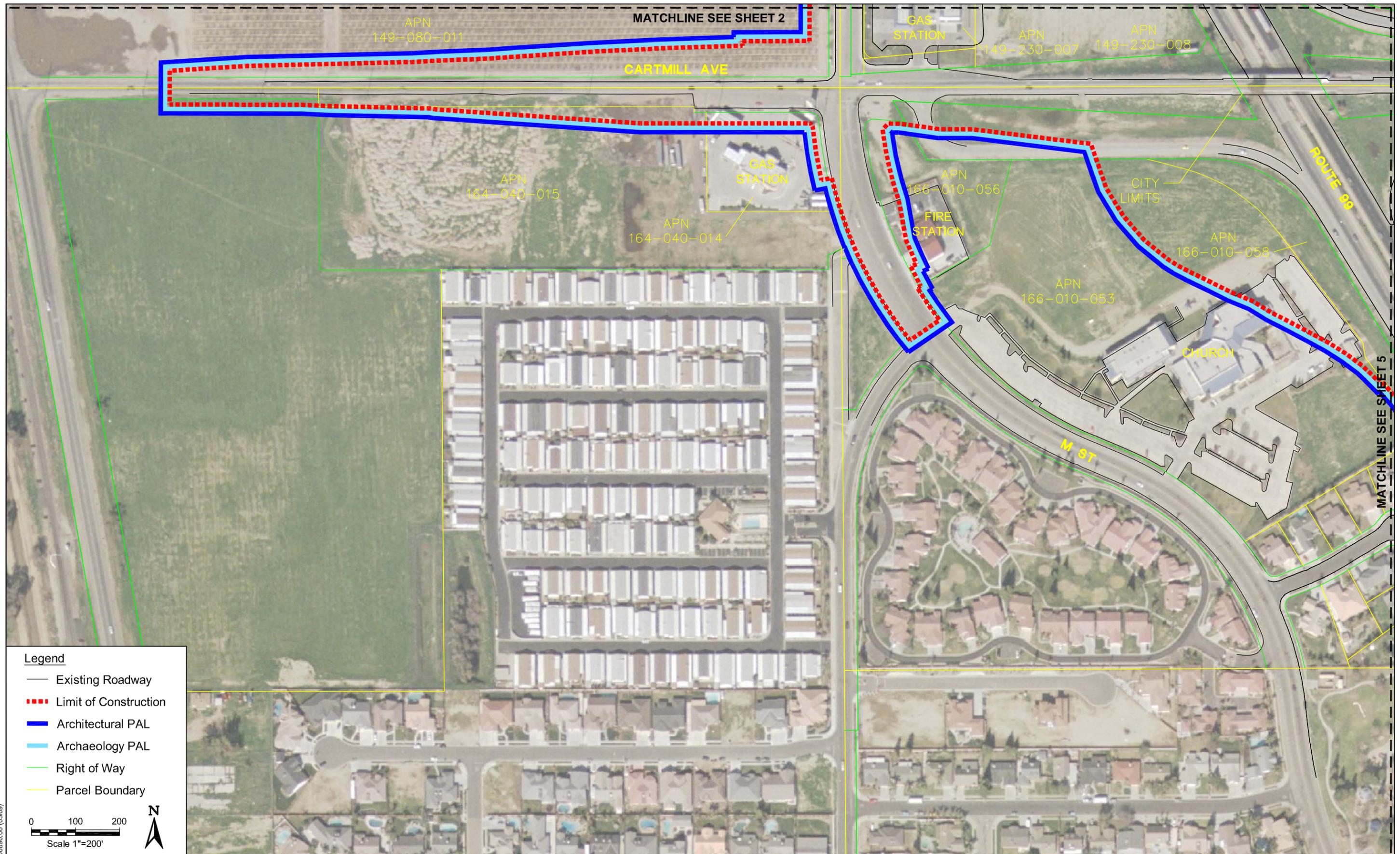
06890.06 (05/09)

**Figure 3**  
**Project Area Limits Map**  
 Sheet 2 of 6



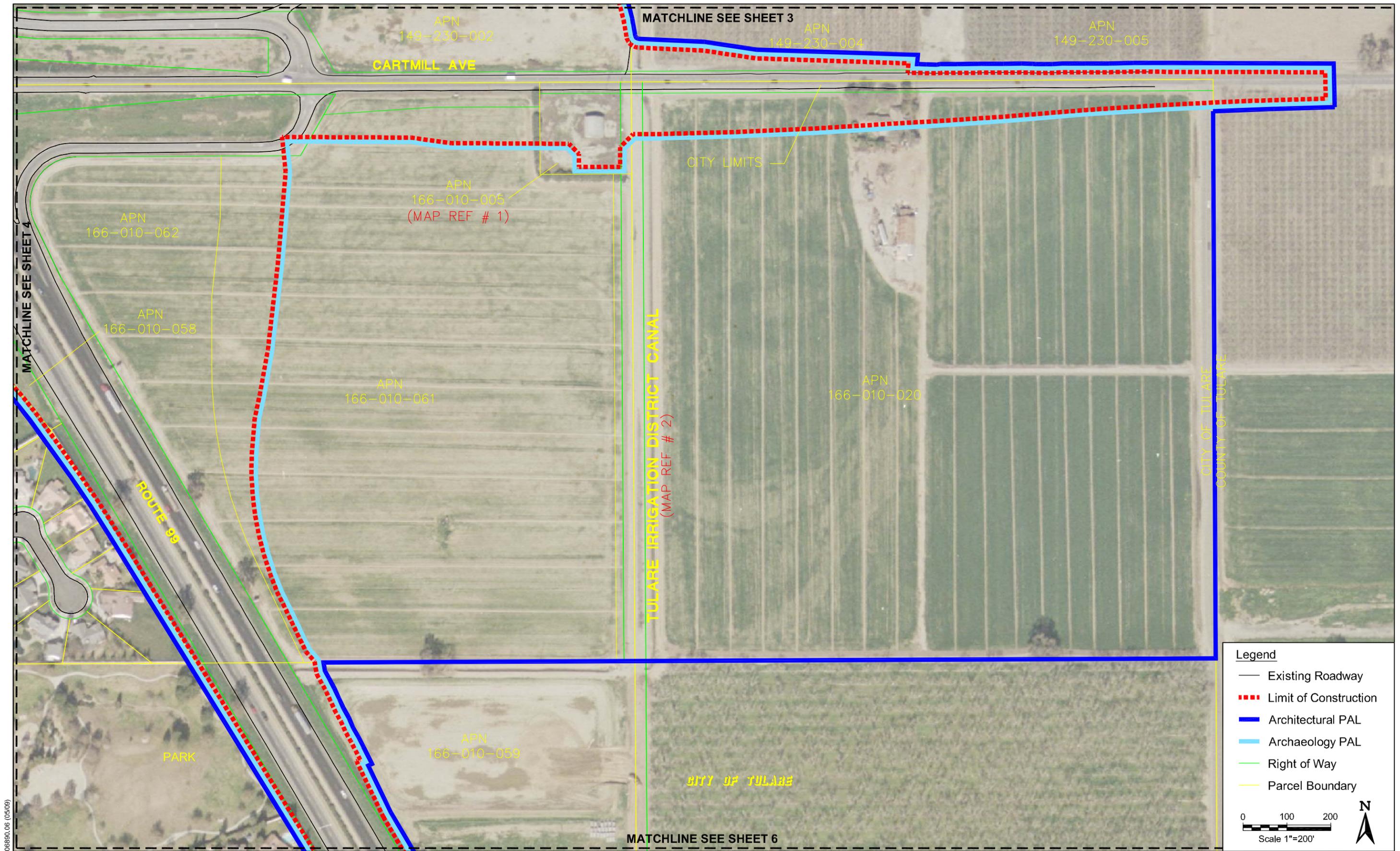
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**Figure 3**  
**Project Area Limits Map**  
**Sheet 3 of 6**



**Figure 3**  
**Project Area Limits Map**  
**Sheet 4 of 6**

06890.06 (05/09)



06890.06 (05/09)

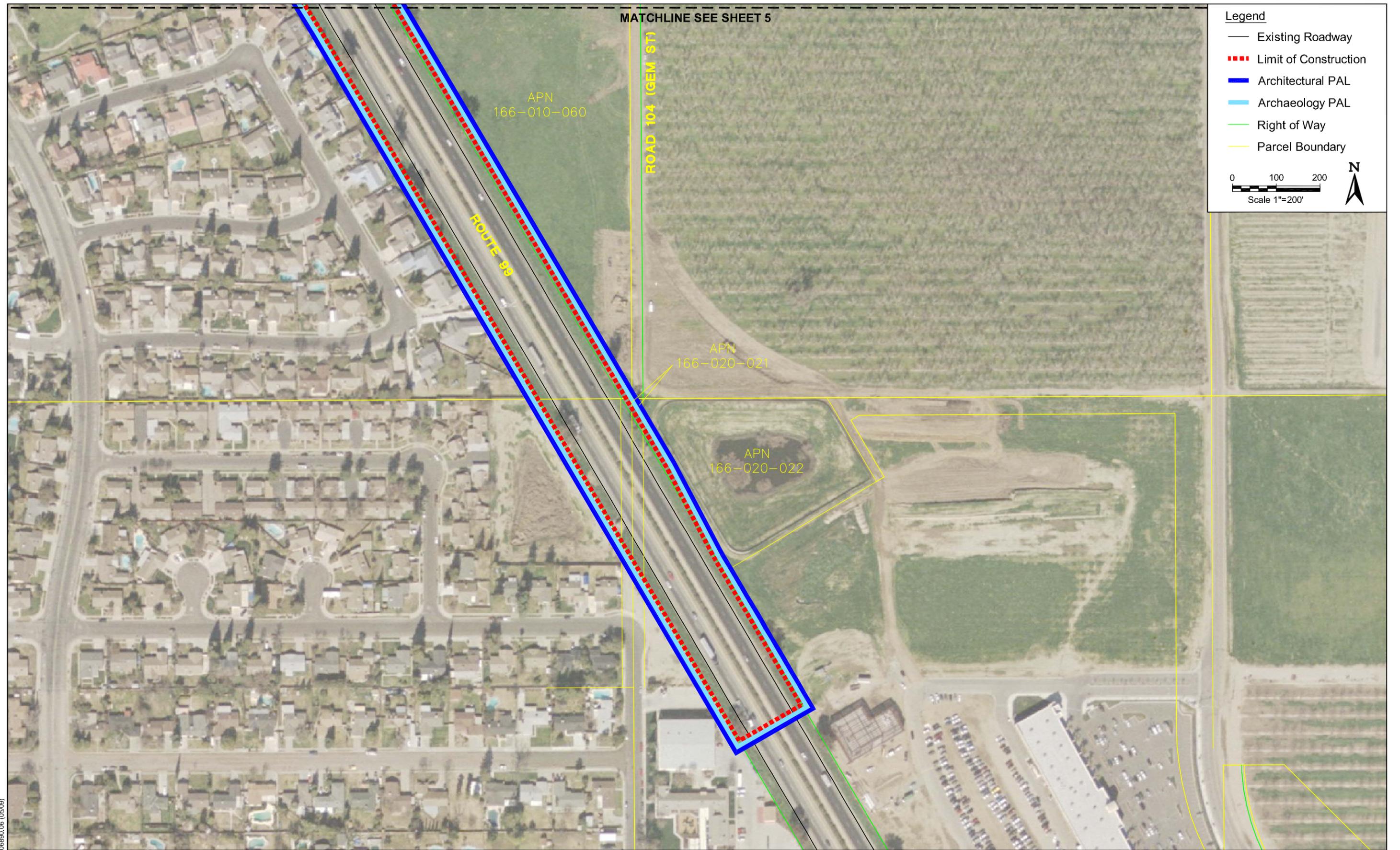
**Legend**

- Existing Roadway
- Limit of Construction
- Architectural PAL
- Archaeology PAL
- Right of Way
- Parcel Boundary

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Scale 1"=200'

N

**Figure 3**  
**Project Area Limits Map**  
**Sheet 5 of 6**



06890.06 (05/09)

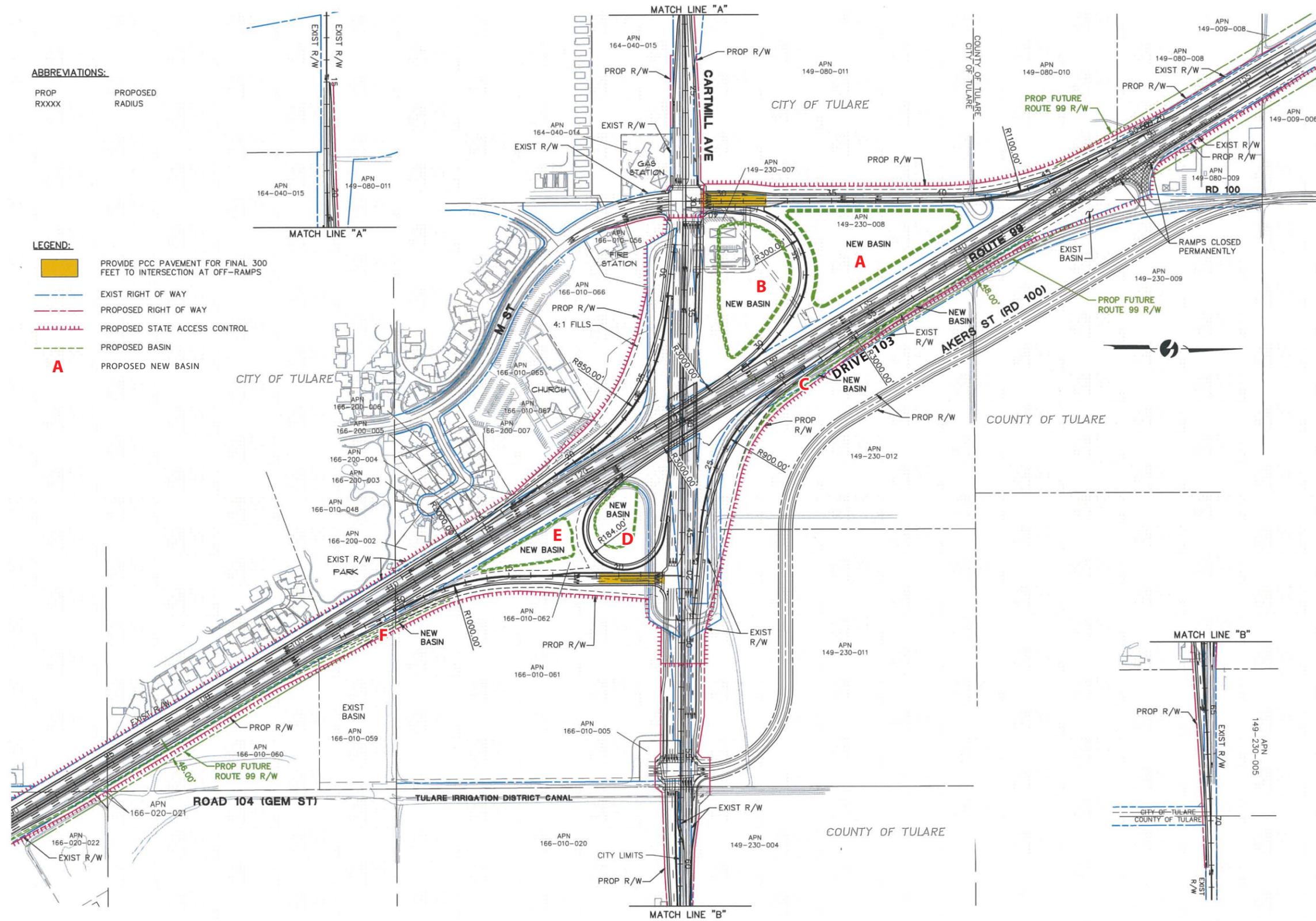
**Figure 3**  
**Project Area Limits Map**  
**Sheet 6 of 6**

**ABBREVIATIONS:**

PROP RXXXX PROPOSED RADIUS

**LEGEND:**

-  PROVIDE PCC PAVEMENT FOR FINAL 300 FEET TO INTERSECTION AT OFF-RAMPS
-  EXIST RIGHT OF WAY
-  PROPOSED RIGHT OF WAY
-  PROPOSED STATE ACCESS CONTROL
-  PROPOSED BASIN
-  PROPOSED NEW BASIN



Graphics...06890.06 HRCR (12-2011) JD

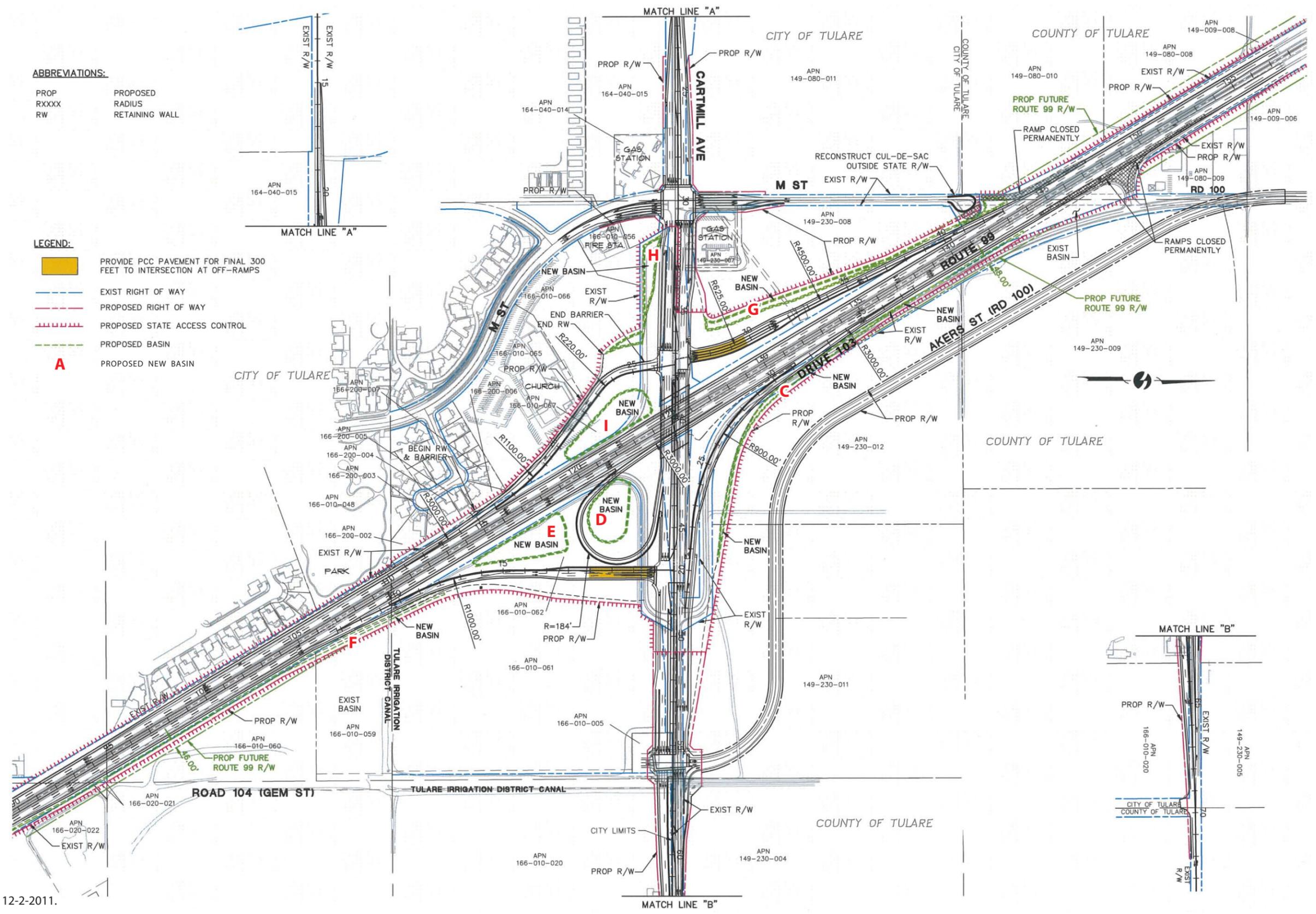
Source: Omni-Means, 12-2-2011.

**Figure 4a  
Alternative 1**

**ABBREVIATIONS:**  
 PROP PROPOSED  
 RXXXX RADIUS  
 RW RETAINING WALL

**LEGEND:**

- PROVIDE PCC PAVEMENT FOR FINAL 300 FEET TO INTERSECTION AT OFF-RAMPS
- EXIST RIGHT OF WAY
- PROPOSED RIGHT OF WAY
- PROPOSED STATE ACCESS CONTROL
- PROPOSED BASIN
- A PROPOSED NEW BASIN



Graphics...06890.06 HRCR (12-2011) JD

Source: Omni-Means, 12-2-2011.

**Figure 4b  
Alternative 2**



Attachment B

# **Statewide Historic Bridge Inventory**



46 0091	Tulare	216	18.68	KAWEAH RIVER		1954	5
46 0097	Tulare	63	4.66	CAMERON CREEK	Visalia	1968	5
46 0098	Tulare	63	5.76	PACKWOOD CREEK	Visalia	1917	5
46 0100	Tulare	63	10.65	ST JOHNS RIVER		1931	5
46 0102	Tulare	63	17.29	COTTONWOOD CREEK		1969	5
46 0103	Tulare	63	17.69	COTTONWOOD CREEK OVERFLO		1969	5
46 0106	Tulare	63	23.07	SAND CREEK		1971	5
46 0113	Tulare	137	0.53	EAST BRANCH BIG CANAL		1920	5
46 0114	Tulare	137	4.57	CAMERON CREEK		1920	5
46 0115	Tulare	137	10.62	CAMERON CREEK		1920	5
46 0118	Tulare	137	17.49	WILLOW CANAL	Tulare	1921	5
46 0119	Tulare	137	22.7	INSIDE CREEK		1921	5
46 0120	Tulare	137	23.38	OUTSIDE CREEK		1921	5
46 0122	Tulare	43	19.91	TULE RIVER		1976	5
46 0123	Tulare	43	17.29	TAYLOR DITCH		1976	5
46 0124	Tulare	43	14.39	HOMELAND CANAL		1976	5
46 0127	Tulare	99	39.66	MILL CREEK DITCH		1933	5
46 0127L	Tulare	99	39.66	MILL CREEK DITCH		1957	5
46 0127R	Tulare	99	39.66	MILL CREEK DITCH		1933	5
46 0128	Tulare	99	23.21	PORTER SLOUGH		1931	5
46 0137	Tulare	201	12.48	SAND CREEK		1939	5
46 0139	Tulare	99	22.23	TULE RIVER OVERFLOW		1931	5
46 0145	Tulare	245	3.18	FRIANT-KERN CANAL		1949	4
46 0148	Tulare	216	11.72	FRIANT-KERN CANAL		1949	4
46 0149C	Tulare	99	26.05	N99-K ST OFF-RAMP OC		1952	5
46 0150L	Tulare	137	16.63	ROUTE 137/99 SEPARATION	Tulare	1952	5
46 0150R	Tulare	137	16.63	ROUTE 137/99 SEPARATION	Tulare	1952	5
46 0156	Tulare	190	11.97	FRIANT-KERN CANAL		1949	4
46 0158	Tulare	99	27.6	PAIGE ROAD OC	Tulare	1952	5
46 0159	Tulare	99	28.61	BARDSLEY AV OC	Tulare	1952	5
46 0160	Tulare	99	31.85	CARTMILL ROAD OC		1952	5
46 0161	Tulare	99	30.58	PROSPERITY AVE OC	Tulare	1952	5
46 0162C	Tulare	99	33.22	SOUTH TAGUS OC		1952	5
46 0165	Tulare	99	6.15	AVENUE 48 OC		1955	5



Attachment C  
**Historical Resources Evaluation Report**



**Cartmill Avenue  
Interchange Project**

**Historical Resources Evaluation Report**

06-TUL-99  
P.M. 31.3/32.6  
EA 06-33220

**December 2011**

STATE OF CALIFORNIA  
Department of Transportation, and  
CITY OF TULARE

Prepared by:  DAVID LEWON  
FOR  
KATHRYN HALEY Date: 12-7-11  
Kathryn Haley, MA  
Architectural Historian  
ICF Jones & Stokes  
630 K St, Suite 400  
Sacramento, CA 95814

Reviewed by: \_\_\_\_\_ Date: \_\_\_\_\_  
Philip Vallejo  
PQS Principal Architectural Historian  
Central California Cultural Resources Branch  
Caltrans District 6

Approved by: \_\_\_\_\_ Date: \_\_\_\_\_  
Jeanne Binning  
Branch Chief  
PQS Principal Prehistoric Archaeology  
Central California Cultural Resource Branch  
Caltrans District 6

ICF Jones & Stokes. 2011. *Historical Resources Evaluation Report for  
Cartmill Ave Interchange Project, Tulare County, California.*  
December. (J&S 06890.06.) Sacramento, CA. Prepared for: City of  
Tulare, Omni-Means, and the California Department of Transportation,  
District 6. Fresno, CA.

# Summary of Findings

The City of Tulare (City), in conjunction with the California Department of Transportation (Caltrans), proposes to modify the existing State Route (SR) 99/Cartmill Avenue/M Street/Oaks Street interchange located at post mile (PM) 31.9 in Tulare. The project would improve safety, provide additional capacity, improve east–west circulation, and improve local access to and from SR 99 at Cartmill Avenue.

The purpose of this historical resources evaluation report (HRER) is to evaluate the potential for the project to affect buildings and structures eligible for listing in the California Register of Historical Resources (CRHR) or any resources considered historic for the purposes of the California Environmental Quality Act (CEQA). The specific purpose of this HRER is to comply with applicable sections of CEQA which requires that public or private projects financed or approved by public agencies be assessed to determine the effects of the projects on historical resources and unique archaeological resources. ICF Jones & Stokes conducted field investigations for this study on October 29, 2008.

The cultural resources addressed in this HRER include one utilitarian building and one linear feature. Both resources were constructed before 1963 and have been formally evaluated for this project (see Appendix C DPR 523 Forms for detailed evaluations of the 2 resources). Neither of the pre-1963 buildings/structures in the project area limits (PAL) appears to meet the criteria for listing in the CRHR, either individually or as a group. Consequently, none of these resources is a historical resource for the purposes of CEQA. Additionally, one bridge (Cartmill Road OC # 46 0160) was administered through the Caltrans' historic bridge inventory and is listed as category 5 (not eligible for the NRHP), and thus did not require formal evaluation.

While the Programmatic Agreement (PA) that Caltrans uses for Section 106 compliance was developed specifically for federal undertakings, it is Caltrans policy (Environmental Handbook Volume 2, 2-7.1) to follow guidance of the PA attachments for State-only projects. To that end, Kathryn Haley, who meets the qualifications of an Architectural Historian per Attachment 1 of the PA, has determined that all other properties within the PAL are exemptible properties per Attachment 4 (Properties Exempt from Evaluation) of the PA.



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# Tables

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## Acronyms and Abbreviations

APE	area of potential effect
APN	assessor's parcel number
Caltrans	California Department of Transportation
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CHRIS	California Historical Resources Inventory System
City	City of Tulare
COZEEP	Construction Zone Enhancement Enforcement Program
CRHR	California Register of Historical Resources
DPR	California Department of Parks and Recreation
HDM	California Highway Design Manual
HRER	historical resources evaluation report
NEPA	National Environmental Policy Act
NRHP	National Register of Historic Places
PAL	project area limits
PM	post mile
PRC	Public Resources Code
ROW	right-of-way
SBC	Southwestern Bell Corporation
SCE	Southern California Edison
SPRR	Southern Pacific Railroad
SR 99	State Route 99
SSJVIC	Southern San Joaquin Valley Information Center
TMP	traffic management plan

# Historical Resources Evaluation Report

## Project Description

The State Route 99 (SR 99)/Cartmill Avenue Interchange Improvements project is located in the City of Tulare on SR 99 at the Cartmill Avenue interchange (PM 31.9). The vicinity and location of the project is shown in Appendix A on Figures 1 and 2). Through the project area, SR 99 is a four-lane freeway with a 42-foot-wide median. Cartmill Avenue crosses over SR 99 at a 30-degree skew. The overcrossing is a two-span structure with closed abutments, and it is constructed to a width of 38 feet, with a paved width of 28 feet from one face of curb to the other. The purpose of this project is to improve safety, provide additional capacity, improve east-west circulation, and improve local access with SR 99 at Cartmill Avenue to correct current traffic congestion and to accommodate planned future growth, including significant commercial development proposed adjacent to the interchange, within the northern area of Tulare.

## Build Alternatives

This section describes the two proposed build alternatives (Alternative 1 and Alternative 2), the common design features of these alternatives, and the features that are unique to each. No alternatives are proposed at a location other than the interchange because location alternatives would not be feasible and would not meet the purpose and need of the project. The project would be constructed in a single phase as described below.

### Common Design Features of the Build Alternatives

The proposed improvements for Alternatives 1 and 2 are shown in Figures 4a and 4b in Attachment A. The project features common to both build alternatives are listed below.

- Remove both hook ramps on northbound State Route 99 at Road 100/Drive 103.
- Construct two lanes on new alignment for Akers Street (Road 100) east of the existing Drive 103 frontage road between Cartmill Avenue and just north of the existing northbound State Route 99 hook on- and off-ramps at Road

100/Drive 103. (Road 100 would be extended to the south to intersect with Cartmill Avenue, and the new road is referred to as Akers Street.)

- Remove the existing frontage road between Cartmill Avenue and the northbound State Route 99 hook ramps (Drive 103).
- Widen Cartmill Avenue from two lanes to a six-lane divided arterial from M Street to Akers Street.
- Transition Cartmill Avenue from M Street west and from Akers Street east to match existing roadway sections.
- Transition M Street from Cartmill Avenue south to match existing roadway sections.
- Construct a new Cartmill Avenue overcrossing over State Route 99.
- Remove the existing Cartmill Avenue overcrossing over State Route 99.
- Remove the existing northbound State Route 99 off-ramp to Cartmill Avenue.
- Construct a new northbound State Route 99 off-ramp to Cartmill Avenue with a two-lane exit from State Route 99 and a 1,300-foot-long auxiliary lane.
- Construct a new loop on-ramp and direct connecting on-ramp from Cartmill Avenue to northbound State Route 99.
- Provide a traffic census/data collection loop on each ramp lane at the gore.
- Remove the existing northbound State Route 99 hook off- and on-ramps at Road 100/Drive 103.

## **Storm Water Runoff Collection**

Storm water runoff from the eastern half of the proposed interchange would drain to four retention basins (referred to as Basin C, Basin D, Basin E and Basin F in Figures 4a and 4b in Attachment A). Basin C would be located in the northeast quadrant of the proposed interchange outside of and adjacent to the State Route 99 northbound on-ramp. Basin D and Basin E would be located in the southeast quadrant of the proposed interchange, between the State Route 99 northbound off-ramp, State Route 99, and Cartmill Avenue. Basins C, D and E would be designed to hold up to one foot of water before overflow runoff would be routed into an underground storm water pipes and conveyed to a new City of Tulare detention basin located at the northeast corner of J Street and Cartmill Avenue. Storm water from the new City Basin would discharge into a Tulare Irrigation District ditch located to the west. Basin F would also be located in the southeast quadrant of the proposed interchange outside of and adjacent to the State Route 99 northbound off-ramp. Basin F would have sufficient capacity to accommodate runoff without exceeding one foot of water. Storm water runoff collection for the western half of the interchange varies between alternatives and is discussed in Unique Features of the Build Alternatives below.

## Interchange Landscaping

Standard erosion control and irrigation crossovers would be provided to accommodate future landscaping at the part of the interchange area where no construction would occur.

## Construction Staging and Detours

The project would be constructed in a single phase with four stages. A description of the construction staging features common to both Alternative 1 and Alternative 2 is provided below. At this time, it is anticipated that the Cartmill Avenue overcrossing would be closed for the entire duration of Stage 2.

### Stage 1 for Alternative 1 and Alternative 2

- Modify the existing northbound State Route 99 hook off-ramp to Road 100/Drive 103. Detour northbound State Route 99 off-ramp traffic to the existing off-ramp to Cartmill Avenue during construction.
- Modify the existing northbound State Route 99 hook on-ramp from Road 100. Detour on-ramp traffic either south to the Prosperity Avenue interchange located at post mile 30.58, via Retherford Street or Hillman Street, or north to the South Tagus Road interchange located at post mile 33.22, via Road 100 or Hillman Street (Road 108).
- Construct new Akers Street (Road 100) north of Cartmill Avenue. Maintain full access to Drive 103.
- Extend the existing northbound State Route 99 ramps termini to the proposed Akers Street (Road 100) alignment.
- Construct a portion of the new southbound direct on-ramp to State Route 99 with temporary connection to Cartmill Avenue via the existing southbound on-ramp.

### Stage 2 for Alternative 1 and Alternative 2

- Close Cartmill Avenue over State Route 99 and detour westbound and eastbound Cartmill Avenue through traffic to adjacent freeway connections via local roads.
- Demolish existing overcrossing structure and erect falsework (temporary structures used until the construction is sufficiently advanced to support itself) for the new Cartmill Avenue overcrossing structure (night work). Detour southbound State Route 99 through traffic via the existing off-ramp to M Street to the southbound on-ramp from Cartmill Avenue. Detour northbound State Route 99 through traffic via the existing off-ramp to Cartmill Avenue to Akers Street (Road 100) and the northbound hook on-ramp at Akers Street (Road 100).
- After falsework erection, close existing northbound State Route 99 off-ramp to Cartmill Avenue and detour off-ramp traffic to northbound State Route 99 hook off-ramp to Akers Street (Road 100).

- Place earth embankment and construct the new Cartmill Avenue overcrossing structure.
- Remove Drive 103, the existing State Route 99 northbound off-ramp to Cartmill Avenue and a portion of the existing southbound on-ramp to State Route 99.
- Construct new State Route 99 northbound off-ramp to Cartmill Avenue.
- Construct a portion of the new northbound loop on-ramp to State Route 99 at Cartmill Avenue.
- Construct the Cartmill Avenue improvements east of State Route 99.
- Construct a portion of the Cartmill Avenue improvements west of State Route 99.
- Construct a portion of the new northbound direct on-ramp to State Route 99 at Cartmill Avenue not in conflict with the off-ramp to Akers Street (Road 100).

### **Stage 3 for Alternative 1 and Alternative 2**

- Open the new northbound State Route 99 off-ramp to Cartmill Avenue.
- Remove Cartmill Avenue overcrossing falsework (night work). Detour southbound State Route 99 through traffic via the existing off-ramp to M Street to the southbound on-ramp from Cartmill Avenue. Detour northbound State Route 99 through traffic via the new off-ramp to Cartmill Avenue to Akers Street (Road 100) and the northbound hook on-ramp at Akers Street (Road 100).
- Re-open Cartmill Avenue over State Route 99.
- Permanently close northbound State Route 99 hook off-ramp to Akers Street (Road 100).
- Complete construction of the new northbound loop on-ramp to State Route 99.
- Complete construction of the new northbound direct on-ramp to State Route 99.

### **Stage 4 for Alternative 1 and Alternative 2**

- Permanently close northbound hook on-ramp to State Route 99 from Akers Street (Road 100).
- Complete shoulder reconstruction on northbound State Route 99 at closed Akers Street (Road 100) ramp junctions.

## **Equipment and Material Staging Areas**

Potential equipment and material staging areas have been identified within the limits of construction. It is anticipated that the northwest interchange quadrant east of M Street would be used for equipment staging. This area is primarily

ruderal grassland. Following state and federal standards, policies, and practices, the equipment staging areas would be prepared for use so that they would not increase the risk of wildland fire or pose a threat related to the temporary storage of hazardous materials such as fuels and equipment lubricants.

## **Traffic Management**

A traffic management plan would be prepared to address traffic flow and access during construction. This plan would be prepared prior to construction. Coordination would be required with emergency services as well as with the City of Tulare Fire Department. Standard lane closures, directional lane closures, and construction staging on State Route 99 would be required. Only one lane closure would be allowed at a time.

During construction of the new Cartmill Avenue structure, falsework openings would be provided for both directions of traffic on State Route 99. The erection of falsework would require California Highway Patrol enforcement through the Construction Zone Enhancement Enforcement Program, night closure of the freeway, and a temporary detour. Existing and temporary ramp connections would be used for the traffic detour on State Route 99. A public information package identifying the timing of the work would be provided and changeable message signs would be posted during construction.

Construction Stage 2 would require full closure of Cartmill Avenue. Two traffic detour options are being considered to redirect traffic while the new structure is under construction.

### **Detour Option 1—Encourage Local Road Options**

Northbound and southbound traffic on State Route 99 would use the Cartmill Avenue Interchange ramps and adjacent local roads, except during Stage 2 construction. The northbound off-ramp will be closed during Stage 2 construction. Southbound State Route 99 traffic heading east of the freeway would use the southbound State Route 99 off-ramp to M Street, then to the Prosperity Avenue crossing over State Route 99. Northbound State Route 99 traffic heading west of the freeway would use the State Route 99 northbound off-ramp to Akers Street (Road 100) then to Retherford Street or Hillman Street (Road 108) to the Prosperity Avenue crossing over State Route 99. Local traffic that would normally cross State Route 99 on Cartmill Avenue would use alternative crossings at Avenue 264 or at Prosperity Avenue.

### **Detour Option 2—Encourage Regional Interchange Options**

Traffic affected by the Cartmill Avenue closure on northbound State Route 99 would use the Prosperity Avenue interchange and local roads. Traffic affected by the closure on southbound State Route 99 would use the Road 92 B (Avenue 264) or J Street interchanges and then local roads. Except for the northbound off-ramp to Cartmill Avenue which would be closed, the remaining northbound and southbound ramps to Cartmill Avenue/M Street/Akers Street (Road 100) would remain open and available similar to Detour Option 1. Local traffic crossing State

Route 99 on Cartmill Avenue would use alternative crossings at Avenue 264 or at Prosperity Avenue.

## **Construction Limits**

For both build alternatives, the limits for all proposed improvements on State Route 99 extend from approximately 0.6 mile south of Cartmill Avenue (post mile 31.3) to approximately 0.7 mile north (post mile 32.6) of Cartmill Avenue. The limits for improvements on the City of Tulare's street system include Cartmill Avenue from approximately 1,000 feet west of M Street, west of State Route 99, east to approximately 1,300 feet east of the Tulare Irrigation District canal; M Street from the State Route 99 southbound off-ramp to Cartmill Avenue; and the new Akers Street (Road 100) footprint from Cartmill Avenue to approximately 400 feet north of the northbound State Route 99 hook ramps on Road 100. Construction of the new Akers Street (Road 100) roadway would occur approximately 700 feet to the east of the existing frontage road. The proposed construction is shown in Figures 4a and 4b in Attachment A.

Excavation would be necessary to construct the bridge foundations and install traffic-signal poles, street-light poles, signal conduit, lighting conduit, and underground utilities (new and relocated). The depth of excavation would vary from 5 to 16 feet. The deepest excavation required would be to install traffic signal poles.

## **Utility Relocations**

Utility relocations are anticipated, and potholing would be conducted to locate a Time Warner fiber optic line on the north side of Cartmill Avenue, a Southern California Edison electric conduit on the south side of Cartmill Avenue, and city sewer and water lines located under M Street south of Cartmill Avenue. Utility relocations would be paid for by the owner of each relocated utility.

## **Unique Features of the Build Alternatives**

The proposed improvements for Alternatives 1 and 2 are shown in Figures 4a and 4b in Attachment A. In addition to the common project features already noted, the two alternatives vary as described below.

### **Alternative 1**

- Modify the existing direct-connecting on-ramp from Cartmill Avenue to southbound State Route 99.
- Construct a new loop on-ramp from westbound Cartmill Avenue to southbound State Route 99.

- Modify the existing southbound State Route 99 off-ramp to M Street to the intersection with Cartmill Avenue.

## **Alternative 2**

- Construct a new direct-connecting on-ramp from Cartmill Avenue to southbound State Route 99 with a single-lane entrance to State Route 99 and a 1,000-foot auxiliary lane.
- Construct a retaining wall adjacent to the direct-connecting on-ramp from Cartmill Avenue to southbound State Route 99 and adjacent to the existing church property.
- Relocate the southbound State Route 99 off-ramp to M Street to a new connection with Cartmill Avenue east of M Street.

## **Storm Water Runoff Collection**

### **Alternative 1**

Storm water runoff from the western half of the proposed interchange would drain to two new retention basins (Basin A and Basin B) to be located in the northwest quadrant of the proposed interchange, between the State Route 99 southbound off-ramp, State Route 99, and Cartmill Avenue (Figure 4a in Attachment A). Basin A and Basin B would be designed to hold up to one foot of water before overflow runoff is routed into underground storm water pipes and conveyed to a new City of Tulare detention basin located at the northeast corner of J Street and Cartmill Avenue. Storm water from the new City Basin would discharge into a Tulare Irrigation District ditch located to the west.

### **Alternative 2**

Alternative 2 would drain all of the storm water runoff from the western half of the interchange to three retention basins (Basin G, Basin H and Basin I). Basin G would be located in the northwest quadrant of the proposed interchange outside of and adjacent to the State Route 99 southbound off-ramp (Figure 4b in Attachment A). Basin H and Basin I would be located south of Cartmill Avenue, in the southwest quadrant of the proposed interchange between M Street and the State Route 99 southbound on-ramp and between the State Route 99 on-ramp and State Route 99 (Figure 4b in Attachment A). Basin G, Basin H and Basin I would be designed to hold up to one foot of water before overflow runoff is routed into underground storm water pipes and conveyed to a new City of Tulare detention basin located at the northeast corner of J Street and Cartmill Avenue. Storm water from the new City Basin would discharge into a Tulare Irrigation District ditch located to the west.

## Construction Staging and Detours

Interchange improvement Stage 1 would be the same for both alternatives and are described above under “Common Design Features of the Build Alternatives.” The alternatives differ slightly during Stages 2, 3, and 4 as noted below.

### Alternative 1

#### Stage 2

In addition to the common Stage 2 activities described above (closing roads, demolishing and reconstructing the Cartmill Avenue overcrossing, removing Drive 103, constructing all or part of the northbound off-ramp and on-ramps), Alternative 1 would include the following step.

- Construct a portion of the new southbound loop on-ramp to State Route 99 at Cartmill Avenue.

#### Stage 3

In addition to the common Stage 3 activities described above (removing overcrossing falsework, closing the northbound off-ramp to Akers Street (Road 100), and completing construction of northbound on-ramps), Alternative 1 would include the following steps.

- Complete construction of the new southbound loop on-ramp to State Route 99.
- Close and reconstruct the existing southbound State Route 99 off-ramp to M Street. During ramp closure, detour southbound State Route 99 off-ramp traffic to the J Street off-ramp.

#### Stage 4

In addition to the common Stage 4 activities described above (closing the northbound hook on-ramp from Akers Street (Road 100), and completing shoulder reconstruction and construction of the southbound off-ramp), Alternative 1 would include the following step.

- Complete construction of the southbound direct on-ramp to State Route 99.
- Complete construction of the Cartmill Avenue/M Street/State Route 99 southbound off-ramp intersection.

### Alternative 2

#### Stage 2

In addition to the common Stage 2 activities described above (closing roads, demolishing and reconstructing the Cartmill Avenue overcrossing, removing Drive 103, constructing all or part of the northbound off-ramp and on-ramps), Alternative 2 would include the following steps.

- Construct a portion of the new southbound State Route 99 direct off-ramp to Cartmill Avenue.

- Construct a portion of the temporary southbound loop on-ramp to State Route 99 from M Street for use in Stage 3. Maintain access to ARCO/AM-PM at the M Street driveway.

### **Stage 3**

In addition to the common Stage 3 activities described above (removing overcrossing falsework, closing the northbound off-ramp to Akers Street (Road 100), and completing construction of northbound on-ramps), Alternative 2 would include the following steps.

- Close southbound on-ramp from Cartmill Avenue to State Route 99 and complete construction of the new southbound on-ramp. During closure, detour traffic to temporary southbound loop on-ramp from M Street. Maintain access to ARCO/AM-PM at the M Street driveway.
- Open new southbound State Route 99 on-ramp from Cartmill Avenue and close temporary loop on-ramp from M Street.
- Complete construction of the new southbound State Route 99 off-ramp to Cartmill Avenue.

### **Stage 4**

In addition to the common Stage 4 activities described above (closing the northbound hook on-ramp from Akers Street (Road 100), and completing shoulder reconstruction and construction of the southbound off-ramp), Alternative 2 would include the following steps.

- Permanently close existing southbound State Route 99 off-ramp to M Street.
- Remove temporary southbound loop on-ramp from M Street.

## **Right-of-Way Acquisition**

Implementing Alternative 1 would require acquiring approximately 38.33 acres of additional right-of-way from 24 parcels, with no excess right-of-way parcels. Implementing Alternative 2 would require acquiring approximately 30.40 acres of additional right-of-way from 28 parcels, with no excess right-of-way parcels. Rights-of-way would be acquired under the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended.

## **No-Build Alternative**

The No-Build Alternative would maintain the existing intersection structure configuration and nonstandard vertical clearance. The existing p.m. peak-hour LOS grade of “F” at the Cartmill Avenue/SR 99 northbound off-ramp intersection and the LOS grade of “E” at the Cartmill Avenue/M Street intersection would continue and worsen as planned development occurred.

## Alternatives Considered but Eliminated from Further Discussion

Four additional interchange alternatives were considered and eliminated from further discussion. These four alternatives are being referred to below as Alternatives 3, 4, 5, and 6. Alternative 3, a partial cloverleaf interchange with direct-connect on-ramps and T-intersection off-ramps at Cartmill Avenue, had insufficient intersection spacing between the State Route 99 southbound ramps and M Street intersections with Cartmill Avenue. This created a short, weaving section between the southbound ramp termini and the westbound left turn to M Street, allowing traffic to potentially queue back from the M Street intersection and block the southbound ramp.

Alternative 4 was similar to Alternative 1, except that this alternative did not include the eastbound Cartmill Avenue direct-connect on-ramp to southbound State Route 99. The project development team agreed that the provision of the direct-connect on-ramp represented a preferred project feature.

Alternative 5 considered locating the State Route 99 southbound on- and off-ramps as hook ramps to a point approximately midway on M Street north of Cartmill Avenue. Alternative 6 was similar to Alternative 4 but also included the eastbound Cartmill Avenue direct-connect on-ramp to southbound State Route 99. The project development team noted that the hook-ramp configuration between M Street and southbound State Route 99 did not represent a preferred alternative and agreed that Alternatives 5 and 6 could be dropped from further consideration.

Following approval of the Project Study Report in October 2008, a Value Analysis Study was prepared that identified an additional alternative (Value Analysis Alternative 2.5). Though it was rejected in the final Value Analysis Study, the City of Tulare and Caltrans subsequently agreed that Value Analysis Alternative 2.5 should be considered in greater detail. In March 2009, a design memorandum was prepared to present the result of the evaluation of Value Analysis Alternative 2.5. In April 2009, a memorandum was prepared that compared the current proposed alternatives (Alternatives 1 and 2 discussed above) with Value Analysis Alternative 2.5. Upon further consideration by both the City of Tulare and Caltrans, Value Analysis Alternative 2.5 was rejected both on the basis of impacts and no operational benefits over the two viable alternatives; and that it had been considered and rejected by the Value Analysis team.

## Project Area Limits

The Cartmill Avenue/State Route 99 Interchange Project, PAL for architectural cultural resources is indicated on Appendix A, Figure 3. The PAL includes all existing right-of-way (ROW) and those parcels from which new ROW will be acquired where proposed project activities will take place. Drawings of project alternatives are located in Appendix A, Figures 4a through 4b.

# Regulatory Setting

## California Register of Historical Resources

The California Environmental Quality Act (CEQA) requires that public or private projects financed or approved by public agencies be assessed to determine the effects of the projects on historical resources and unique archaeological resources. CEQA uses the term “historical resources” to include buildings, sites, structures, objects, or districts, each of which may have historical, prehistoric, architectural, archaeological, cultural, or scientific importance. The term “unique archaeological resource” refers to an archaeological artifact or site that does not meet the criteria for “historical resource” but does meet criteria set forth in Section 21083.2.

CEQA states that if implementation of a project results in significant effects on historical resources, then alternative plans or mitigation measures must be considered; however, only significant historical resources need to be addressed (*California Code of Regulations [CCR] 15064.5, 15126.4*). Therefore, before impacts and mitigation measures can be identified, the significance of historical resources must be determined.

CEQA guidelines define three ways that a property may qualify as a historical resource for the purposes of CEQA review:

- if the resource is listed in or determined eligible for listing in the California Register of Historical Resources (CRHR),
- if the resource is included in a local register of historical resources, as defined in section 5020.1(k) of the Public Resources Code (PRC) or identified as significant in an historical resource survey meeting the requirements of section 5024.1(g) of the PRC unless the preponderance of evidence demonstrates that it is not historically or culturally significant, or
- the lead agency determines the resource to be significant as supported by substantial evidence in light of the whole record (*14 CCR 15064.5[a]*).

Each of these ways of qualifying as a historical resource for the purpose of CEQA is related to the eligibility criteria for inclusion in the CRHR (*PRC 5020.1[k], 5024.1, 5024.1[g]*). A historical resource may be eligible for inclusion in the CRHR if it meets any of the following criteria.

1. The resource is associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage.
2. The resource is associated with the lives of persons important in our past.
3. The resource embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
4. The resource has yielded, or may be likely to yield, information important in prehistory or history.

Properties that are listed in or eligible for listing in the NRHP are considered eligible for listing in the CRHR and thus are significant historical resources for the purpose of CEQA (PRC 5024.1[d][1]).

## Research Methods

ICF Jones & Stokes prepared this HRER following procedures as specified by the guidelines established in Caltrans' *Environmental Handbook, Volume 2: Cultural Resources* (Caltrans 2004) and the 2004 Programmatic Agreement. ICF Jones & Stokes followed a three-step process to prepare this report: basic background research to establish the general historic context for the PAL; in-depth property-specific research; and on-site fieldwork to inspect and record resources in the PAL.

A qualified ICF Jones & Stokes archaeologist conducted a record search at the Southern San Joaquin Valley Information Center (SSJVIC) of the California Historical Resources Inventory System (CHRIS) located at CSU Bakersfield in Bakersfield, California in February 2007. Sources consulted during the records search included maps of previous cultural resource studies and known cultural resource locations. According to the SSJVIC staff, the records search resulted in the finding of no prehistoric or historic era sites having been recorded, reported or identified in, adjacent or within 0.50 miles of the project area. Sources consulted by SSJVIC staff researchers included maps of previous cultural resource studies and known cultural resource locations. SSJVIC staff also consulted the NRHP, California Register of Historical Resources (CRHR), *California Inventory of Historic Resources* (California Department of Parks and Recreation 1976), *California Historical Landmarks* (California Department of Parks and Recreation 1996), California Points of Historical Interest (May 1992 and updates), *Gold Districts of California* (Clark 1970), historical maps, and secondary historical writings.

The record search identified no architectural resources in the PAL that had been evaluated for NRHP or CRHR eligibility. No properties located in the PAL are listed in the NRHP or the CRHR.

ICF Jones & Stokes conducted additional background research to arrive at a general understanding of the history of the City and County of Tulare, with a focus, in general, on the history of the settlement and development of the project area. Research was undertaken at the California State Archives, California State Library, Sacramento; the Tulare County Assessor's Office, Tulare Irrigation District, and Tulare Public Works.

In addition, ICF Jones & Stokes sent letters describing the project and requesting any information on potential cultural resources in the PAL to the Tulare County Historical Society, and the Tulare County Museum. These letters were sent on November 18, 2008. ICF Jones & Stokes has received no responses as of February 26, 2009. The correspondence is documented in Appendix B.

## Field Methods

ICF Jones & Stokes surveyed and recorded built-environment cultural resources in the architectural APE October 29, 2008. The survey was conducted according to guidelines established in Caltrans' *Environmental Handbook: Cultural Resources Volume 2*, 2004 (Draft) (California Department of Transportation 2004 [as amended]). Kathryn Haley, who is fully qualified to do the work, conducted the survey. Ms. Haley meets the qualifications of an Architectural Historian per Attachment 1 of the PA. The survey effort included the formal recordation of the property with digital photographs and handwritten notes.

## Historical Overview

### Tulare County

The PAL is located on the agricultural flatlands of in the City of Tulare on SR 99 at the Cartmill Avenue interchange. The PAL includes one building and Liberty Ditch, a segment of the Tulare Irrigation District which is east of SR99.

The San Joaquin Valley remained relatively unsettled for most of the 19<sup>th</sup> century compared to the California coastal regions, which supported the earliest Spanish settlement, and the foothills of the Sierra Nevada, which formed the stage for the Gold Rush of the 1840s. Tulare County did not feature the approved Mexican land grants common to many coastal counties and to the foothill regions of Central Valley counties. In fact, much of Tulare County (as it is bounded currently) consisted entirely of public lands. Settlement of the area gradually increased as former gold seekers realized the potential of the Central Valley for crop production and cattle raising. Many small towns were founded in the Central Valley because the SPRR passed through providing access, goods, and employment. The growth of Visalia and Tulare further influenced settlement patterns in the area. The region has historically been used for agricultural and ranching pursuits, and these practices continue into the present. By 1980, Tulare County ranked second only to Fresno County in terms of value of agricultural production (Jelinek 1982: Introduction table).

Although Tulare County was not one of the original 27 counties created in 1850 by the first California Legislature, it was created only two years later when California split off the lower half of the immense Mariposa County. Officials altered the county boundaries several times between 1856 and 1893, the date when the county assumed its current configuration. (Beck and Haase 1974:61). However, the boundaries were not officially codified until 1923 (Coy 1923: 282).

### City of Tulare

The development of Tulare begins with the Southern Pacific Railroad (SPRR). Early settlers in the area like Dr. W. F. Cartmill, Isaac N. Wright, and Charles

Powell owned large sections of land, but used it as pastureland for their herds of cattle. In 1872, the SPRR announced plans for a new town, Tulare, at the end of its San Joaquin Valley Division. The SPRR traded land south of town for Wright's property and north of town for Powell's land. The town site was surveyed and lots were sold at public auction (Small 1926:470 and Elliott 1883:164).

The growth of Tulare was slow compared to other nearby cities. The town was surveyed with the expectation that Tulare would be the county seat and had lots platted for a new county courthouse. The California Legislature, however, passed a bond act granting the new courthouse to Visalia (Tulare County Chamber of Commerce 1959:20-21). Losing the county seat was the first in a series of setbacks the city suffered in its early years. In July 1875, a fire destroyed the business district. A severe drought between 1877 and 1878 crippled farmers and cattle ranchers. A second disastrous fire struck in July 1883, and burned twenty-five buildings in the business district. A third devastating fire occurred in 1886 and quickly spread to the city's water tower, which cut off the water supply to fight the fire. The entire business district burned or suffered severe damage. Tulare began rebuilding for a third time (Small 1926:474-476).

In 1888 the city incorporated and the population was at a high of 3,250 (Small 1926:474-476 and Elliott 1883:164). By this time Tulare had a thriving business district with hotels, a restaurant, livery stables, blacksmiths shops, a wagon factory, an undertaker, and meat and vegetable markets (Elliott 1883:164). The city, however, experienced another setback in 1891 when the SPRR moved its shops to Bakersfield. A large percentage of the population, primarily the skilled SPRR labor force, left Tulare. Businesses had no patrons and closed. Rents dropped. Residences were sold and moved to nearby towns (Small 1926:477). The removal of the shops was a significant economic impact on Tulare. It took until the early twentieth century and the success of the Tulare Irrigation District to eventually lift Tulare out of stagnation. Today the City of Tulare is a leading agricultural center of Tulare County.

## **Agriculture and Settlement**

### **Early Period (Before 1906)**

During the earliest period of settlement, agriculture in the project area consisted primarily of cattle, hog, and sheep farming. A series of severe droughts in the early 1860s reduced the already small size of the Tulare cattle herds. When early Anglo ranchers realized the hardships associated with raising cattle, they introduced hogs, which thrived in the area. When it was determined later that wheat could easily be cultivated in the San Joaquin Valley without irrigation, grain farmers used hogs for the clearing of stubble left over after the harvest (Mitchell 1974:33).

Wheat proved an ideal crop for the wide, flat valley lands surrounding Visalia and the City of Tulare. The sparse rural population could successfully raise

wheat without the aid of irrigation, despite a lack of capital. By the 1870s, the railroad pushed into the valley and allowed for the wide distribution of the wheat-growers' products. For these reasons wheat farmers produced great quantities of their product throughout the state of California until the early 1890s, when the wheat market collapsed. The spread of irrigation in the area also contributed to the decline of wheat farming as water-intensive crops became more profitable to produce (Bean and Rawls 1983:187; Jelinek 1982:34).

Dairying officially began in Tulare County in 1861, when Dr. W. F. Cartmill opened the first dairy north of the City of Tulare and supplied the miners of the White River, Kern River, and Coso mining districts. Daniel K. Zumwalt built the first commercial creamery between Tulare and Visalia in 1889 when Tulare County saw the increased subdivision of farmlands and the increased utilization of irrigation. Irrigation allowed for the cultivation of alfalfa which at that time produced from six to eight crops a year for the feeding of dairy stock. While creameries historically operated throughout Tulare County, the dairy and creamery industries remained relatively viable around the cities of Tulare, Tipton, Woodville, and Poplar (Mitchell 1974:36).

The demand for butter and cheese existed in limited quantities until the railroads provided access to larger markets (Scheuring 1983:193). Technology transformed California's dairy industry from regional to more scientific and modern. Advances during the 1880s and 1890s, including the cream separator, refrigeration, irrigation, the milking machine and extensive plantings of alfalfa for feed, changed California's dairy production substantially. However, the potential of the San Joaquin Valley for the production of dairy products did not fully emerge until the 1920s (Scheuring 1983:195; Santos 1994:4).

## **Late Period (1906-Present)**

As farmers began to diversify crops after the turn of the century, many owners of the large tracts of land then common to the Visalia/Tulare area (often consisted of 120 acres or more), began to subdivide and sell off acreage. Landowners throughout the county sold parcels of 10 to 40 acres. Irrigation made intensive farming practices possible on these small parcels, and small farming rapidly became a feature of the area. These small farms were much more profitable than the large wheat farms that had preceded them as profits could quickly be made from a 20-acre orchard or vineyard. Farmers also began to plant alfalfa to feed the cattle of the growing local dairy industry (Tulare County Board of Trade 1915:9).

Increases in demand pushed the numbers of dairies and creameries upward. Like wheat farms from years previous, dairies required larger parcels of land for the production of alfalfa and the pasturage of cattle (Tulare County Board of Trade 1915:9). Improvements in operation practices and technology galvanized more Tulare area farmers to specialize in dairying. The introduction of the centrifugal cream separator and the power churn along with the production of condensed and evaporated milk proved instrumental to the growth of the dairy industry within Tulare County. Non-fat dried milk also opened another specialized market for

local dairies. The versatility of the San Joaquin Valley farmers meant that the region became the principal dairy center for California by 1910 (Scheuring 1983:194). Inspectors for the State Dairy Bureau indicated in 1913, that Tulare County dairies were, “unexcelled in any part of the United States.” (Bruhn 2000:7). On balance, manufactured dairy products consumed most raw valley milk during the early 20<sup>th</sup> century. An increase in the consumption of liquid milk by southern Californians during World War II along with the explosion of the Los Angeles population following the war meant that the milk demands on Tulare County and surrounding counties also increased. Immediate-post-war Europe also provided willing markets for dairy products (Scheuring 1983:194). Moreover, within post-war California, only dairy animal numbers showed increases, which remained consistent with California’s burgeoning population (Liebman 1983:87).

Post-war dairy enterprises continued to evolve as mechanization took giant steps forward. Improved field choppers allowed for the easier marketing of off-site fresh alfalfa to dairy farmers and thus reduced the need for dairies to retain large grazing fields. Milk tanker trucks and other technological improvements vastly expanded markets for milk and forever changed the designs of California dairies (Scheuring 1983:196). New milking equipment and the revolution of traditional milking methods made older dairy structures obsolete. Smaller barns and “milking parlors” through which farmers efficiently channeled the cows to awaiting milking equipment either replaced or augmented the older and much larger structures within which the farmer formerly moved the equipment between a large number of awaiting cows. Since dairy farmers typically converted retired alfalfa lands to house more dairy cattle, the older (and many times less sanitary) barns were abandoned, replaced, or used to house feed, supplies or equipment. Much of this replacement process took place in the latter half of the 20<sup>th</sup> century (Scheuring 1983:196; Rockey and DeForest 1960:250).

By the mid-1950s, various crops and land uses were visible within the project area. At that time, local farms largely cultivated irrigated crops such as alfalfa, corn, cotton, and to a lesser extent plums and other fruits. Farmsteads were spread throughout the project area along with a small number of dairy operations. Although land uses changed somewhat during the last half of the 20<sup>th</sup> century, the overall crop pattern of cotton, alfalfa, and corn remained relatively consistent. Additional specialty crops such as walnuts and “turf” pasture mixed within the established crops between the 1950s and the 1990s. The number of dairies and farmsteads remained steady, but were oftentimes integrated with larger and more distant corporations (DWR 1958; DWR 1978; DWR 1985; DWR 1993).

## Irrigation

With no readily available water supply, San Joaquin Valley farmers were among the first American settlers in California to build works specifically for agricultural irrigation. During the late 1850s and 1860s, these early ditches were constructed with rough earthen linings and conveyed water over relatively short distances. Water was diverted into these early ditches by means of temporary brush dams constructed across the lower courses of tributaries in the foothills of

the Sierra Nevada. The earliest of these California ditches were built in the vicinity of Visalia as well as near the Kaweah River and the King's River Deltas. Early irrigation in these areas stemmed from initial attempts to cultivate citrus fruits. Growers used the vast majority of the valley lands for the production of wheat, which could be dry-farmed. By 1870, only 60,000 acres of land within California featured irrigation, because severe flooding in 1862 and 1868 had destroyed many water conveyance systems. Additional severe floods occurred in the years 1906, 1937, 1944, and 1955. Between 1850 and the 1870s, irrigation was uncommon on the valley floor. The majority of farmers sought their fortunes by supplying Gold Rush miners with dry-farmed wheat and beef from cattle ranches, neither of which required large quantities of water to produce (Robinson 1948).

Irrigation within the county of Tulare developed over the course of seven historic periods. Generally speaking these seven periods include: the 1850s with small ditch diversions; the 1870s artesian well development; 1880s subdivisions with associated water rights; the 1887 Wright Act; 1890s deep well pumps; turn of the 20<sup>th</sup> century's locally financed water districts; and the 1930s state water plans and federal water projects (Mitchell 1974:59).

Initially, local ranchers constructed their own small conveyance systems, and among the earliest of the ditches constructed to divert water from the Kaweah River and its tributaries were the Watson, Persian, Birch, Elbow, Modoc, Cross Creek, and Farmers Ditches, as well as the Kaweah Canal. Sometimes farmers took advantage of natural flows, as in 1862, when a flood carved a small channel into what is now St. Johns River, which was then used for irrigation (Mitchell 1974:59).

In the 1880s, systems of ditches and flumes initially constructed for the purpose of gold mining in the Sierra Nevada foothills were extended into valley areas and converted to agricultural irrigation. Early water companies made most of their money by selling water to hydraulic miners. But because this kind of mining washed huge amounts of debris into the state's waterways, laws were passed in 1884 to regulate the amount of debris released into rivers and streams. Although these laws threatened to bankrupt many water companies, several avoided bankruptcy by selling irrigation water exclusively to foothill farmers (Robinson 1948). As the availability of irrigation increased in the late 19th century, lands that were formerly dry-farmed with wheat were rapidly subdivided as farmers realized that smaller lots of 20 to 40 acres could support profitable citrus and grape farms (Newell 1902:318).

In order to gain greater control over water sources, local residents established private irrigation systems in the San Joaquin Valley. The most common act of citizens was to form an irrigation district to build or purchase irrigation canals for a particular region.

## Tulare Irrigation District

Two irrigation districts comprised the bulk of pre-1900 organized farm water suppliers in the region of Visalia. The Alta Irrigation District, located north of Visalia and organized in 1888; and the Tulare Irrigation District, organized in 1889 and which generally surrounded the City of Tulare (Adams 1929:214, 245). A number of irrigation features which supply the Tulare Irrigation District pass through the Visalia region. The additional irrigation districts located throughout the area, including Lindsay-Strathmore, Corcoran, and Terra Bella, date to the early 20<sup>th</sup> century.

The Tulare Irrigation District organized two years following the passage of the Wright Act in 1887. The delay of organization came about largely through the controversies surrounding concerns between local riparian water users and prior appropriators who felt that an irrigation district potentially would limit their water allotments. The district as initially envisioned would have irrigated approximately 210,000 acres of land between the foothills and Tulare Lake. The aforementioned opposition resulted in the reduction of irrigated land by Tulare Irrigation District to approximately 39,360 acres including the city of Tulare.

Engineers for the district first sought to divert water from the south bank of the Kaweah River, but later modified the plan when the heavy tunneling required proved too costly. As a substitute, the district located a north side diversion from the St. Johns River along with a flume which carried the water back over to the south of the river. District officials purchased the previously constructed Settlers and Kaweah canals using bond money in 1892. These bond monies proved difficult to rely upon during the depression of the 1890s when many bond owners defaulted. At this time the district limited its operations although water remained in the ditches in order to keep them operational. Many farmers in the area who retained capital for farm investing also turned to deep well pumps to irrigate.

As a result of these financial difficulties, the district operated more like a cooperative without formally assessing farmers for improvements until 1909, when a single assessment for \$10,000 in improvements took place. Regular assessments of the district's then 34,000 acres resumed in 1918. By 1929 the district engineer claimed that approximately 300 miles of ditches and canals, along with 300 canal structures, spread throughout the serviced area. While all of the ditches remained unlined at that time, the district followed the general convention seen throughout the San Joaquin Valley and previously replaced all of the original wood features with more durable concrete (Adams 1929:245).

Currently, the Tulare Irrigation District services over 71,000 acres of farmland through 300 miles of canals and ditches (Dumermuth 2002:75).

## Description of Cultural Resources

The project area is a mix of suburban and rural landscapes, bisected north to south by SR 99. East of SR 99 is a primarily rural landscape consisting of

agricultural fields, agricultural storage buildings and the Liberty Ditch. West of SR 99 is a suburban landscape consisting of recently constructed residences, and scattered retail buildings, restaurants and gas stations.

## Conclusions

In accordance with Caltrans guidelines for inventorying architectural properties, ICF Jones & Stokes evaluated the historical significance of buildings, structures, and objects in the PAL that predate 1963. California Department of Parks and Recreation (DPR) Historic Resource Inventory Forms (DPR 523 forms)—primary records and building/structure/object records—for the evaluated properties are contained in Appendix C. There were no previously identified historical resources in the PAL. The survey population in the PAL comprises one utilitarian building, and one engineering structure. The utilitarian building is of a style commonly found throughout agricultural areas of California in the early to mid-20<sup>th</sup> century. The linear feature is a segment of the Tulare Irrigation District Canal. One bridge (Cartmill Road OC, # 46 0160) was administered through the Caltrans’ historic bridge inventory is listed as category 5 (not eligible for the NRHP), and did not require formal evaluation.

ICF Jones & Stokes evaluated two resources in the PAL. Table 1 summarizes the evaluated properties listed by assessor’s parcel number (APN) address, or other identifier. None of the following resources appear to be eligible for inclusion in the CRHR and are not historical resources under CEQA:

**Table 1.** Evaluated Properties in the PAL

Assessor’s Parcel Number (APN)	Street Address	Year Built	Map Reference No.	CRHR Status
166-010-005	N/A	c. 1950	1	not eligible
N/A	Tulare Irrigation Canal (segment)	c. 1951	2	not eligible

This HRER concludes that none of the buildings or structures in the PAL appear to meet the criteria for listing in the CRHR. Therefore the properties were also evaluated in accordance with State CEQA Guidelines Section 15064.5(a)(2–3), using criteria outlined in California Public Resources Code Section 5024.1. Overall, the project area contains no historical (built environment) resources for the purposes of CEQA. There does not appear to be potential for a historic district or a landscape that might include any of these properties as contributing elements.

Kathryn Haley, who meets the Professionally Qualified Staff standards in Section 106 PA Attachment 1 as an Architectural Historian or above, has determined that the only other properties present within the APE, including state-owned resources, meet the criteria for Section 106 PA Attachment 4 (Properties Exempt from Evaluation).

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1942 Tulare County, Calif. 1:62500 quadrangle.

U.S. Geological Survey

1925 Tulare, Calif. 1:31,680 quadrangle (Photorevised 1927).

1951 Tulare, Calif. 15 minute quadrangle

# Preparers' Qualifications

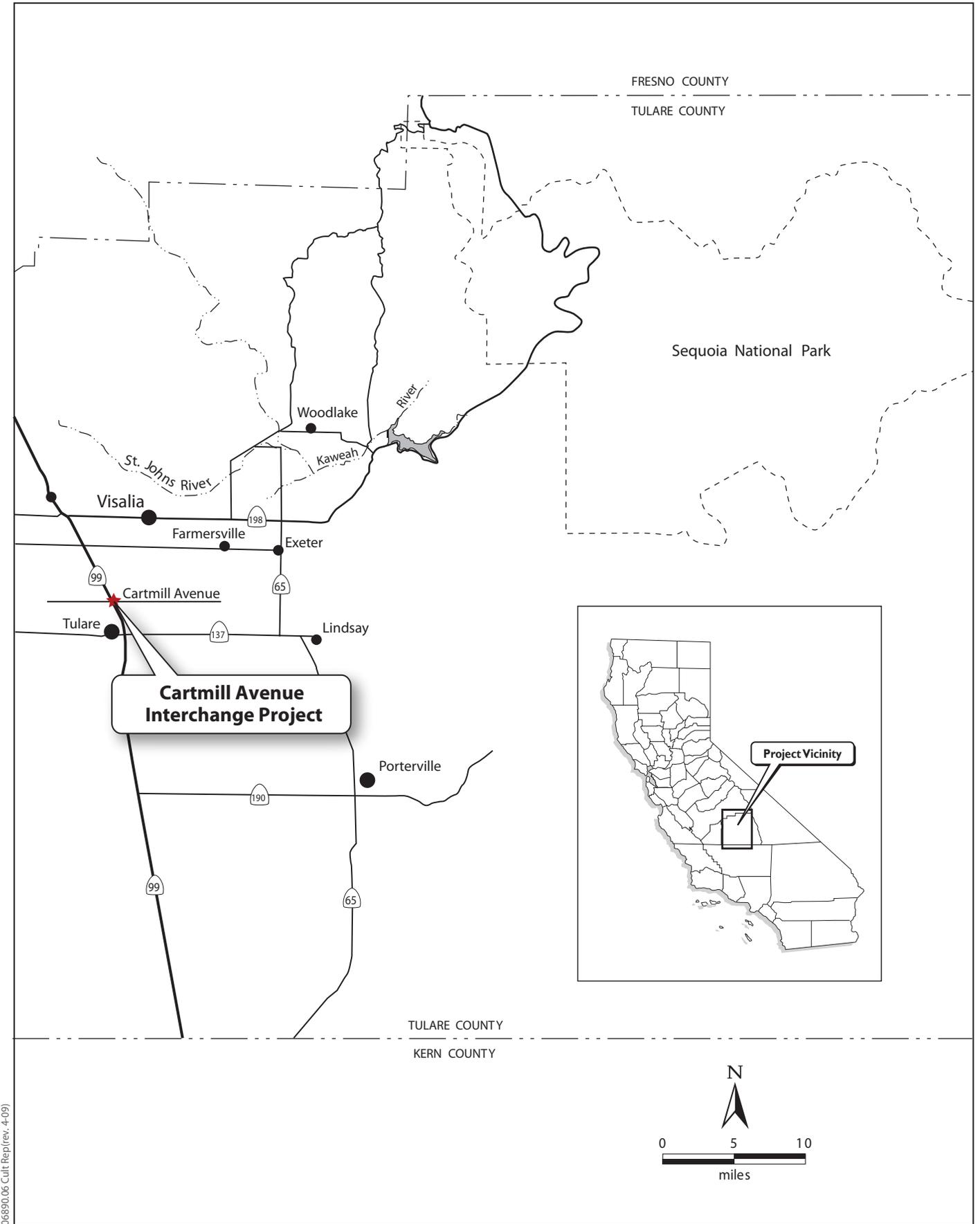
Kathryn Haley is a professional historian and architectural historian with over six years experience in the field of cultural resources management. She has experience in historic research, field inventory, and site assessment typically conducted for purposes of Section 106, National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) compliance. Kathryn meets the Secretary of the Interior's Standards for Historian and Architectural Historian. Kathryn has conducted research at various sources of primary and secondary documentation repositories including county recorders and assessors' offices in California and Utah, historical societies, libraries, the California State Library and Archives, and the University of California library system. Kathryn also serves as co-author and contributor for cultural resource management projects, including historic resource inventories and evaluations.

Patricia Ambacher is a professional historian and architectural historian with experience in the field of cultural resource management and preservation. She has experience in historic research, field inventory, and site assessment typically conducted for the purposes of Section 106 and CEQA compliance. She evaluates resources for significance for the CRHR and the NRHP. Patricia has conducted research at several repositories including county recorders and assessors' offices in California, historical societies, special collections, and State of California repositories. She is a co-author to cultural resource management projects, including surveys. Patricia meets the Secretary of Interior's Standards for work in history and architectural history.

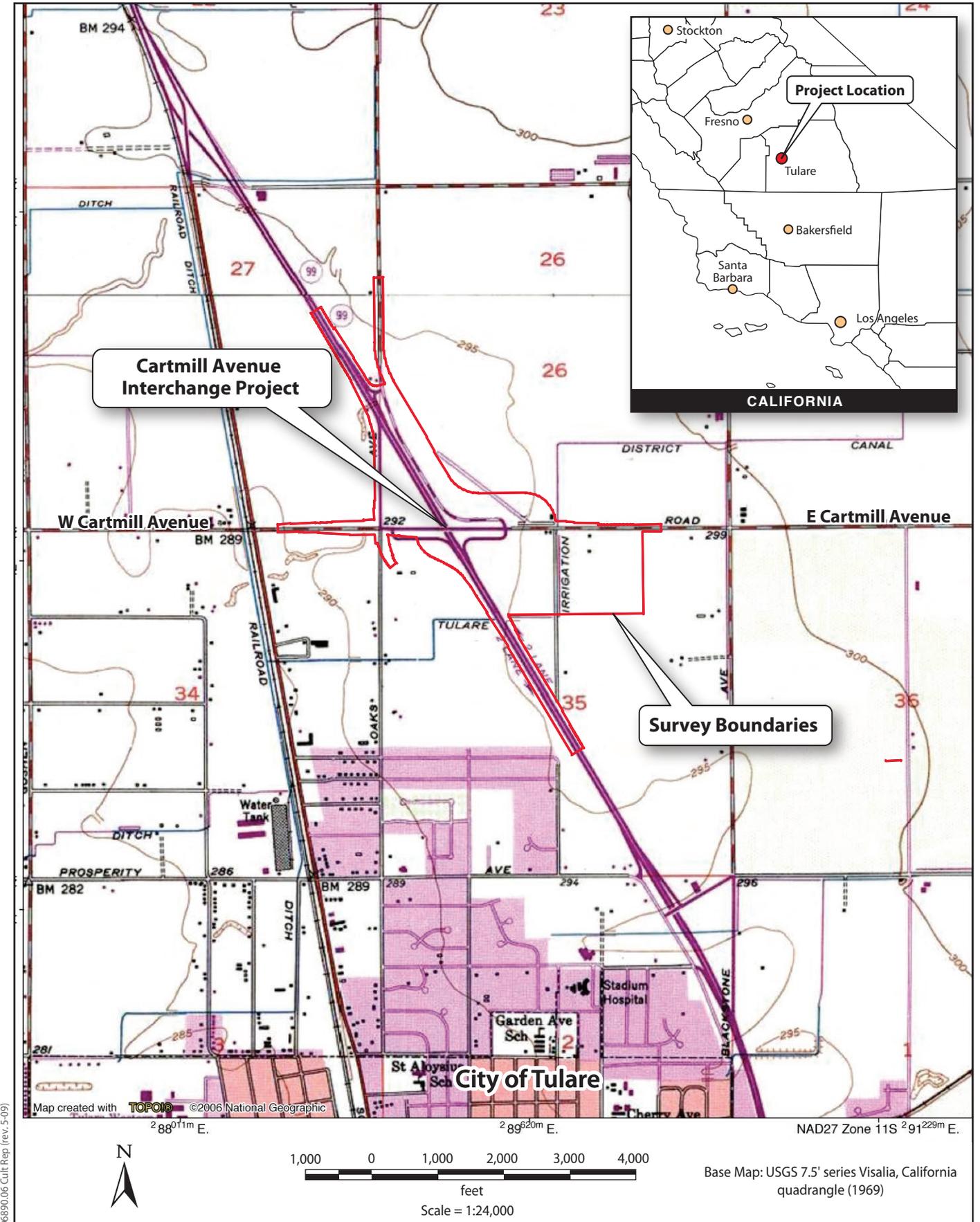


Appendix A  
**Figures**



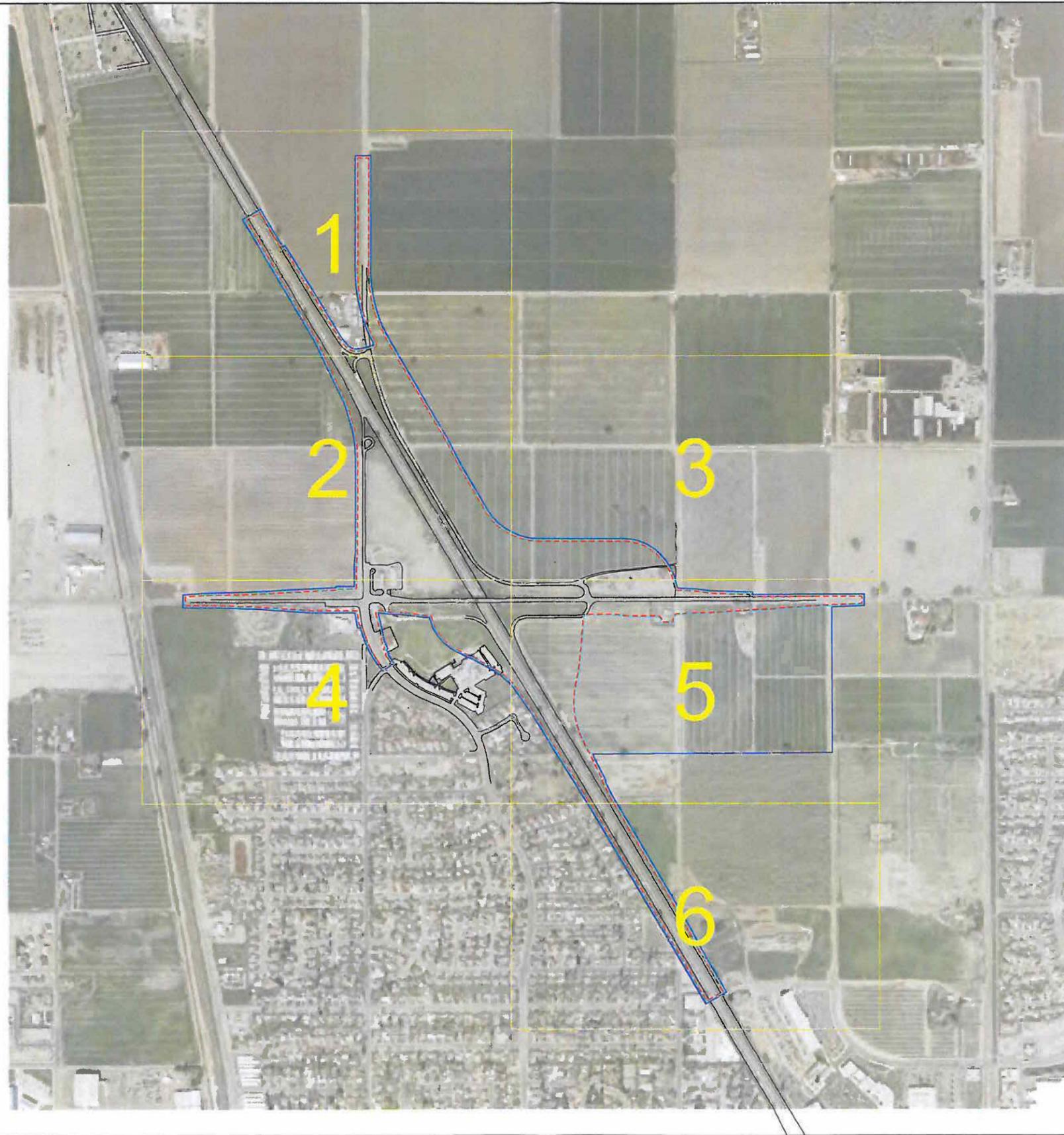


**Figure 1**  
**Cartmill Avenue Interchange Project**  
 Post Mile 31.3/32.6  
 EA 06-33220



06890.06 Cult Rep (rev. 5-09)

**Figure 2**  
**Cartmill Avenue Interchange Project**  
**Post Mile 31.3/32.6**  
**EA 06-33220**



Project Area Limits Map  
 Cartmill Avenue/State Route 99 Interchange Project  
 Post Mile 31.3/32.6  
 EA 06-33220  
 Caltrans District 6  
 Tulare County, California  
 06-TUL-99

*Phillip Vallejo* 6/1/09  
 Phillip Vallejo, Caltrans PQS Principal Architectural Historian (date)

*Bob Hull* 6/1/09  
 Bob Hull, Project Manager (date)

**Legend**

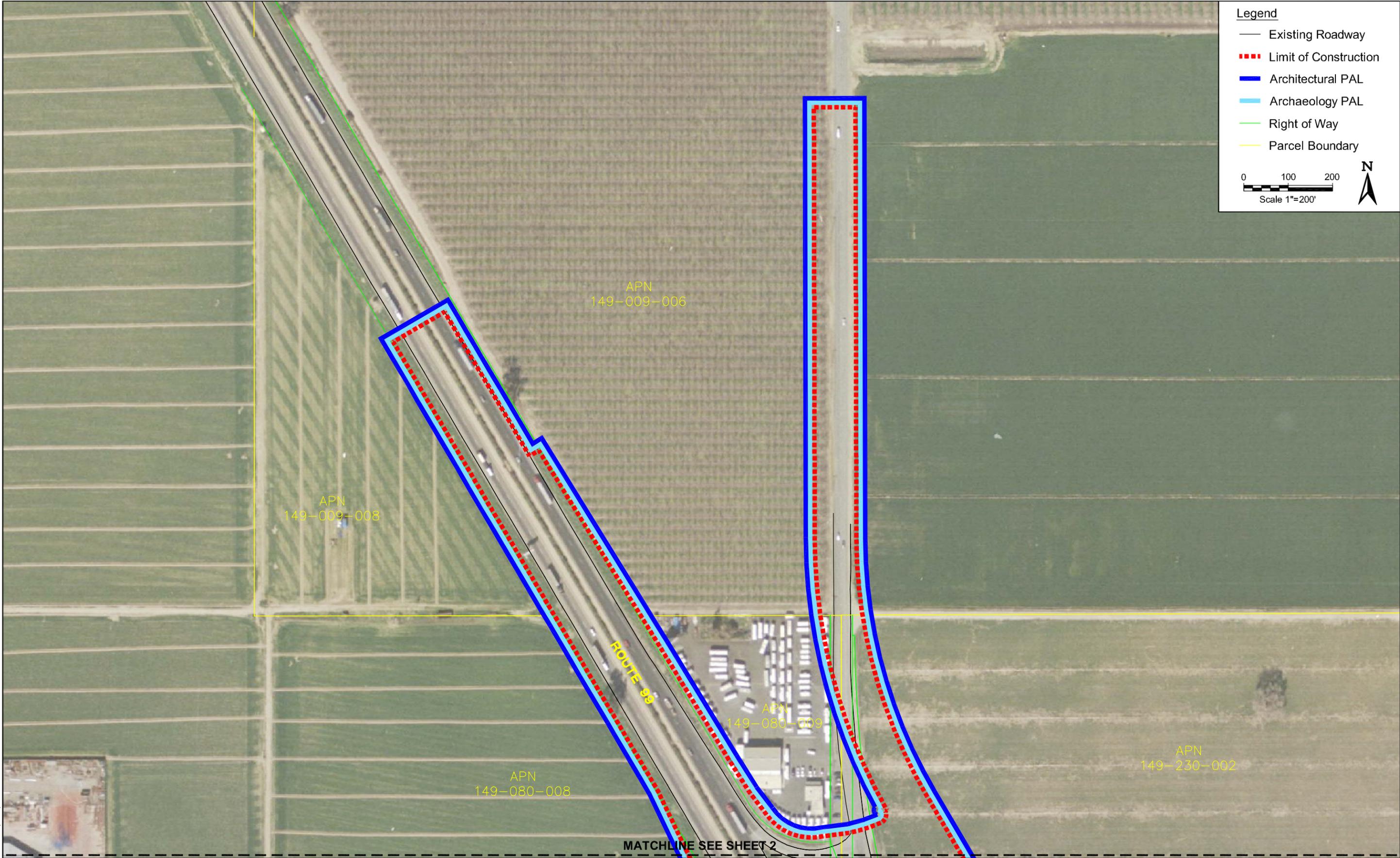
- Existing Roadway
- - - Limit of Construction
- Architectural PAL
- Archaeology PAL

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 Scale 1"=1000'

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06690.06 (05/09)

**Figure 3**  
**Project Area Limits Map Key**



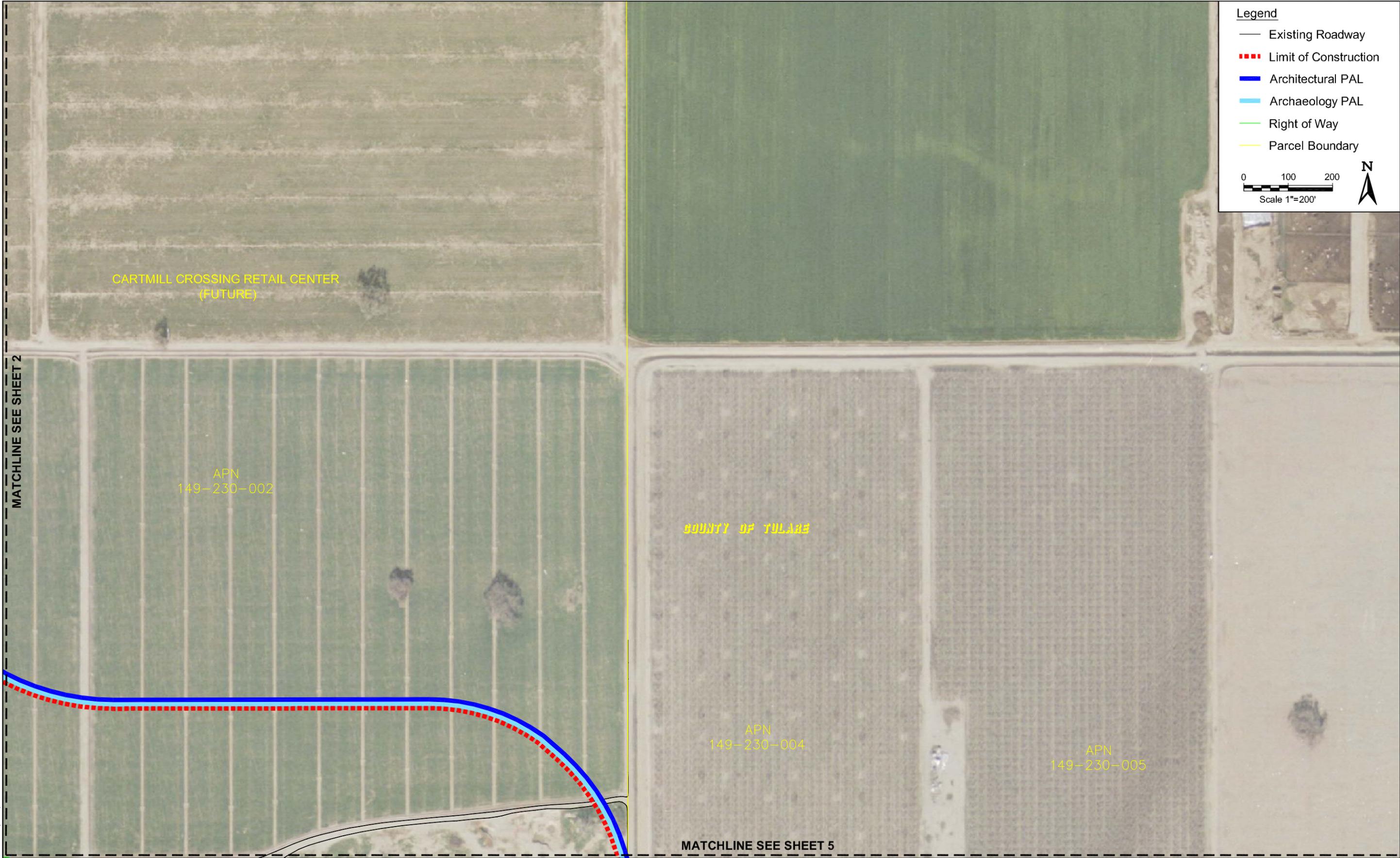
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**Figure 3**  
**Project Area Limits Map**  
**Sheet 1 of 6**



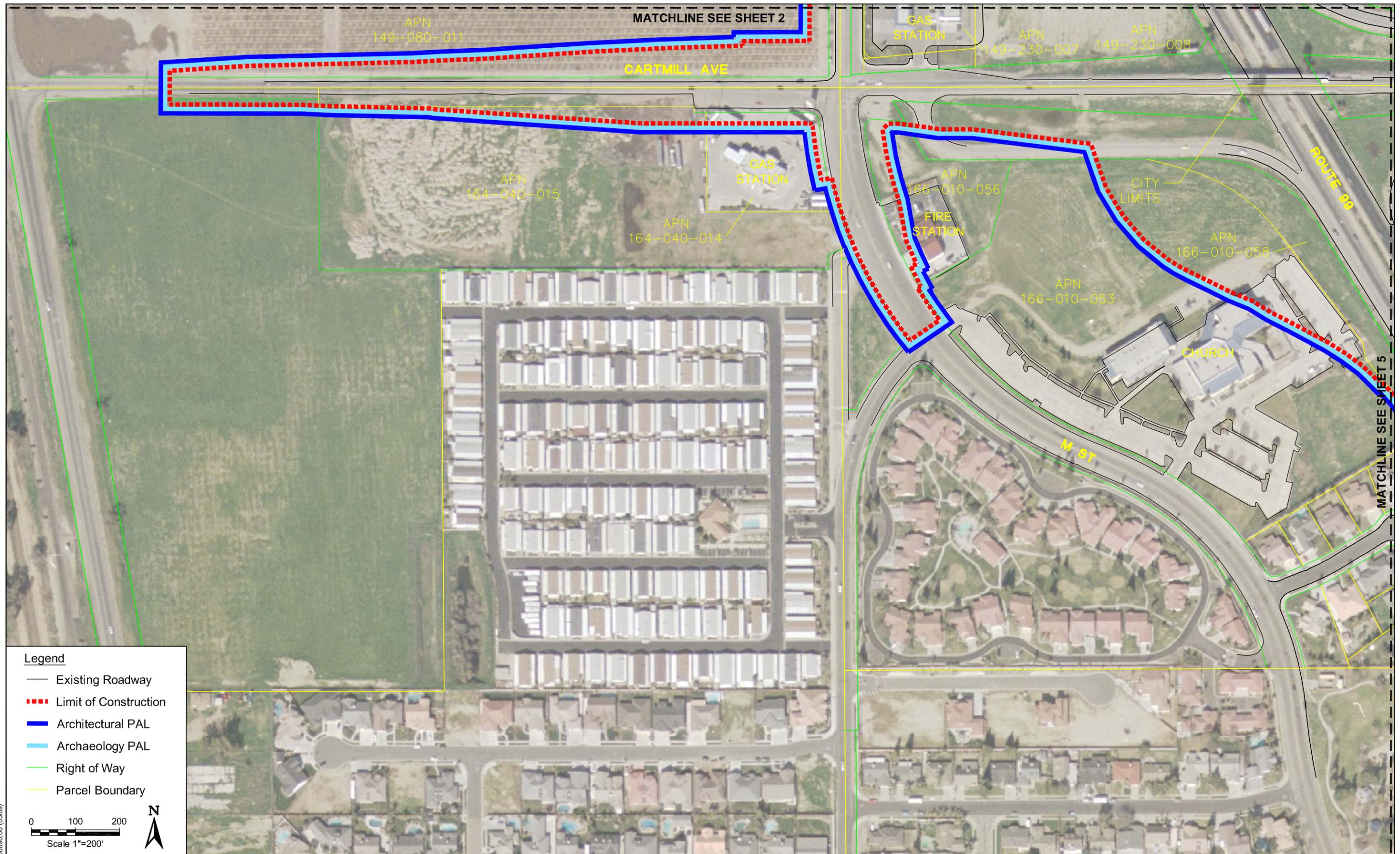
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**Figure 3**  
**Project Area Limits Map**  
 Sheet 2 of 6



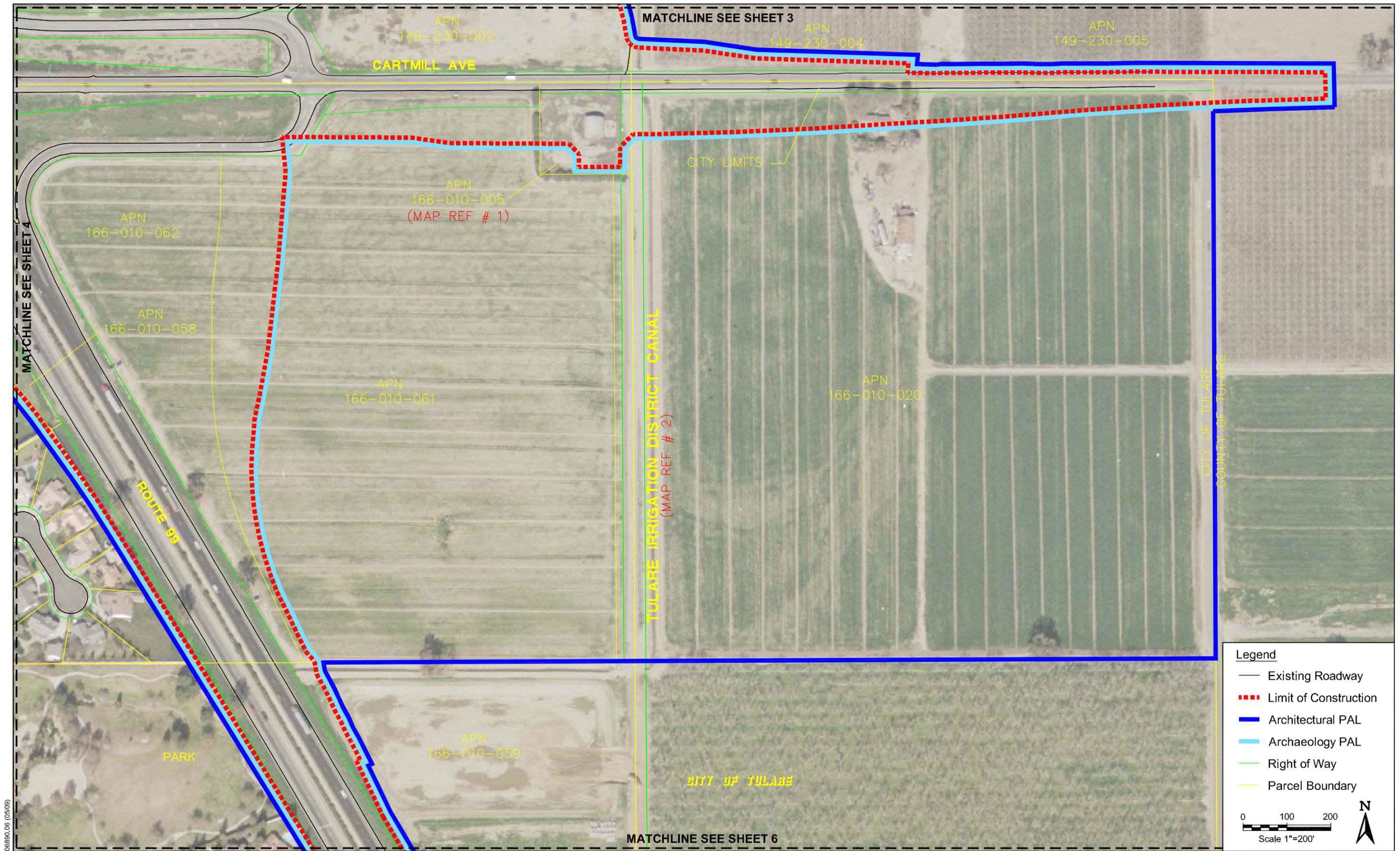
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**Figure 3**  
**Project Area Limits Map**  
**Sheet 3 of 6**



**Figure 3**  
**Project Area Limits Map**  
**Sheet 4 of 6**

06890.06 (05/09)



06890.06 (05/09)

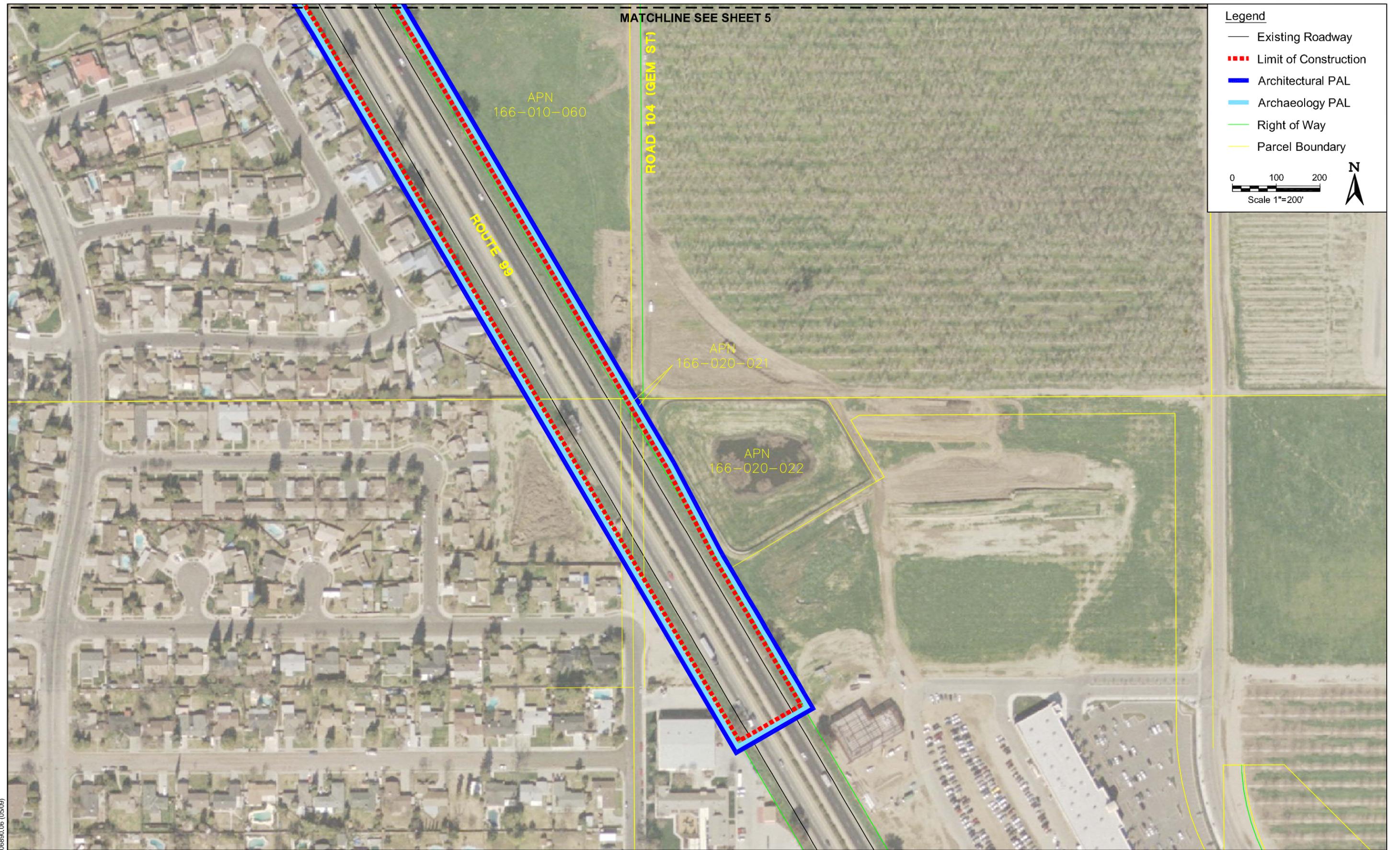
**Legend**

- Existing Roadway
- Limit of Construction
- Architectural PAL
- Archaeology PAL
- Right of Way
- Parcel Boundary

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Scale 1"=200'

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**Figure 3**  
**Project Area Limits Map**  
**Sheet 5 of 6**



06890.06 (05/09)

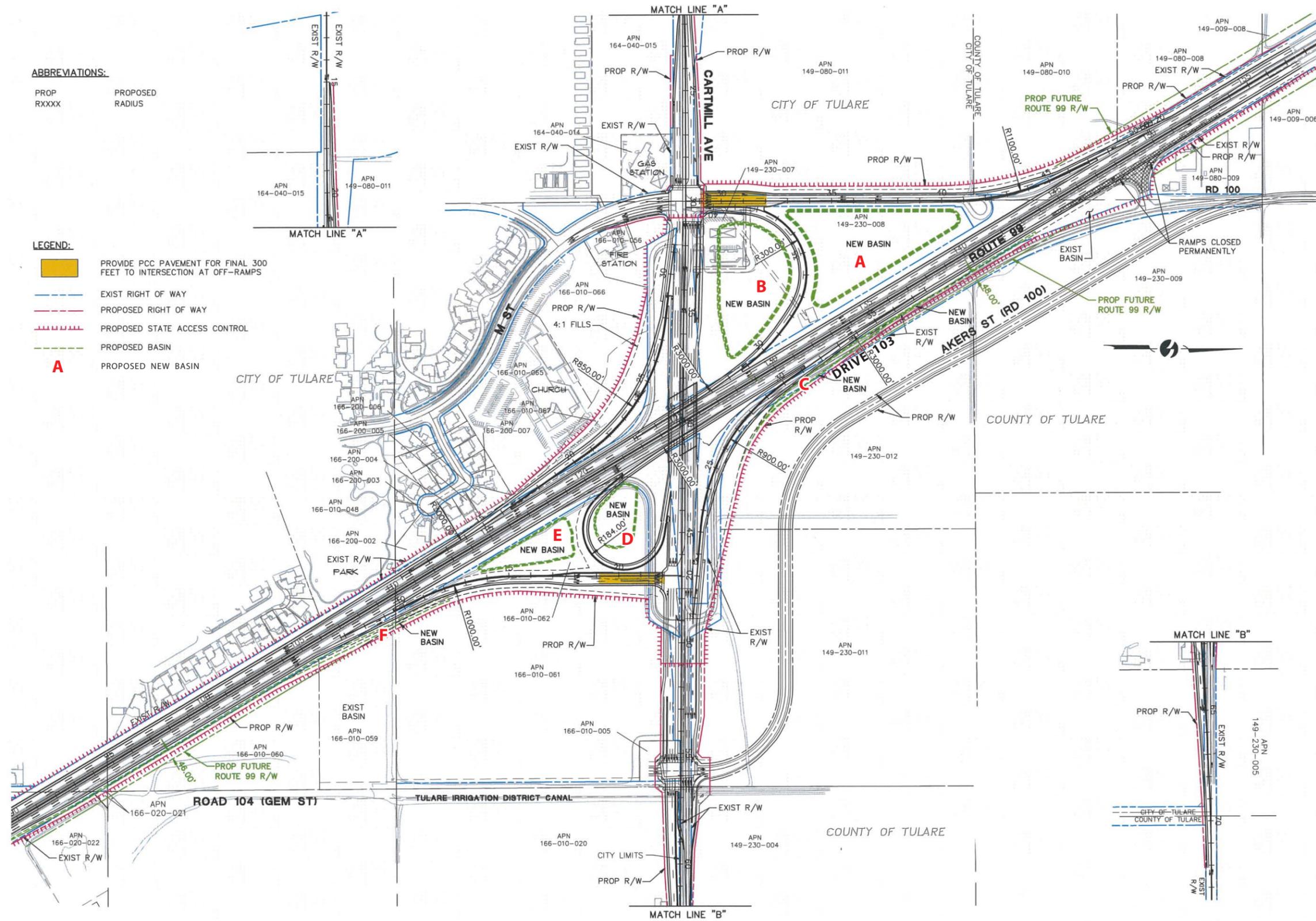
**Figure 3**  
**Project Area Limits Map**  
**Sheet 6 of 6**

**ABBREVIATIONS:**

PROP RXXXX PROPOSED RADIUS

**LEGEND:**

-  PROVIDE PCC PAVEMENT FOR FINAL 300 FEET TO INTERSECTION AT OFF-RAMPS
-  EXIST RIGHT OF WAY
-  PROPOSED RIGHT OF WAY
-  PROPOSED STATE ACCESS CONTROL
-  PROPOSED BASIN
-  PROPOSED NEW BASIN



Graphics...06890.06 HRCR (12-2011) JD

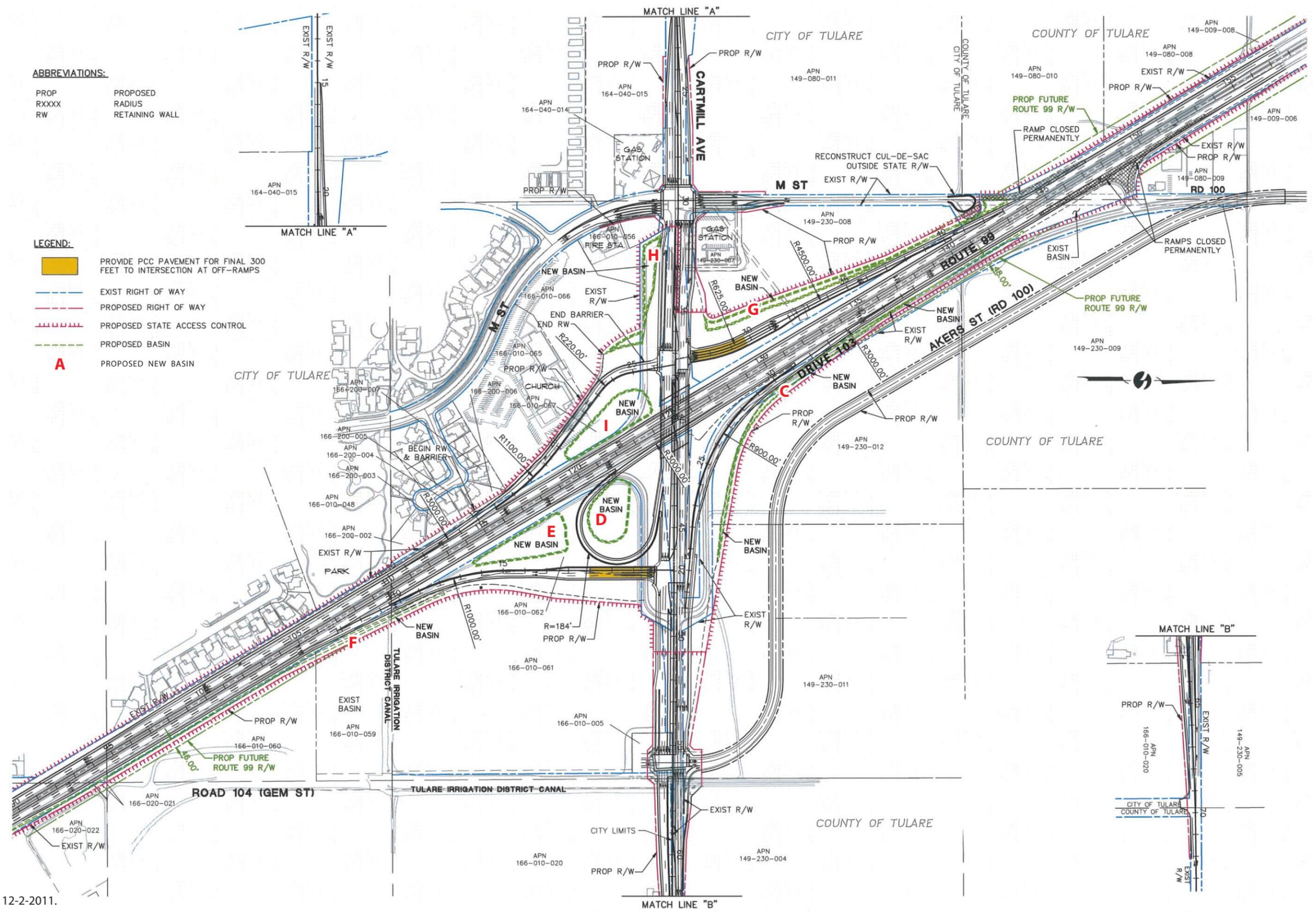
Source: Omni-Means, 12-2-2011.

**Figure 4a  
Alternative 1**

**ABBREVIATIONS:**  
 PROP PROPOSED  
 RXXXX RADIUS  
 RW RETAINING WALL

**LEGEND:**

- PROVIDE PCC PAVEMENT FOR FINAL 300 FEET TO INTERSECTION AT OFF-RAMPS
- EXIST RIGHT OF WAY
- PROPOSED RIGHT OF WAY
- PROPOSED STATE ACCESS CONTROL
- PROPOSED BASIN
- A** PROPOSED NEW BASIN



Graphics...06890.06 HRCR (12-2011) JD

Source: Omni-Means, 12-2-2011.

**Figure 4b  
Alternative 2**



Appendix B

# **Historical Society Correspondence**





November 18, 2008

Tulare County Historical Society  
P.O. Box 295  
Visalia, CA 93279

**Subject: Cultural Resources Inventory for the Cartmill Avenue/State Route 99 Interchange Project, Tulare County**

Dear Tulare County Historical Society:

ICF Jones & Stokes is in the process conducting a cultural resources study along Cartmill Avenue/State Route 99 in Tulare County. The City of Tulare, in conjunction with California Department of Transportation (Caltrans), proposes to modify the existing State Route 99 (SR 99)–M Street–Cartmill Avenue interchange located at post mile (PM) 31.9 in the City of Tulare. The project would improve safety, provide additional capacity, improve east-west circulation, and improve local access with SR 99 at Cartmill Avenue. Please see the enclosed map for details.

As part of our effort to identify cultural resources in the area of potential effects, all interested parties are being consulted to determine if any significant resources that may be affected by the proposed project. Your efforts in this process provide invaluable information for the proper identification and treatment of cultural resources.

All comments and letters received from interested organizations and/or individuals will be included in the technical reports generated by this study. If you have any questions or comments regarding cultural resources in the proposed project area, please call me at (916) 737-3000.

Sincerely,

A handwritten signature in black ink that reads 'Kathryn Haley'.

Kathryn Haley  
Architectural Historian

Enclosure: Project Location Map



November 18, 2008

Tulare County Museum  
27000 S. Mooney Boulevard  
Visalia, CA 93279

**Subject: Cultural Resources Inventory for the Cartmill Avenue/State Route 99 Interchange Project, Tulare County**

Dear Tulare County Museum:

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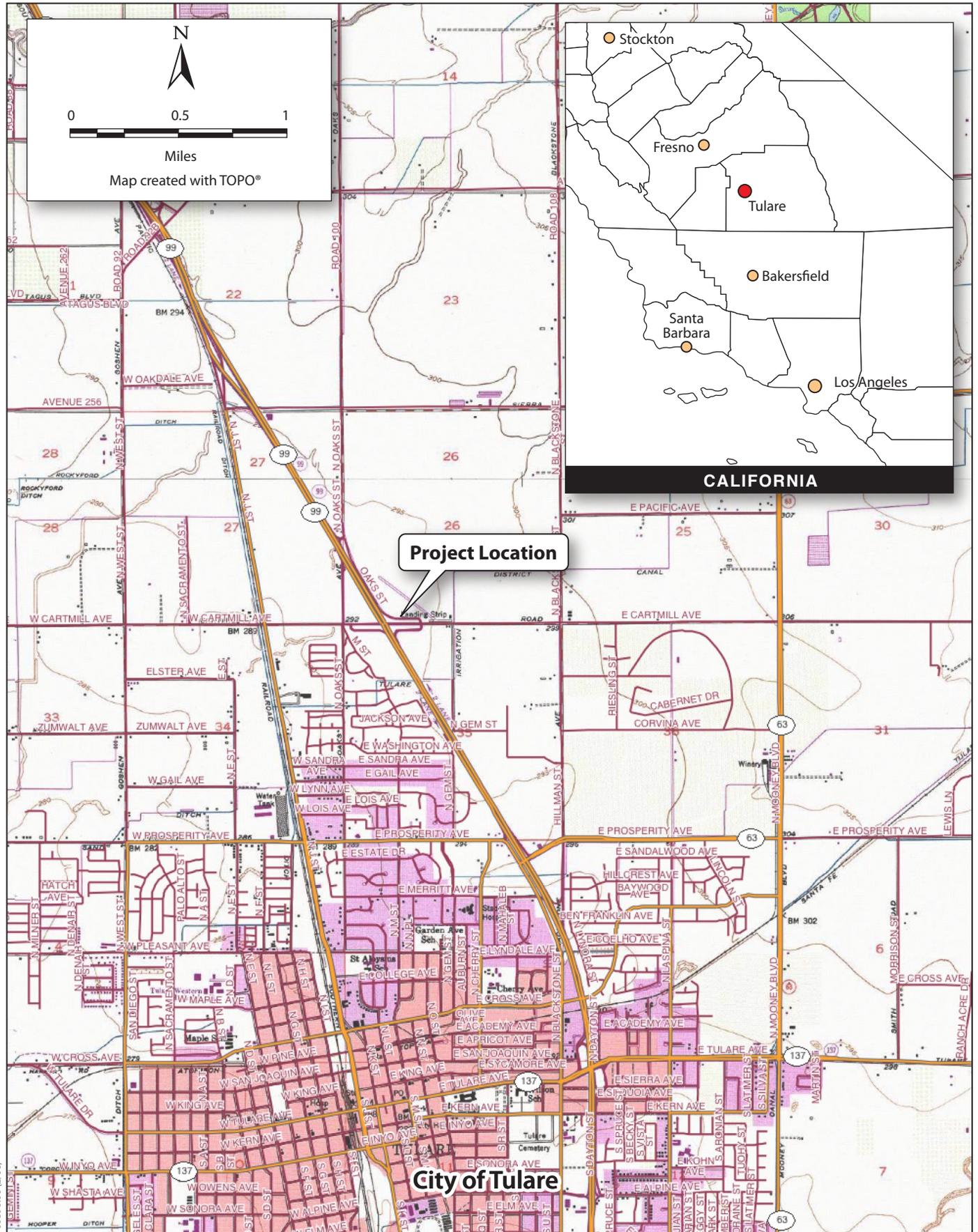
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Sincerely,

A handwritten signature in black ink that reads 'Kathryn Haley'.

Kathryn Haley  
Architectural Historian

Enclosure: Project Location Map



06890.06 (2/08)

**Figure 1-1**  
**Project Location**



Appendix C  
**Department of Parks and Recreation (DPR)**  
**523 Forms**



State of California — The Resources Agency  
DEPARTMENT OF PARKS AND RECREATION  
**PRIMARY RECORD**

Primary #  
HRI #  
Trinomial  
NRHP Status Code 6Z

Other Listings  
Review Code

Reviewer

Date

Page 1 of 3 \*Resource Name or #: Corrugated Metal Building - Map Reference No. 1

**P1. Other Identifier:**

\*P2. Location:  Not for Publication  Unrestricted \*a. County: Tulare

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

\*b. USGS 7.5' Quad: Tulare Date: 1951, photo revised 1959 T 19S; R24E; Secs: 26 & 35 ; M.D. B.M.  
c. Address: 597 Cartmill Avenue City: Tulare Zip: 93274

d. UTM: Zone: 10 ; mE/ mN (G.P.S.)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation:  
APN: 166-010-005

\*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

The building located on parcel number 166-010-005 is rectangular in plan and topped with a barrel vaulted corrugated metal roof with exposed rafter tails. There is vertical wood siding on the side elevations. The main elevation (north) is sheathed in corrugated metal and has a large corrugated metal sliding door. The main elevation also has painted signage stating "Fertilizers Dust Sprays". The setting for this building is overgrown and the property line is surrounded by a cyclone fence, which limited access. The roof appears to be missing in one section and the corrugated metal appears damaged.

\*P3b. Resource Attributes: (List attributes and codes) HP8 - Industrial Building

\*P4. Resources Present:  Building  Structure  Object  Site  District  Element of District  Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)



\*P5b. Description of Photo: (View, date, accession #) Camera facing south, Oct. 29, 2008

\*P6. Date Constructed/Age and

Sources:  Historic

Prehistoric  Both

Ca. 1950 / Historic Maps

\*P7. Owner and Address:

City of Tulare  
411 East Kern Ave.  
Tulare, CA 93274

\*P8. Recorded by: (Name, affiliation, and address)

Kathryn Haley  
Architectural Historian  
ICF Jones & Stokes  
630 K Street  
Sacramento, CA 95814

P9. Date Recorded: 10/29/08

\*P10. Survey Type: (Describe)  
Intensive

\*P11. Report Citation: (Cite survey report and other sources, or enter "none.") ICF Jones & Stokes. 2008. DRAFT Historical Resources Evaluation Report Cartmill Avenue/State Route 99 Interchange Project Caltrans District 6, Tulare County, California, 06-TUL- 99 PM 31.9

\*Attachments:  NONE  Location Map  Sketch Map  Continuation Sheet  Building, Structure, and Object Record  
 Archaeological Record  District Record  Linear Feature Record  Milling Station Record  Rock Art Record  
 Artifact Record  Photograph Record  Other (List):

**BUILDING, STRUCTURE, AND OBJECT RECORD**

\*Resource Name or # Corrugated Metal Building - Map Reference No. 1

B1. Historic Name: Unknown

B2. Common Name: Unknown

B3. Original Use: Unknown

B4. Present Use: Unknown

\*B5. Architectural Style: No style

\*B6. Construction History: (Construction date, alterations, and date of alterations) Unknown

\*B7. Moved? No Yes Unknown Date:

Original Location:

\*B8. Related Features:

B9a. Architect: Unknown

b. Builder: Unknown

\*B10. Significance: Theme: Agriculture

Area: Tulare

Period of Significance: ca. 1950

Property Type: Industrial Building

Applicable Criteria: N/A

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

The building located at 597 Cartmill Avenue (APN 166-010-005) does not appear to meet the criteria for listing in the California Register of Historical Resources (CRHR). In accordance with Section 15064.5 (a)(2)-(3) of CEQA Guidelines and using the criteria outlined in Section 5024.1 of the California Public Resources Code, the building does not appear to be historical resource for the purposes of CEQA.

The building is located on land that was historically owned by the Southern Pacific Railroad (SPRR) (Bannister, 1883). In 1872, the SPRR bought the land that was the original Tulare townsite from early settlers who owned large sections of land, but used it as pastureland for their herds of cattle. In 1872, the town site was surveyed and lots were sold at public auction (Small 1926:470 and Elliott 1883:164). The growth of Tulare was slow and the city suffered a series of setbacks, including fires that destroyed the business district (Small 1926:474-476). In 1888 the city incorporated and the population was at a high of 3,250 (Small 1926:474-476 and Elliott 1883:164). By this time Tulare had a thriving business district (Elliott 1883: 164). The city, however, experienced another setback in 1891 when the SPRR moved its shops to Bakersfield. This had a negative economic impact on Tulare and left the city stagnant for more than a decade. (See Continuation Sheet)

B11. Additional Resource Attributes: (List attributes and codes)

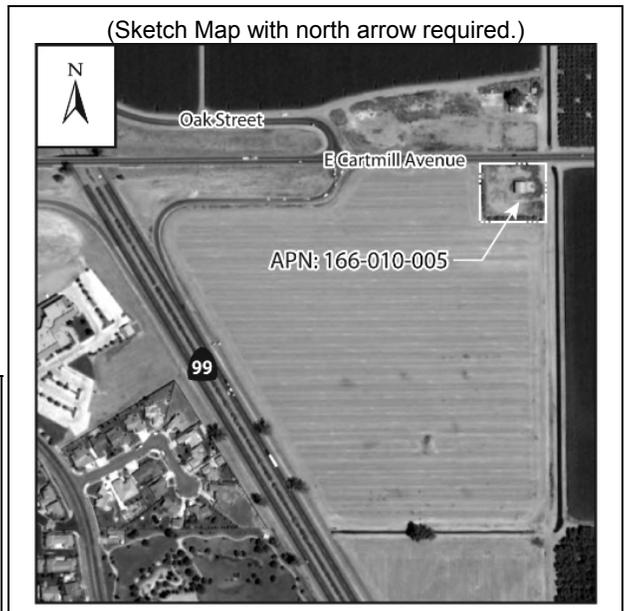
\*B12. References: For full citations see: ICF Jones & Stokes. 2008. DRAFT Historical Resources Evaluation Report Cartmill Avenue/State Route 99 Interchange Project Caltrans District 6, Tulare County, California, 06-TUL- 99 PM 31.9

B13. Remarks:

\*B14. Evaluator: Kathryn Haley

\*Date of Evaluation: October 29, 2008

(This space reserved for official comments.)



**B10. Significance (cont)**

The Tulare Irrigation District provided the surrounding farmers and ranchers with the opportunity to experiment with water-intensive crops (Bean and Rawls 1983:187; Jelinek 1982: 34). As farmers began to diversify crops many owners of the large tracts of land then common to the Tulare area, began to subdivide and sell off acreage. Landowners throughout the county sold parcels of 10 to 40 acres. The SPRR had sold this land to D.F.G. and it too was subdivided (Smith, 1909). Irrigation made intensive farming practices possible on these small parcels, and small farming rapidly became a feature of the area. (Tulare County Board of Trade 1915:9).

Property ownership and use for this land is unclear for several decades, but the property is currently owned by the City of Tulare (Personal Communication with Tulare County Assessor's Office, November 17, 2008). The building first appears on historic maps as one of two buildings located south of a landing strip across Cartmill Road (USGS, 1951). The building does not appear to be associated with the development of Tulare or its agricultural and dairy industries (Criterion 1). Based on the signage, design of the building, and its proximity to a small landing strip, the building was likely used as a storage facility for crop dusting in the 1950s and later period. The landing strip, however, is no longer extant, which has impacted this building's integrity. Research has not revealed the building's association with a significant person or groups that played a significant role in the history of Tulare or its agriculture and dairy industries and makes the building appear ineligible under Criterion 2. Architecturally, the building does not exhibit distinctive characteristics of a type, period, region or method of construction. Nor does the building appear to be the work of a master and does not possess high artistic values. This type of building is commonly found throughout agricultural regions of California and is not of a unique style or design. Therefore, it is not eligible under Criterion 3. Lastly, the building does not appear likely to yield further information (Criterion 4). Furthermore, the property does not appear to retain integrity of design, setting, feeling, and association because the airstrip is no longer extant, the parcel is overgrown, and the property is surrounded by cyclone fencing.



State of California — The Resources Agency  
DEPARTMENT OF PARKS AND RECREATION  
**PRIMARY RECORD**

Primary #  
HRI #  
Trinomial  
NRHP Status Code 6Z

Other Listings  
Review Code 6Z

Reviewer

Date

Page 1 of 4 \*Resource Name or #: Liberty Ditch- Map Reference No. 2

**P1. Other Identifier:**

\*P2. Location:  Not for Publication  Unrestricted \*a. County: Tulare

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

\*b. USGS 7.5' Quad: Tulare

Date: 1951 photo revised 1959 T 19S; R 24E ; Secs 26 & 35; M.D. B.M.

c. Address:

City: Tulare

Zip:

d. UTM: Zone: 11; mE/ 289740, mN 4013140 (G.P.S.)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation:

\*P3a. **Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)  
This is an L-shaped segment of an earthen canal known as the Liberty Ditch. It stretches about 300 feet from west to east and 600 feet from north to south. It is three feet deep and nine feet wide. There are concrete headwalls and culverts where it crosses Cartmill Road. At the time of survey the canal had been recently machined. The canal is surrounded on its west, south and east sides by agricultural fields. There was debris and weeds in the canal at the time of recordation.

\*P3b. **Resource Attributes:** (List attributes and codes) HP20 – Canal/Aqueduct

\*P4. **Resources Present:**  Building  Structure  Object  Site  District  Element of District  Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)



**P5b. Description of Photo:** (View, date, accession #) Camera facing south, Oct. 31, 2008

\*P6. **Date Constructed/Age and Sources:**  Historic  
 Prehistoric  Both  
ca. 1951 / Historic Maps

\*P7. **Owner and Address:**  
Tulare Irrigation District  
1350 West San Joaquin Ave.  
Tulare, CA 93274

\*P8. **Recorded by:** (Name, affiliation, and address)  
Kathryn Haley  
Architectural Historian  
ICF Jones & Stokes  
630 K Street  
Sacramento, CA 95814

**P9. Date Recorded:** 10/31/08

\*P10. **Survey Type:** (Describe)  
Intensive

\*P11. **Report Citation:** (Cite survey report and other sources, or enter "none.") ICF Jones & Stokes. 2008. *DRAFT Historical Resources Evaluation Report Cartmill Avenue/State Route 99 Interchange Project Caltrans District 6, Tulare County, California, 06-TUL- 99 PM 31.9*

\*Attachments:  NONE  Location Map  Sketch Map  Continuation Sheet  Building, Structure, and Object Record  
 Archaeological Record  District Record  Linear Feature Record  Milling Station Record  Rock Art Record  
 Artifact Record  Photograph Record  Other (List):

**BUILDING, STRUCTURE, AND OBJECT RECORD**

Page 2 of 4

\*NRHP Status Code 6Z

\*Resource Name or # (Assigned by recorder) Liberty Ditch- Map Reference No. 2

B1. Historic Name: Tulare Irrigation District Canal

B2. Common Name: Liberty Ditch

B3. Original Use: water conveyance

B4. Present Use: water conveyance

\*B5. Architectural Style: No style

\*B6. Construction History: (Construction date, alterations, and date of alterations) ca. 1951; in 1972 the concrete headwalls and culvert crossing were added and it was extended

\*B7. Moved? No Yes Unknown Date:

Original Location:

\*B8. Related Features: N/A

B9a. Architect: N/A

b. Builder: Tulare Irrigation District

\*B10. Significance: Theme: Irrigation

Area: Tulare

Period of Significance: ca. 1951

Property Type: Industrial Building

Applicable Criteria: N/A

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

This segment of the Tulare Irrigation District located in the project area does not appear to meet the criteria for listing in the California Register of Historical Resources (CRHR). In accordance with Section 15064.5 (a)(2)-(3) of CEQA Guidelines and using the criteria outlined in Section 5024.1 of the California Public Resources Code, the feature does not appear to be historical resource for the purposes of CEQA.

The Tulare Irrigation District, organized in 1889 generally surrounded the City of Tulare (Adams 1929: 214, 245). A number of irrigation features which supply the Tulare Irrigation District pass through the Visalia region. The Tulare Irrigation District organized two years following the passage of the Wright Act in 1887. The delay of organization came about largely through the controversies surrounding concerns between local riparian water users and prior appropriators who felt that an irrigation district potentially would limit their water allotments. The district as initially envisioned would have irrigated approximately 210,000 acres of land between the foothills and Tulare Lake. The aforementioned opposition resulted in the reduction of irrigated land by Tulare Irrigation District to approximately 39,360 acres including the city of Tulare. (See Continuation Sheet)

B11. Additional Resource Attributes: (List attributes and codes)

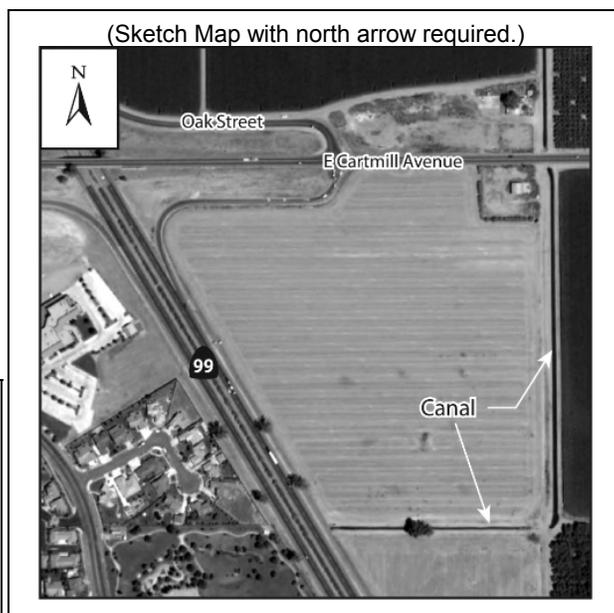
\*B12. References: For full citations see: ICF Jones & Stokes. 2008. DRAFT Historical Resources Evaluation Report Cartmill Avenue/State Route 99 Interchange Project Caltrans District 6, Tulare County, California, 06-TUL- 99 PM 31.9

B13. Remarks:

\*B14. Evaluator: Kathryn Haley / Patricia Ambacher

\*Date of Evaluation: October 31, 2008

(This space reserved for official comments.)



**CONTINUATION SHEET**

\*Recorded by Kathryn Haley

\*Date October 31, 2008

Continuation  Update

**B10. Significance (cont)**

Engineers for the district first sought to divert water from the south bank of the Kaweah River, but later modified the plan when the heavy tunneling required proved too costly. As a substitute, the district located a north side diversion from the St. Johns River along with a flume which carried the water back over to the south of the river. District officials purchased the previously constructed Settlers and Kaweah canals using bond money in 1892. These bond monies proved difficult to rely upon during the depression of the 1890s when many bond owners defaulted. At this time the district limited its operations although water remained in the ditches in order to keep them operational. Many farmers in the area who retained capital for farm investing also turned to deep well pumps to irrigate.

As a result of these financial difficulties, the district operated more like a cooperative without formally assessing farmers for improvements until 1909, when a single assessment for \$10,000 in improvements took place. Regular assessments of the districts then 34,000 acres resumed in 1918. By 1929 the district engineer claimed that approximately 300 miles of ditches and canals, along with 300 canal structures, spread throughout the serviced area. While all of the ditches remained unlined at that time, the district followed the general convention seen throughout the San Joaquin Valley and previously replaced all of the original wood features with more durable concrete (Adams 1929: 245). Currently, the Tulare Irrigation District services over 71,000 acres of farmland through 300 miles of canals and ditches (Dumermuth 2002: 75).

This segment of the Tulare Irrigation District does not appear to be associated with the early development of the District and does not appear to have made a significant contribution to the events surrounding the District. Therefore, it does not meet CRHR Criterion 1. The segment does not appear to be associated with persons or groups that have made a significant contribution (Criterion 2). The structure also does not embody the distinctive characteristics of a type or method of construction, possess high artistic value, and is not the work of a master engineer (Criterion 3). The segment also does not appear to have the potential to yield more information (Criterion 4). In addition to not being significant under one of the CRHR criteria, this segment of the canal lacks integrity of design, materials and workmanship. The canal was altered and extended between 1951 and 1959. In 1972 it was extended past Cartmill Avenue and the concrete headwalls and culvert crossing was added. Therefore, this segment of the canal does not appear to be a historical resource for the purposes of CEQA.



L1. **Historic and/or Common Name:** Liberty Ditch, Tulare Irrigation District

L2a. **Portion Described:**  Entire Resource  Segment  Point Observation **Designation:**

**b. Location of point or segment:** (Provide UTM coordinates, legal description, and any other useful locational data. Show the area that has been field inspected on a Location Map)

UTM: Zone 11: 289740, 4013140

L3. **Description:** (Describe construction details, materials, and artifacts found at this segment/point. Provide plans/sections as appropriate.) This is an L-shaped segment of an earthen canal known as the Liberty Ditch. It stretches about 300 feet from west to east and 600 feet from north to south. It is three feet deep and nine feet wide. There are concrete headwalls and culverts where it crosses Cartmill Road. At the time of survey the canal had been recently machined.

L4. **Dimensions:** (In feet for historic features and meters for prehistoric features)

a. **Top Width:** 9 feet

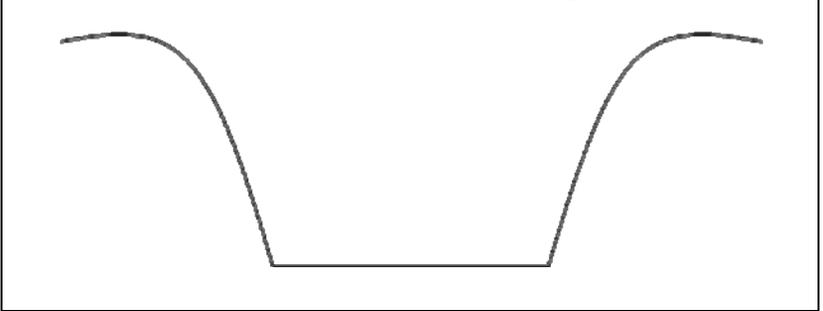
b. **Bottom Width:** 9 feet

c. **Height or Depth:** 3 feet

d. **Length of Segment:** 300 x 600 ft

L5. **Associated Resources:** N/A

L4e. **Sketch of Cross-Section** (not to scale) **Facing:** North and South



L6. **Setting:** (Describe natural features, landscape characteristics, slope, etc., as appropriate.) The irrigation ditch is surrounded by agricultural fields to its west, south, and east. It crosses Cartmill Avenue to the north.

L7. **Integrity Considerations:** This segment of the canal was altered between 1951 and 1959 and again in 1972

L8a. **Photograph, Map or Drawing**



L8b. **Description of Photo, Map, or Drawing** (View, scale, etc.)  
Camera facing north

L9. **Remarks:**  
N/A

L10. **Form Prepared by:** (Name, affiliation, and address)  
Patricia Ambacher and  
Kathryn Haley  
ICF Jones & Stokes  
630 K Street  
Sacramento, CA 95814

L11. **Date:** October 31, 2008

DPR 523E (1/95)



Attachment D  
**Archaeological Survey Report**



**Archaeological Survey Report**  
**Cartmill Avenue Interchange Project,**  
**City of Tulare, Tulare County, California**

06-TUL-99  
P.M. 31.3/32.6  
EA 06-33220

Prepared by:  Date: 12/7/11  
Traci O'Brien  
With review by Shahira Ashkar  
ICF Jones & Stokes  
630 K St, Suite 400  
Sacramento, CA 95814

Reviewed by: \_\_\_\_\_ Date: \_\_\_\_\_  
Jon L. Brady  
Prehistoric and Historic Archaeology  
Central California Cultural Resources Branch  
Caltrans District 6  
855 M Street, Suite 200  
Fresno, CA 93721

Approved by: \_\_\_\_\_ Date: \_\_\_\_\_  
G. William "Trais" Norris, III  
Branch Chief  
Sierra Pacific Environmental Analysis Branch  
Caltrans District 6  
855 M Street, Suite 200  
Fresno, CA 93721

**December 2011**

*USGS 7.5-minute Quadrangle: Visalia, CA (1969)*

*Keywords: Township 19 South, Range 24 East M.D.B.M.; Tulare County; archaeological survey*  
*Approximately 30 Acres*

ICF Jones & Stokes. 2011. *Archaeological Survey Report for State Route 99/Cartmill Avenue Interchange Project, Tulare County, California*. December. (ICF J&S 0689.06.) Sacramento, CA. Prepared for: City of Tulare, Omni-Means, and the California Department of Transportation, District 6. Fresno, CA.

# Summary of Findings

The City of Tulare (City), in conjunction with the California Department of Transportation (Caltrans), proposes to modify the existing State Route (SR) 99/Cartmill Avenue/M Street/Oaks Street interchange located at post mile (PM) 31.9 in the city of Tulare.

The purpose of this Archaeological Survey Report (ASR) is to evaluate the potential for the project to affect archaeological resources eligible for listing in the California Register of Historical Resources (CRHR) or any resources considered historic for the purposes of the California Environmental Quality Act (CEQA). The specific purpose of this ASR is to comply with applicable sections of CEQA which require that both public and private projects financed or approved by public agencies be assessed to determine the effects of the project on historical resources and unique archaeological resources. The proposed project is sponsored by the City who considers the project necessary to support planned growth within the northern area of the City. The project is 100-percent funded by the City of Tulare and through Measure R sales tax revenue. Caltrans is the lead agency under CEQA as the project is on the state highway system. A cultural resources assessment was conducted of the project study area by Basin Research Associates (BRA) in November 2005 (BRA 2007). The project study area was included in a survey conducted by BRA for the City of Tulare General Plan Amendment Environmental Impact Report for the Cartmill Crossing North and SR 99/Cartmill Avenue Interchange projects. Additionally, in November 2008, an ICF Jones & Stokes archaeologist conducted a project study area reconnaissance to review and confirm the findings and results of the BRA survey and to investigate the California Department of Transportation (Caltrans) right-of-way (ROW) not specifically included in the BRA survey.

No archaeological resources were identified within or immediately adjacent to the project area. Additional survey would be required if the project plans are changed to include any areas not previously surveyed for cultural resources. It is Caltrans' policy to avoid cultural resources whenever possible. If buried cultural materials are encountered during construction, it is Caltrans' policy that work stop in that area until a qualified archaeologist can evaluate the nature and significance of the find. Additional survey will be required if the project changes to include areas not previously surveyed (Caltrans 2005).



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# Acronyms and Abbreviations

ASR	Archaeological Survey Report
BRA	Basin Research Associates
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CHRIS	California Historical Resources Inventory System
City	City of Tulare
CRHR	California Register of Historical Resources
HRER	historical resources evaluation report
NAHC	Native American Heritage Commission
PAL	project area limits
PM	post mile
ROW	right-of-way
SPRR	Southern Pacific Railroad
SR 99	State Route 99
SSJVIC	Southern San Joaquin Valley Information Center
WPLT	Western Pluvial Lakes Tradition

# Archaeological Survey Report

## Introduction

The project study area is located at the State Route 99 (SR 99)/Cartmill Avenue Interchange located within the City limits of the City of Tulare located in Tulare County, California, Caltrans District 06 (PM 31.3/32.6). The vicinity and location of the project area is illustrated on Figures 1 and 2 (Appendix A). The project study area limits are outlined on the Project Area Limits (PAL) map Figure 3 and Figure 3 Sheets 1 through 6 (Appendix A). The archaeological investigations described in this report were conducted by Basin Research Associates (2005) (Appendix B) and ICF Jones & Stokes (2007 and 2008).

Christiaan Havelaar and Traci O'Brien, both archaeologists with ICF Jones & Stokes, conducted the research and the archaeological fieldwork described in this report. Mr. Havelaar earned a B.A. in anthropology (emphasis in archaeology) from California State University, Sacramento in 2002. Mr. Havelaar has nearly 10 years of broad (prehistoric and historic archaeology) professional experience in cultural resources management in California. Ms. O'Brien earned a B.A. in anthropology (emphasis in archaeology) from California State University, Sacramento in 1986 and has over 20 years of broad prehistoric and historic archaeological professional experience throughout California. Ms. O'Brien qualifies for the Caltrans PQS Level of Co-Principal Investigator.

## Highway Project Location and Description

The SR 99/Cartmill Avenue Interchange Improvements project is located in the City of Tulare on SR 99 at the Cartmill Avenue interchange (PM 31.9). The vicinity and location of the project is shown on Figures 1 and 2. Through the project area, SR 99 is a four-lane freeway with a 42-foot-wide median. Cartmill Avenue crosses over SR 99 at a 30-degree skew. The overcrossing is a two-span structure with closed abutments, and it is constructed to a width of 38 feet, with a paved width of 28 feet from one face of curb to the other. The purpose of this project is to improve safety, provide additional capacity, improve east-west circulation, and improve local access with SR 99 at Cartmill Avenue to correct current traffic congestion and to accommodate planned future growth, including significant commercial development proposed adjacent to the interchange, within the northern area of Tulare.

The proposed interchange improvements include two alternatives. Both alternatives include a complete reworking of all on-and off-ramps, the widening

of Cartmill Avenue and construction of new overcrossing, and construction of new infiltration basins for storm water run-off. The limits for all proposed improvements on SR 99 extend from approximately PM 31.3 south of Cartmill Avenue to approximately PM 32.6 north of Cartmill Avenue. The limits for the design-year improvements on the City of Tulare's street system include Cartmill Avenue from approximately 0.3 mile west of "M" Street to approximately 0.3 mile east of future Akers Street, plus M Street from the SR 99 southbound off-ramp to approximately 0.1 mile south of Cartmill Avenue. A detailed project description, including both alternatives, can be found in the Historic Resources Compliance Report as Attachment B. Actual engineering plan renderings for the Phase 1 improvements and the two alternatives are shown in Figures 4a through 4b in the HRCR. The proposed interchange improvements would entail considerable subsurface ground disturbing activities and have the potential to affect undiscovered archaeological resources. The PAL includes all existing rights-of-way (ROW) as well as those parcels from which new ROW will be acquired where proposed project activities will take place. However, this report will only discuss the findings for the archaeological study area as outlined on Figure 3. The archaeological study area follows the same outline as the construction limits outline.

## Sources Consulted

The effort to identify archaeological sites in the study area consisted of an archival records search, Native American consultation and field work investigation conducted by BRA (2007) and ICF Jones & Stokes. The results of the research, consultation, and fieldwork are included below.

## Summary of Methods and Results

### Summary of Records Search

The background research conducted to identify any known cultural resources within or adjacent to the project area was prepared for and initially reported in the Preliminary Environmental Analysis Report (PEAR) (ICF Jones & Stokes 2008) prepared for Caltrans. The research included a records search at the Southern San Joaquin Valley Information Center (SSJVIC) of the California Historical Resources Inventory System (CHRIS) located at CSU Bakersfield in Bakersfield, California in June 2007. Sources consulted during the records search included maps of previous cultural resource studies and known cultural resource locations (Appendix C). According to the SSJVIC staff, the records search resulted in the finding of no prehistoric or historic era sites having been recorded, reported or identified in, adjacent to or within 0.50 miles of the project area. Sources consulted by SSJVIC staff researchers included maps of previous cultural resource studies and known cultural resource locations. SSJVIC staff also consulted the Historic Properties Data File (6/3/07); the NRHP; California Register of Historical Resources (CRHR); *California Inventory of Historic Resources* (California Department of Parks and Recreation 1976); *California*

*Historical Landmarks* (California Department of Parks and Recreation 1996); and California Points of Historical Interest (May 1992 and updates).

In addition to the BRA study, the records search found that three previous studies that included portions of the project area had been conducted. All of these earlier studies reported negative findings for cultural resources in the vicinity of the project. The Cultural Resources Inventory Report for the Proposed Mojave Northward Expansion Project (Hatoff et al. 1999) includes Cartmill Road adjacent to the project as well as the Union Pacific Company right-of-way west of the project. The report includes records searches, background, and the results of a field investigation. The Cultural Resource Survey for the Selma to Bakersfield Fiber optic Line, Southern San Joaquin Valley, California (Wickstrom and Anderson 1997) proceeds along State Route 99 adjacent to the commercial retail portion of the project. This report provides a review of the natural environment and cultural background (including 19th century maps), results of records searches and field survey. Various irrigation canals were recorded, but not in the vicinity of the project. A Negative Archaeological Survey Report (ASR) Upgrading Bridge Rails on Seven Bridges along State Route 99 (Hovey 1999) includes a brief background review, records search, sources consulted, and field survey. The ASR was negative for archaeological sites. No historic properties or historical resources were identified within or adjacent to (within 0.5 miles) the project area.

## **Summary of Others Who Were Consulted**

The 2007 BRA report provides a detailed accounting of the historic maps and resources research findings. ICF Jones & Stokes conducted additional background research to arrive at a general understanding of the history of the City of Tulare area within Tulare County, with a focus on exploration, settlement, agriculture, development, transportation, and architecture. Research was undertaken at the California State Library; California State Archives; San Joaquin District Office of the Department of Water Resources, City of Fresno; Tulare County Free Library, City of Visalia; Tulare Public Library, City of Tulare; and ICF Jones & Stokes cultural library.

## **Summary of Native American Consultation**

ICF Jones & Stokes also consulted with Native Americans regarding the proposed project to obtain information about traditional cultural properties, archaeological sites, and concerns about the project. ICF Jones & Stokes staff contacted the Native American Heritage Commission (NAHC) in November 2008 to request a search of their Sacred Lands file and to obtain a list of Native American contacts for Tulare County. The NAHC response was negative for "Native American cultural resources in the immediate project area" (Appendix D).

ICF Jones & Stokes cultural staff prepared project information letter to the Native American contacts on the list provided by the NAHC in December 2008 requesting any information known regarding resources located within the proposed project area or that may be affected by the proposed project was requested (Appendix D). The correspondence included a map depicting the project study area, a brief description of the proposed project and a request for any knowledge or concerns they may have with the project area. Follow-up phone calls were made.

To date, one return phone call has been received by the ICF Jones & Stokes office from Mr. John Sartuche of the Wukchumni Tribe. Mr. Sartuche did not have any specific concerns or information regarding the project area; however, he stated that he would like to be kept informed on the progress of the project.

## Background

### Environment

The County of Tulare, covering 4,863 square miles, is situated midway between San Francisco and Los Angeles, on the southern end of the San Joaquin Valley. Geographically, Tulare County is bounded by the Central Coast Range to the west, the Transverse Range (San Emigdio Mountains) to the south, and the Sierra Nevada Range to the east. The area is located on the broad alluvial fan of the Kaweah River. Many small creeks in this area, including Deep Creek, have been channelized through agricultural land to carry flood and irrigation waters. The project area reflects the typical environment of the southern Central Valley. It is relatively flat with little or no slope. Most of the area is either agricultural fields or orchards, with sparse areas of grassland.

The general vicinity of the project area is inhabited by several species of small mammals including coyotes (*Canis latrans*), bobcats (*Lynx rufus*), gray foxes (*Urocyon cinereoargenteus*), kit foxes (*Vulpes macrotis*), raccoons (*Procyon lotor*), badgers (*Taxidea taxus*), porcupines (*Erithizon dorsatum*), skunks (*Spilogale* and *Mephitis* spp.), weasels (*Mustela frenata*), gophers (*Thomomys* spp.), and various species of hare and squirrel (Preston 1981).

The dominant plant communities within the project area are classified as valley oak woodland and valley grasslands; however, urban development and intensive agricultural practices have displaced much of the native vegetation (Preston 1981). Typical native species of the valley grassland include needlegrasses (*Stipa* spp.), bluegrasses (*Poa* spp.), triple-awned grasses (*Aristida* spp.), and rye grasses (*Elymus* spp.). Native vegetation comprising valley oak woodlands include the valley oak (*Quercus lobata*), Fremont cottonwood (*Populus fremontii*), black willow (*Salix goodingii*), mule fat (*Baccharis salicifolia*), and wild rye (*Elymus triticoides*). At stream bottoms and low, well-watered terraces and wetlands tule (*Scirpus acutus*) and cattail (*Typha* sp.) are common (Schoenherr 1992).

## Ethnography

The project area is located within the ethnographic territory of the Choinok (Kroeber 1925; Latta 1949) or Choynok (Wallace 1978) tribelet of the Southern Valley Yokuts. Kroeber (1925:482) places this tribelet's village, Ch'iuta, just south from the city of Farmersville, along Deep and Outside Creeks (Kroeber 1925; Latta 1949).

Pedro Fages, Francisco Garces, and Lieutenant Jose Maria Estudillo wrote historical accounts of the Southern Valley Yokuts (Cook 1976:248, Table 2). Ethnographic descriptions and recent discussions of the Tachi Yokuts are provided by Powers (1877), Kroeber (1925), Cummins (1978), and Latta (1999). Wallace (1978) summarizes these works (excepting Cummins), and this brief context draws largely from Wallace (1978).

Yokuts territory encompassed the upper southern end of the San Joaquin Valley, from the lower Kings River to the Tehachapi Mountains. Included in this area were Tulare, Buena Vista, and Kern lakes, and their connecting sloughs, and the lower portions of the Kings, Kaweah, Tule, and Kern rivers. Adjacent to these lakes, rivers, and sloughs were extensive swamplands that expanded and contracted seasonally. The valley floor was essentially a large wetland, treeless with the exception of cottonwoods (*Populus* spp.), sycamores (*Platanus racemosa*), and willows (*Salix* spp.) lining the banks of waterways.

At the time of European contact, at least 15 Yokuts groups inhabited the southern San Joaquin Valley (Kroeber 1925). Population estimates for the early historic-period Southern Valley Yokuts range from 5,250 to 15,700.

Linguists and anthropologists have had difficulty determining the precise relationships among languages classified as part of the Yokutsan language family. Shipley (1978:89) assigns the Tachi Yokuts speech (it is unclear whether Tachi should be classified as a language or a dialect) to the Kings River and Tulare Lake group (Group A) of the Southern Valley grouping of the Valley Yokuts languages.

The Yokuts depended on a mixed subsistence economy, emphasizing fishing; game hunting and fowling; and collecting shellfish, roots, and seeds. Trout (Salmonidae family), perch (Centrarchidae family), chubs (Cyprinidae family), suckers (Catostomidae family), steelhead, and salmon were obtained using dragnets, spears, poisons, and bows and arrows. Fish were speared from the bank, the tules, or large, flat-bottomed tule rafts. In some areas, fish were driven into stick pens in the shallows or were obtained by diving with hand-held nets. Waterfowl were hunted using snares, bows and arrows, decoys, and long-handled nets. Among gathered animal resources were turtles, mussels, and the eggs of waterfowl. Relatively few insect food sources were exploited. Small game was taken with snares or traps, bows and arrows, and nets. Rabbits were driven and killed with throwing sticks. Small burrowing animals were sometimes smoked or flooded out of their burrows. Antelope and elk were shot with bows and arrows from blinds or were driven into snares or traps (Wallace 1978).

Vegetal resources consisted of the roots and seeds of wetland plants, brush, and bunch grasses. Tule roots were dried, pounded, and made into a starchy mush. Seeds of grasses and flowering shrubs were collected and ground into meals. Leaves and stems of particular plants, such as fiddleneck (*Amsinckia* sp.), watercress (*Rorippa nasturtium-aquaticum*), alfilaria, and clover, were eaten raw. Acorns were not readily available in the valley, although abundant oak tracts were present in the Sierra Nevada foothills and probably the South Coast Ranges as well. Acorns were often obtained through trade with Indian groups from the Sierra Nevada, in exchange for fish. Asphaltum was an important trade item in the area; the Yokuts used it to waterproof baskets and to glue objects to one another (Latta 1999).

The concentrated supply of foods that existed in Yokuts territory allowed them to remain relatively sedentary. Structures ranged from small, single-family buildings constructed of wooden frames and covered with tule mats to larger structures accommodating 10 families. These larger structures were distinctive, having very steeply pitched tule roofs. In the foothills of the South Coast Ranges, dwellings were more ephemeral, approximating a ramada. Tachis would construct a small earthen mound and erect four juniper posts across which branches and tree limbs were laid until a small hut was fashioned (Bureau of Reclamation 1983:20). Families had segregated spaces, with their own fires and doors, within the larger structures. Village size was variable but averaged several hundred people. The locations of at least 50 Yokuts villages are known (Latta n.d., 1949, 1999; Wallace 1978).

The material culture of the Yokuts centered on the use of tule. Tule stems were used to make a variety of items, including a large variety of basket forms. In addition to baskets, tule stems were made into mats that were used for floor and roof coverings, for clothing, and even for canoe-shaped boats (Stevens 2004:9). Yokuts used wood for many utilitarian items such as house framing, furniture, tools, and utensils. Stone was used to manufacture some cutting tools, and bone was used for other tools, such as awls. Marine shells, obtained from coastal groups, were manufactured into money and used for items of personal adornment (Wallace 1978).

The earliest contact the Southern Valley Yokuts had with Europeans probably occurred in the late eighteenth century, when Spanish explorers ventured into the southern San Joaquin Valley. Although many members of Yokuts groups were settled at Missions Soledad, San Luis Obispo, and San Juan Bautista, the infiltration of runaway neophytes from the missions had a more significant impact on the Southern Valley Yokuts population in general. The former mission Indians introduced practices from the missions into Yokuts culture. Among the introduced practices was horse riding, which, for a variety of social and economic reasons, led to Yokuts raids on mission and rancho herds. In the 1820s, ranchers began to organize punitive forays to recover stolen horses and livestock, punish horse thieves, and capture slaves. Disease, such as the 1833 epidemic, resulted in a catastrophic death toll among Southern Valley Yokuts. The greatest depredations to Southern Valley Yokuts' quality of life and morale resulted from the annexation of California by the United States. The United States government sponsored genocidal acts and forced relocation of entire tribes from their native lands. Nevertheless, present-day Yokuts rancherías maintain

strong community and cultural solidarity, emphasize or petition for sovereignty, and educate others about Yokuts culture (Cook 1976:210–211; CSUFF Laboratory of Anthropology 2003:12).

## Prehistory

The proposed project is situated in the city of Tulare, on the eastern margin of the San Joaquin Valley. Little archaeological research has been conducted in the immediate environs of Tulare, and most of this research is confined to cultural resource inventories undertaken to satisfy environmental and historic preservation regulations. Therefore, expectations regarding the potential types of prehistoric resources in the project study area must be proposed by reference to archaeological research conducted further afield. The most relevant studies to the project area are located at Tulare Lake, Buena Vista Lake, the Fresno Plains, and the Lake Kaweah and Success Lake reservoir areas (Arguelles 1983; Hartzell 1992; Meighan et al. 1984, 1988). Their relevance is derived from their proximity to the project area as well as natural settings similar to the valley and valley-foothill interface characteristic of the project vicinity.

This treatment of local prehistory does not include a resumé of previous archaeological research in the region, as such summaries are numerous and ably outlined in other, accessible literature (Dillon 1988; Hartzell 1992). Instead, the evidence presented in these sources is marshaled to construct a probable, though unverified, prehistoric sequence for the project vicinity.

## Paleoindian Occupation (ca. 13,500–10,000 B.P.)

Archaeologists have widely touted a Paleoindian presence on Tulare Lake on the basis of fluted projectile point finds around the lakebed (Dillon 2002:Table 1). Based on a combination of radiocarbon-dated contexts and cross-dating, fluted points in California are frequently taken to indicate Paleoindian occupation on the order of 10,000–12,000 B.P., although recent recalibrations of radiocarbon curves relevant to the terminal Pleistocene and Holocene epochs indicate that the early range should be extended to 13,500 calendric years B.P. (Anderson et al. 1998; Mills et al. 2005:72).

Less secure, but not entirely equivocal evidence for Paleoindian fluted points exists at the Witt Site (CA-Kin-32), on the southwestern margin of Tulare Lake. Here, Riddell and Olson (1969) and the Tulare Lake Archaeological Research Group identified 269 fluted points on the site surface (Dillon 2002: Table 1). These points are very similar in morphology (but thinner and lighter in weight) to Clovis points found in various locations in western North America. Human skeletal material taken from the Witt Site has been dated to being between 11,000 and 12,000 years old using uranium-thorium analysis (Wallace 1991). Although the fluted points are not reported in association with these human remains, the dating of the remains provides tentative support for a Paleoindian assignment for CA-Kin-32's fluted points. An additional 19 fluted points have been identified at the Trico Site, also on Tulare Lake (Dillon 2002: Table 1).

Paleoindian subsistence and settlement practices in the Tulare Lake basin and beyond are difficult to discern with any certainty, despite the rich surficial deposits at CA-Kin-32. Although the same lake margin where the fluted points were discovered has produced fossilized remains of Pleistocene mammals, the fossilized taxa have not been definitively associated with the fluted points. Recent work by the Tulare Lake Archaeological Research Group demonstrates that the environment of the Tulare Lake region was colder and the marshland less extensive in the late Pleistocene than has been recorded historically (West et al. 1991; Arguelles with Moratto 1983:14). The early hunters, West et al. (1991) propose, hunted game that came to the shoreline of the lake. Because of the surface nature of the finds, associations between cultural debris and extinct taxa remains are questionable.

## **Western Pluvial Lakes Tradition (ca. 12,000–7000 B.P.)**

Tulare Lake's archaeological record also contains evidence of a human adaptation that may have succeeded the Paleoindian occupation, or formed a continuation with it, known as the Western Pluvial Lakes Tradition (WPLT). The WPLT was an expansive economic orientation throughout southern California that took advantage of the deep pluvial lakes and wetland environments fostered by the cool, wet conditions during the early Holocene Epoch (ca. 12,000–7000 B.P.) (Moratto 1984:103). WPLT artifact inventories typically include flaked-stone crescents, an absence of ground-stone tools, percussion-flaked foliate knives or projectile points, Silver Lake or Lake Mojave points, lanceolate bifaces, long-stemmed points, large flake and core scrapers, choppers, hammerstones, cores, drill, and graters (Moratto 1984:93, 103).

The WPLT sites closest to the proposed project are located at Buena Vista, Kern, and Tulare lakes. Along the southern and southeastern margin of Tulare Lake, minimal evidence of a WPLT occupation is evinced by the presence of a Lake Mojave projectile point, a fragment of a putative Parman point, and a flaked-stone crescent, each at a separate archaeological site (Arguelles 1983:101, 104). Faunal remains from the basal deposit of CA-Ker-116 on Buena Vista Lake indicate the exploitation of lacustrine resources as well as terrestrial resources at some remove from the lake, such as the Elk Hills (Hartzell 1992:317; Jackson 1997:12). If similar subsistence practices obtained on eastern Tulare Lake—a scant 32 km from the project area—the project vicinity may have been en route to higher-elevation exploitation zones for WPLT peoples. To date, no evidence of the WPLT has been identified in the immediate project vicinity, nor have archaeological remains dating from 12,000–7000 B.P.

## **Middle Holocene Occupations (7000–4000 B.P.)**

Middle Holocene occupations are unknown in the project vicinity, the foothills east of the project area, and Buena Vista Lake. Archaeological manifestations of this time period are present on Tulare Lake, principally in the form of Pinto series points, heavy stemmed and shouldered points, and millingstones. The temporal ascription of these manifestations is made principally on the basis of

cross-dating with time-sensitive artifacts, although an obsidian hydration date of 6450 B.P. was obtained from a stemmed point (Arguelles 1983:Table 3; Arguelles and Moratto 1983:46; Hartzell 1992:318–320).

CA-Tul-90, on Tulare Lake, is a notable site in that Warren and McKusick (1959:20–21), cited in Dillon (1988:60) postulated the first burial sequence for the lower San Joaquin Valley on the basis of human remains from the site. The first stage of the burial sequence terminates at about 4000 B.P. and extends an unknown length of time into the past. Burials from ca. 4000 B.P. at CA-Tul-90 were buried in an extended position, either supine or prone. The burials appeared to lack accoutrements, though Warren and McKusick (1959) equivocate on this point (Dillon 1988:60).

## **Late Holocene Occupation (4000–2000 B.P.)**

The portion of the Late Holocene between 4000 and 2000 B.P.—termed by Hartzell (1992:322) “Middle-Late Holocene”—marks the resumption of human occupation of Buena Vista Lake, the earliest known human occupation of the Fresno Plains north of the project area, and continued occupation of Tulare Lake. Buena Vista Lake and slough sites exhibit increasingly diverse artifactual and faunal assemblages over time, and seasonal dietary indicators point to year-round occupation of lakeside sites. Sites from 4000–3000 B.P. are characterized by extended burials lacking funerary objects; Pinto and Elko series projectile points; millingstones; handstones; charmstones; limited quantities of obsidian, marine shell beads, and ornaments imported from the coast; and small amounts of worked bone and steatite. Sites in the Buena Vista Slough area suggest temporary processing and hunting localities (Hartzell 1992:322).

The first evidence of house structures at Buena Vista Lake appears around 3000 B.P. Structures and features include shallow circular housepits, clay-lined cache features, and stone-lined hearths. Steatite cookware is abundant, including bowls and trays. Between 3000 and 2000 B.P., Buena Vista sites evince greater use of obsidian and imported tabular chert (Hartzell 1992:323–324).

Other developments in the region include an apparent shift in burial patterns at Tulare Lake, where the preferred burial position was supine and semi-flexed with few burial goods. What burial goods were present included shell ornaments and retouched flakes (Dillon 1988:60).

As mentioned above, the first verifiable occupation of the Fresno Plains has been dated by radiocarbon methods to ca. 3000 B.P. Sites on the arid plains tend to be small, but numerous. The majority of sites are situated alongside streams or near springs. Some sites possess midden, housepits, and artifact scatters, although most do not. The nearly exclusive positioning of sites on stream courses and their relatively high density has led some archaeologists to hypothesize that prehistoric populations moved along streams in the dry season, moving from pool to pool as the streams dried. Chronological data for the Fresno Plain are sparse, so researchers postulate that this pattern of movement occurred through the historic period (Dillon 1988:68–70). This scenario has intuitive appeal for the

project vicinity, as it shares similar hydrologic and other natural characteristics with the Fresno Plains.

## Late Holocene Occupations (2000 B.P.–Historic Period)

The period from 2000 B.P. to the historic period in the region marks major cultural developments at Buena Vista Lake and numerous archaeological sites are occupied on the shores of Tulare Lake (Arguelles 1983:Table 3). Other areas near the project vicinity apparently maintained previous patterns of behavior until the emergence of ethnographic Yokuts cultures.

The Buena Vista Lake archaeological record from 2000–1000 B.P. shows a marked increase in the quantity and diversity of fauna, incorporating significant amounts of freshwater shellfish. Fresher water conditions are implied by the presence of deeper-water species such as Sacramento blackfish and diving ducks. This time interval also witnessed the introduction of new technologies suited to a lacustrine economy: bipointed bone fishhooks, steatite reels, and tule-wrapped baked-clay net weights. Concomitantly with aquatic resource procurement, lakeside sites contain greater quantities of elk (*Cervus elaphus*), pronghorn antelope (*Antilocapra americana*), coyotes (*Canis latrans*), domestic dogs, and jackrabbits (*Lepus californicus*) than in earlier periods of prehistory. Specific task groups would fan out from year-round sites on the lake into the adjacent plain and hills, as suggested by the Elk Hills archaeological record. The inferred year-round habitation of lakeside sites is weakened somewhat by the presence of milling equipment at sites in Elk Hills, though the precise chronological position of the milling equipment is uncertain. At Buena Vista Lake sites, milling equipment is plentiful, suggesting that the lakeside habitations were the setting for the bulk of vegetal processing (Hartzell 1992:324–325; Jackson 1997:2–3, 5, 15).

During the interval 1000 B.P. to the historic period, Buena Vista Lake returned to shallower and more alkaline conditions. Although site density at Buena Vista and Tulare lakes remained high into the historic period, lacustrine resource exploitation appears to have been embedded in a more general forager settlement-subsistence pose (*sensu* Binford 1980). The most notable technological change during this period was the introduction of the hopper mortar and a shift in burial customs that dates to ca. 1500 B.P. At this juncture, the preferred burial posture was tightly flexed, with the corpse placed on its side or supine. Burials contained a moderate quantity of funerary objects similar to middle-Late Holocene occupations, with the introduction of European manufactures in the historic period (Dillon 1988:60; Hartzell 1992:326–327).

## History

The post-contact history of California is generally divided into three different time periods. For Tulare County, these are the Discovery and Spanish Mission Period (1772–1821), the Mexican Period (1822–1846), and the American Period (1847–present) (Bean and Rawls 1988).

In 1772, a band of Spanish soldiers lead by Pedro Fages ventured through Tejon Pass into the San Joaquin Valley. Over the next 50 years, Spanish expeditions came into the southern Valley looking for suitable mission sites, pursuing escaped mission Indians, and recovering stolen horses. Similar expeditions continued during the Mexican Period (1822–1846) (Bean and Rawls 1988).

In 1848, California became part of the United States after signing the Treaty of Guadalupe-Hildago with Mexico. During this same year, gold was discovered to the north at Sutter's Mill, an event that ultimately had a profound effect upon the development of the upper San Joaquin Valley. When gold was discovered in the upper Kern River area during mid 1850's it brought about a tremendous influx of miners. In turn, this stimulated much activity in the Valley and as the gold ceased to be abundant, miners settled in the flatlands and assumed new professions, such as farming (Preston 1981:75).

The County of Tulare was founded in 1852 by an act of the State legislature, shaped from the southern portion of Mariposa County. The territory at the time included all of what is now Kings County. On September 7, 1853, the City of Visalia became the county seat. Los Tules, named by Commandante Tagus, was the reed-filled lake that became Tulare Lake, the one-time largest natural body of water in the Valley and source of the name Tulare (Small 2001).

The San Joaquin Valley remained relatively unsettled for most of the 19<sup>th</sup> century compared to the California coastal regions, which supported the earliest Spanish settlement, and the foothills of the Sierra Nevada, which formed the stage for the Gold Rush of the 1840s. Tulare County did not feature the approved Mexican land grants common to many coastal counties and to the foothill regions of Central Valley counties. In fact, much of Tulare County (as it is bounded currently) consisted entirely of public lands. Settlement of the area gradually increased as former gold seekers realized the potential of the Central Valley for crop production and cattle ranching. Many small towns were founded in the Central Valley because the Southern Pacific Railroad (SPRR) passed through providing access, goods, and employment. The growth of Visalia and Tulare further influenced settlement patterns in the area. The region has historically been used for agricultural and ranching pursuits, and these practices continue into the present. By 1980, Tulare County ranked second only to Fresno County in terms of agricultural production (Jelinek 1982: Introduction table).

During the earliest period of settlement, agriculture in the project area consisted primarily of cattle, hog, and sheep farming. As noted above, inland Tulare County supported neither the Mexican ranchos that existed along the coast nor the hide and tallow trade associated with them. Compared with the coastal ranchos, farms in Tulare County produced few cattle. A series of severe droughts in the early 1860s reduced the already small size of the Tulare herds. When early Anglo ranchers realized the hardships associated with raising cattle, they introduced hogs, which thrived in the area. When it was determined later that wheat could easily be cultivated in the San Joaquin Valley without irrigation, grain farmers used hogs for the clearing of stubble left over after the harvest. Sheep were also common in the region, although they were primarily limited to the foothill areas where they could be herded from place to place in the Sierra Nevada without the need to cross private property (Mitchell 1974:33).

Irrigation within the County of Tulare developed over the course of seven historic periods. Generally speaking these seven periods include: the 1850s with small ditch diversions; the 1870s artesian well development; 1880s subdivisions with associated water rights; the 1887 Wright Act; 1890s deep well pumps; turn of the 20<sup>th</sup> century's locally financed water districts; and the 1930s state water plans and federal water projects (Mitchell 1974:59).

Initially, local ranchers constructed their own small water conveyance systems, and among the earliest of the ditches constructed to divert water from the Kaweah River and its tributaries were the Watson, Persian, Birch, Elbow, Modoc, Cross Creek, and Farmers ditches, as well as the Kaweah Canal. Sometimes farmers took advantage of natural flows, as in 1862, when a flood carved a small channel into what is now St. Johns River. The flood channel was then used for irrigation (Mitchell 1974:59).

The relatively flat landscape of eastern Tulare County, combined with the boundaries established by the U.S. public land survey system, left a grid-like pattern of roadways that remains to the present day. As with many of the north/south trending roads of the area, the proposed project alignment follows along the east and west boundary lines of adjacent township sections. Furthermore, perpendicular roadways follow along northern and southern boundaries of those same sections. This early network of local roads provided the essential support for the movement of agricultural commodities (Zimrick 1976:36).

Agricultural development within the proposed project area largely followed agricultural development statewide in terms of overall progression. Early farmers constructed utilitarian structures based upon government guidelines found in agricultural assistance publications or based their designs upon commonly accepted forms used on neighboring farms. Necessity, brought about by economic, sociologic, technological changes, was the galvanizing factor in the development of most farm building designs. The development of specialized markets, improved communications and electric power (and motorized equipment) as well as improved construction techniques also influenced farm design changes nationally and locally (Teter and Giese 1960:218).

## Field Methods

A cultural resources assessment was conducted of the project study area by Basin Research Associates (BRA) in November 2005 and is reported in the letter report, Cultural Resources Assessment Report/Paleontological Review Cartmill Crossing North, Northeast Corner of Highway 99 and Cartmill Avenue and Highway 99/Cartmill Avenue Interchange, City of Tulare, Tulare County prepared for Environmental Consulting Services, Oakland, CA. (Basin Research 2007). The project study area was included in the survey conducted by BRA for the City of Tulare General Plan Amendment Environmental Impact Report for the Cartmill Crossing North and SR 99/Cartmill Avenue Interchange projects. A BRA archaeologist, Christopher Canzonieri, M.A. conducted a pedestrian survey of the project study area as well as additional acreage adjacent to the project

study area using 30-meter transect intervals. Visibility during the 2005 survey was described as mixed with the southeast and southwest quadrants adjacent to the interchange having excellent visibility and the northeast and northwest quadrants having poorer visibility due to vegetation. Exposed subsurface soil was examined where visible, primarily in the numerous rodent burrows.

Additionally, in November 2008, ICF Jones & Stokes archaeologist, Traci O'Brien conducted a reconnaissance of the project area to review and confirm the findings and results of the BRA survey and to investigate the Caltrans right-of-way (ROW) not specifically included in the BRA study. The project area was surveyed using a zig-zag pattern. Visibility during the 2008 field visit was very good over most of the area being reviewed, very little vegetation or ground cover to obscure ground surface. Any exposed subsurface soil was examined as well, either in road cut, rodent burrows, or areas of soil tilling. However, most of the ground surface in the project area has been considerably altered by mechanical equipment used for construction and agricultural activities.

As a result of the field efforts described above, no archaeological resources were identified within or immediately adjacent to the proposed project area.

## Study Finding and Conclusions

As a result of the archaeological investigations conducted for the project area, no archaeological resources were identified within or immediately adjacent to the project area. It is Caltrans policy to avoid cultural resources whenever possible. If cultural resources cannot be avoided, then additional work may be necessary. If buried cultural materials are encountered during construction, it is Caltrans policy that work in that area must halt until a qualified archaeologist can evaluate the nature and significance of the find (*Environmental Handbook, Vol. 2, Chapter 1*).

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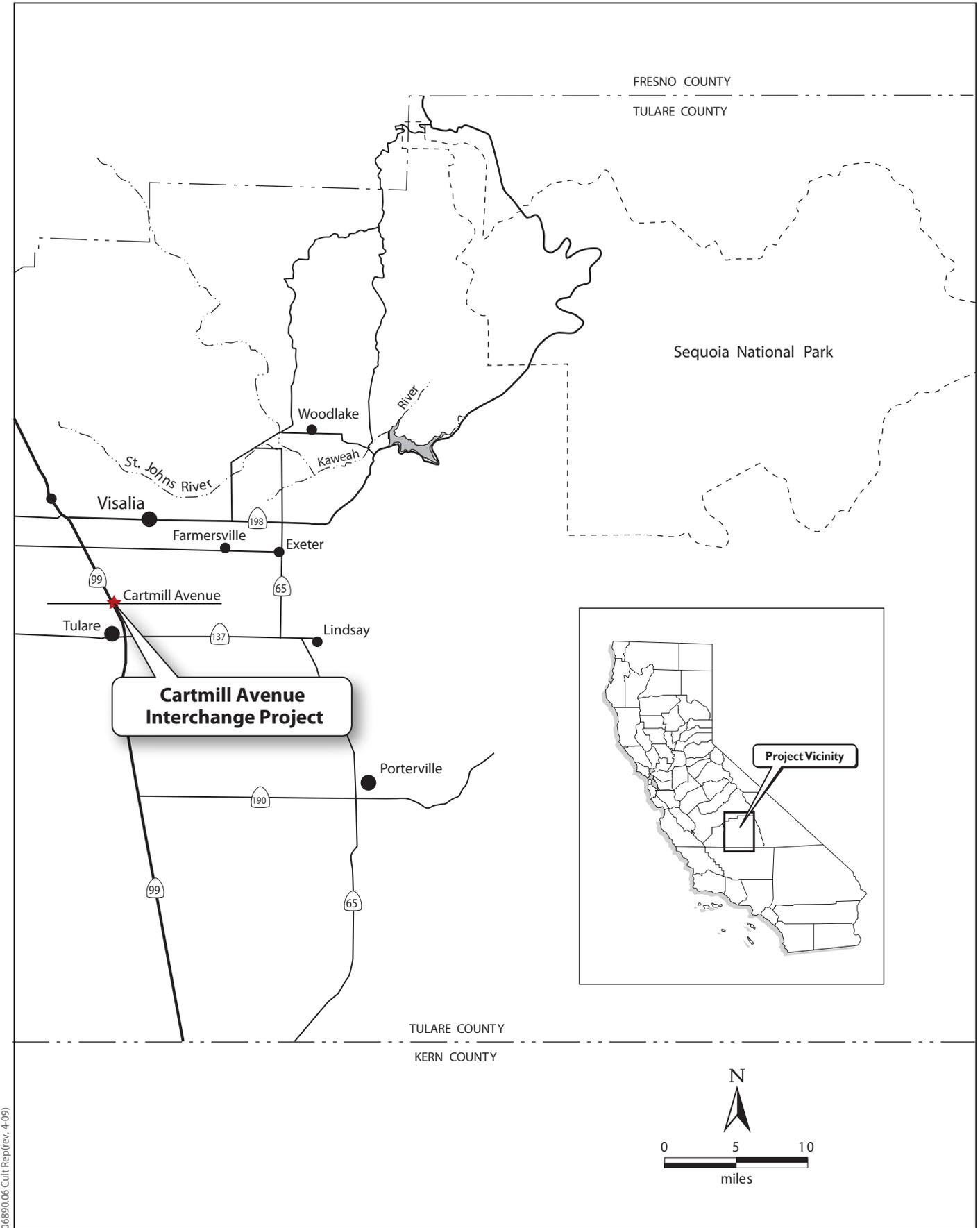
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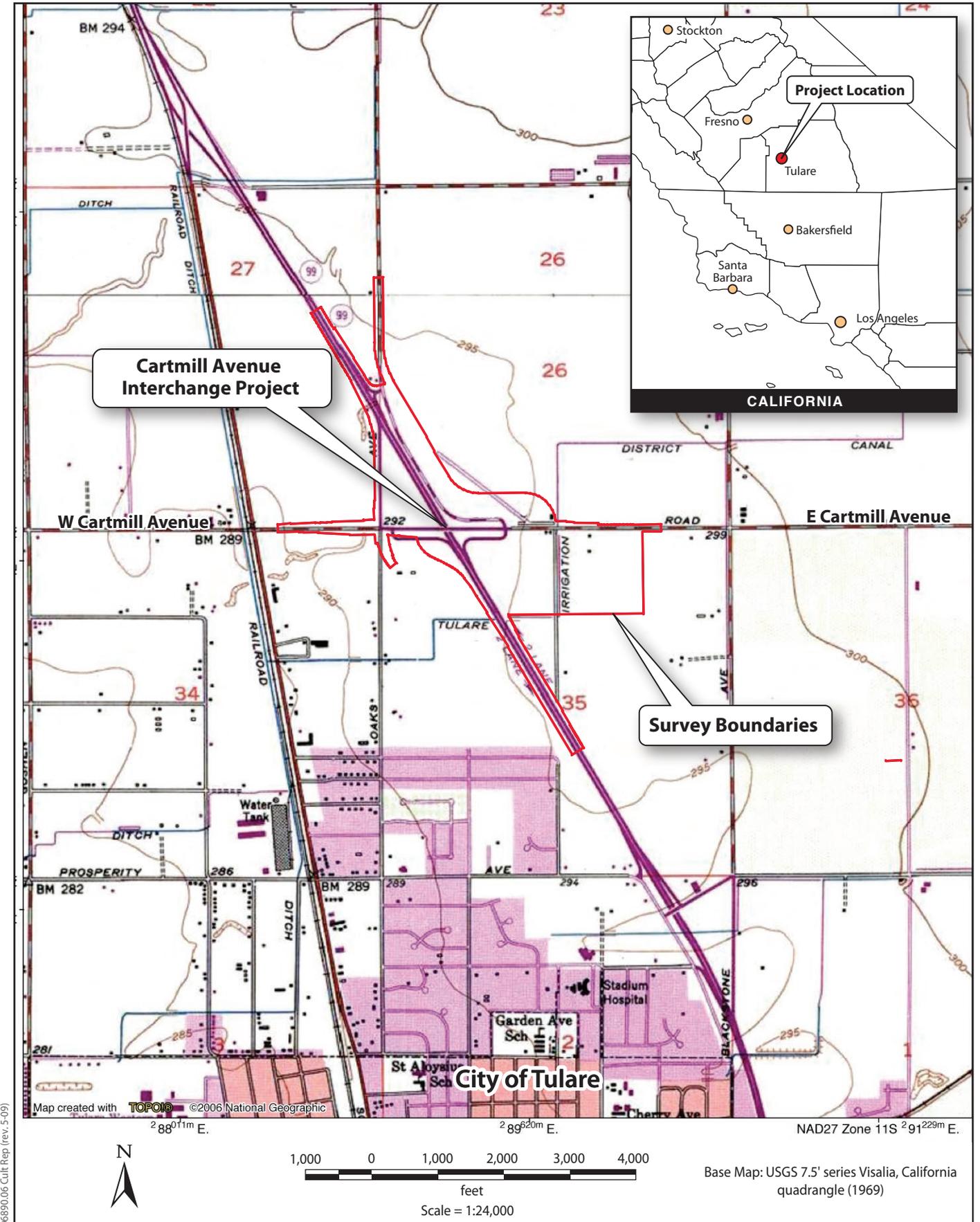
Appendix A  
**Figures**





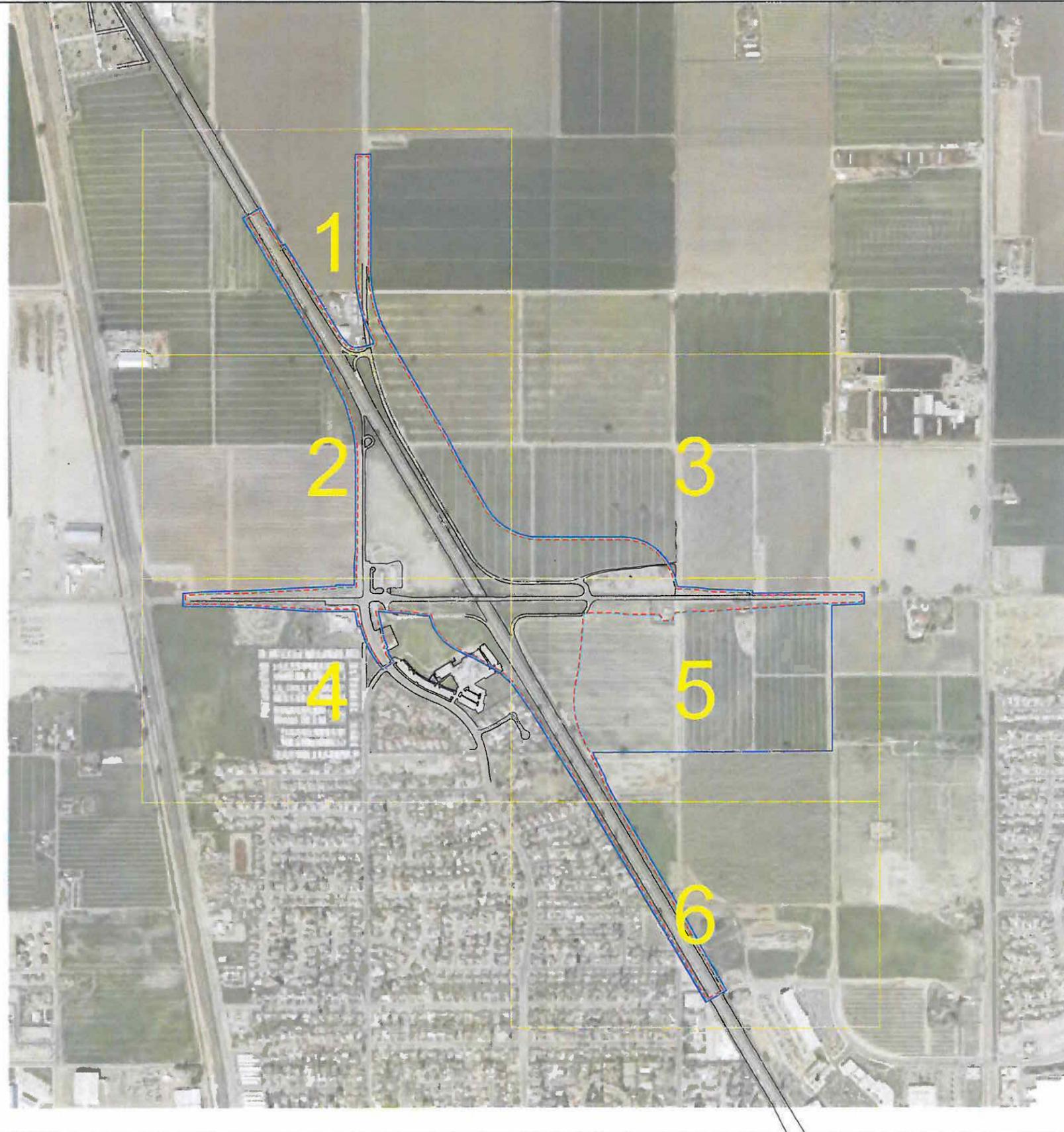
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**Figure 1**  
**Cartmill Avenue Interchange Project**  
 Post Mile 31.3/32.6  
 EA 06-33220



06890.06 Cult Rep (rev. 5-09)

**Figure 2**  
**Cartmill Avenue Interchange Project**  
**Post Mile 31.3/32.6**  
**EA 06-33220**



Project Area Limits Map  
 Cartmill Avenue/State Route 99 Interchange Project  
 Post Mile 31.3/32.6  
 EA 06-33220  
 Caltrans District 6  
 Tulare County, California  
 06-TUL-99

*Phillip Vallejo* 6/1/09  
 Phillip Vallejo, Caltrans PQS Principal Architectural Historian (date)

*Bob Hull* 6/1/09  
 Bob Hull, Project Manager (date)

**Legend**

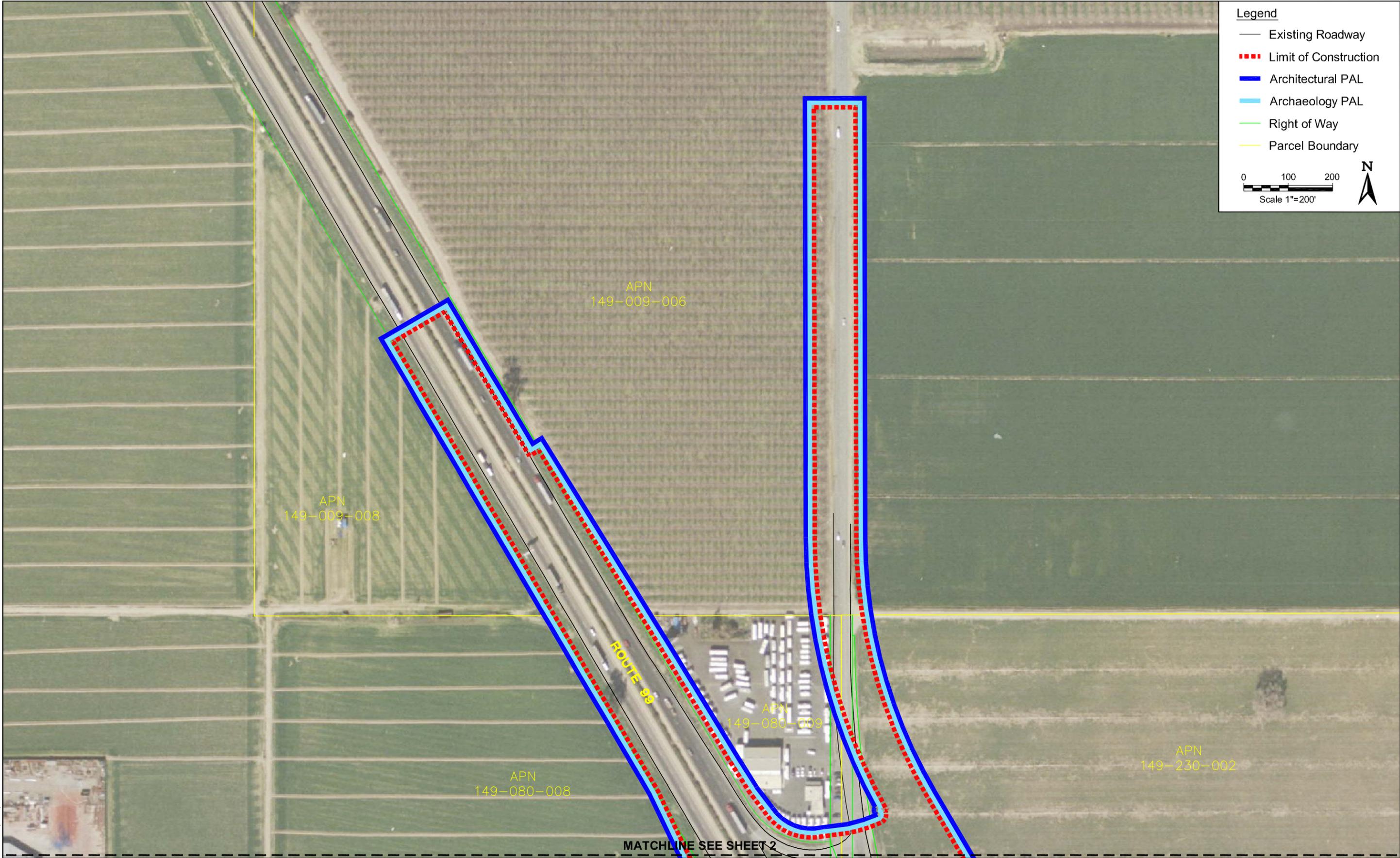
- Existing Roadway
- - - Limit of Construction
- Architectural PAL
- - - Archaeology PAL

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 Scale 1"=1000'

N

06690.06 (05/09)

**Figure 3**  
**Project Area Limits Map Key**



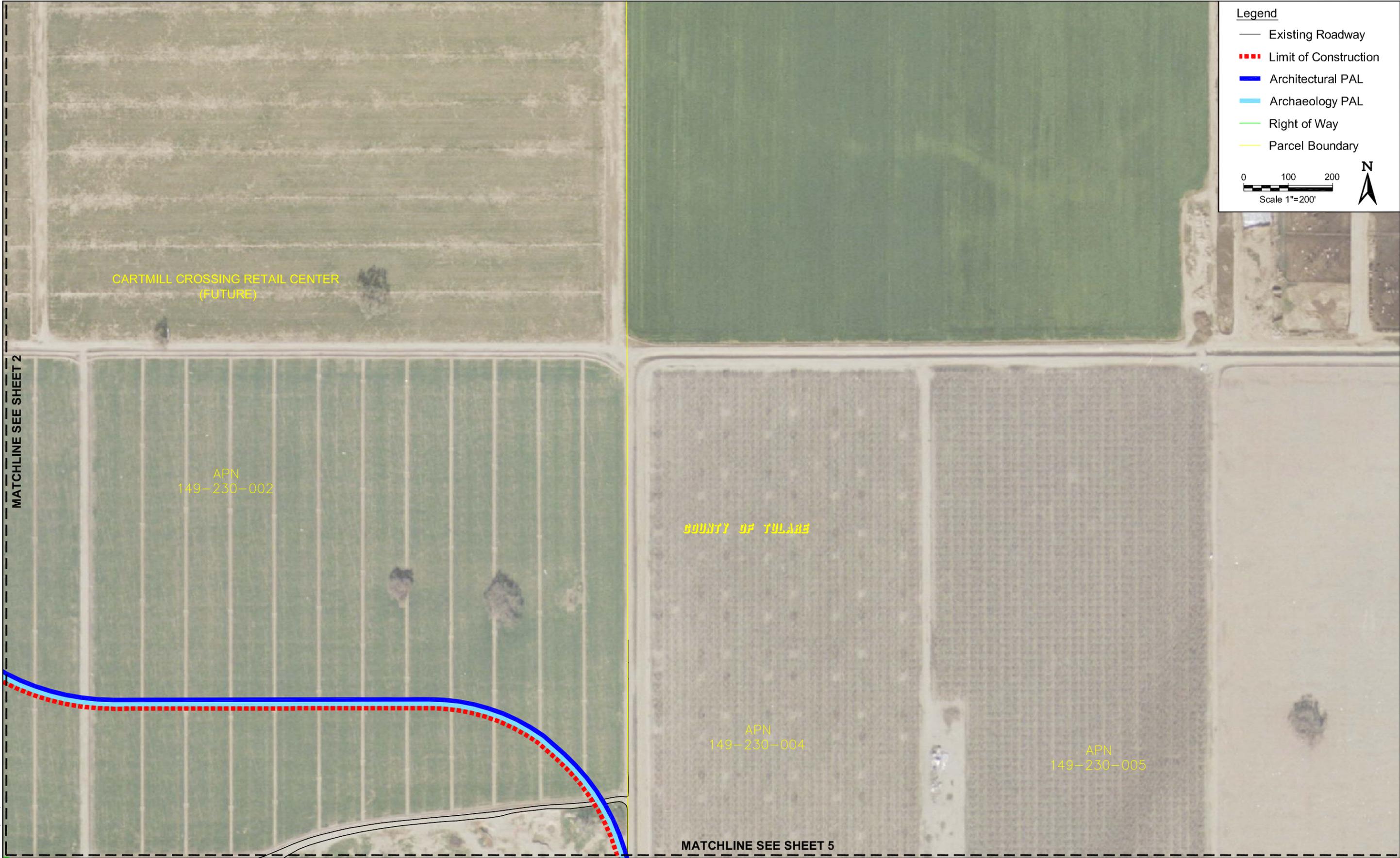
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**Figure 3**  
**Project Area Limits Map**  
**Sheet 1 of 6**



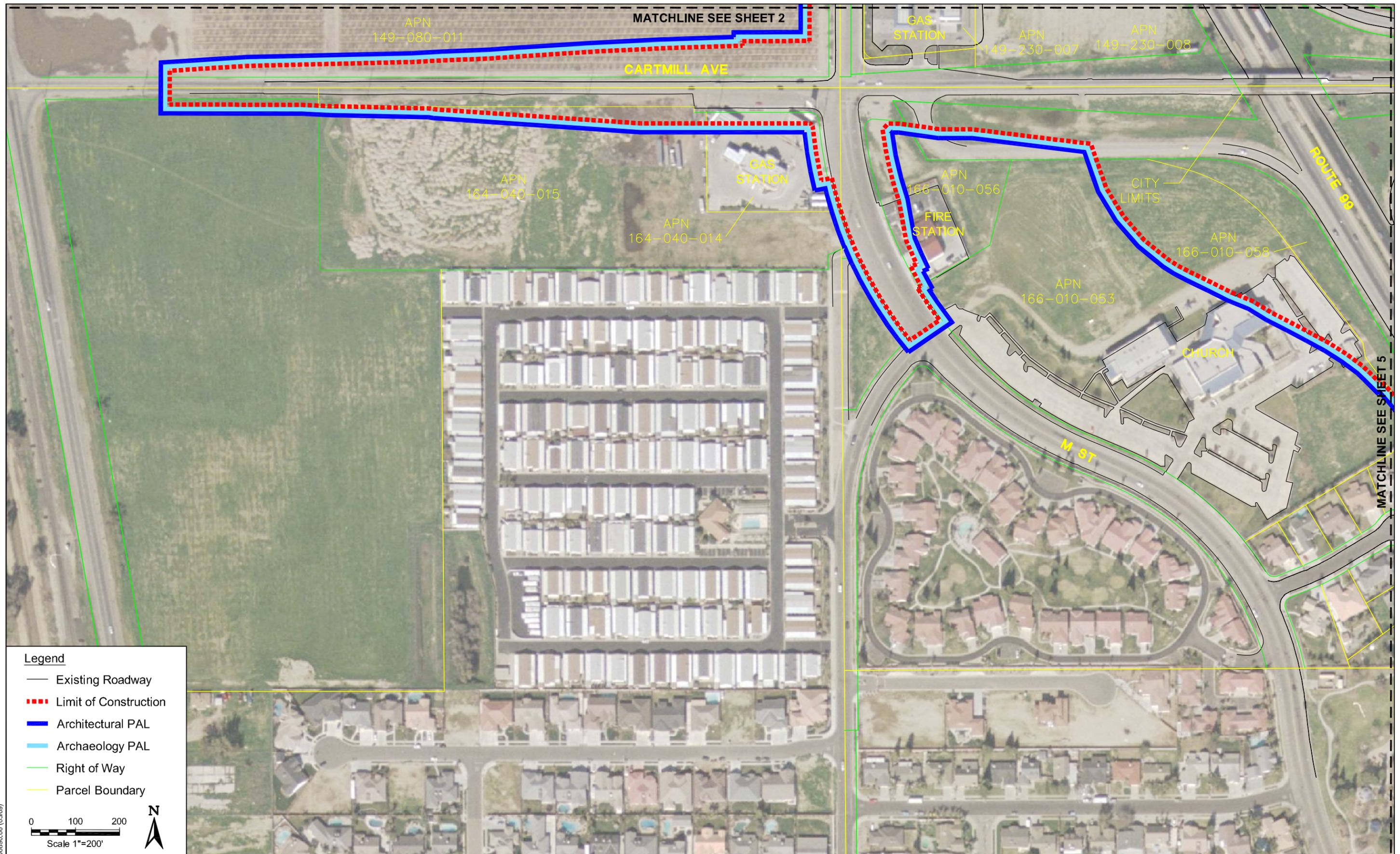
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**Figure 3**  
**Project Area Limits Map**  
 Sheet 2 of 6



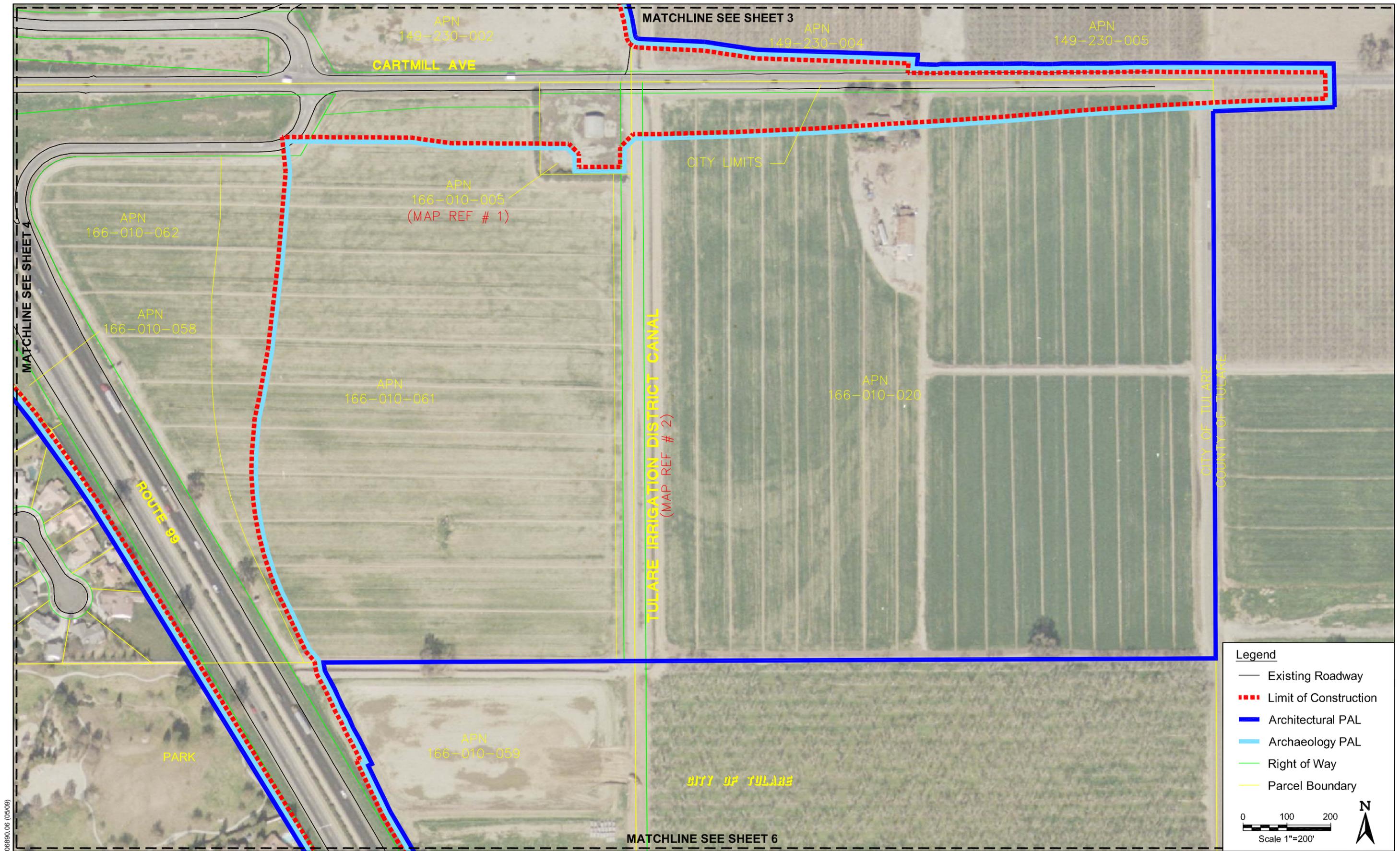
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**Figure 3**  
**Project Area Limits Map**  
**Sheet 3 of 6**



**Figure 3**  
**Project Area Limits Map**  
**Sheet 4 of 6**

06890.06 (05/09)



06890.06 (05/09)

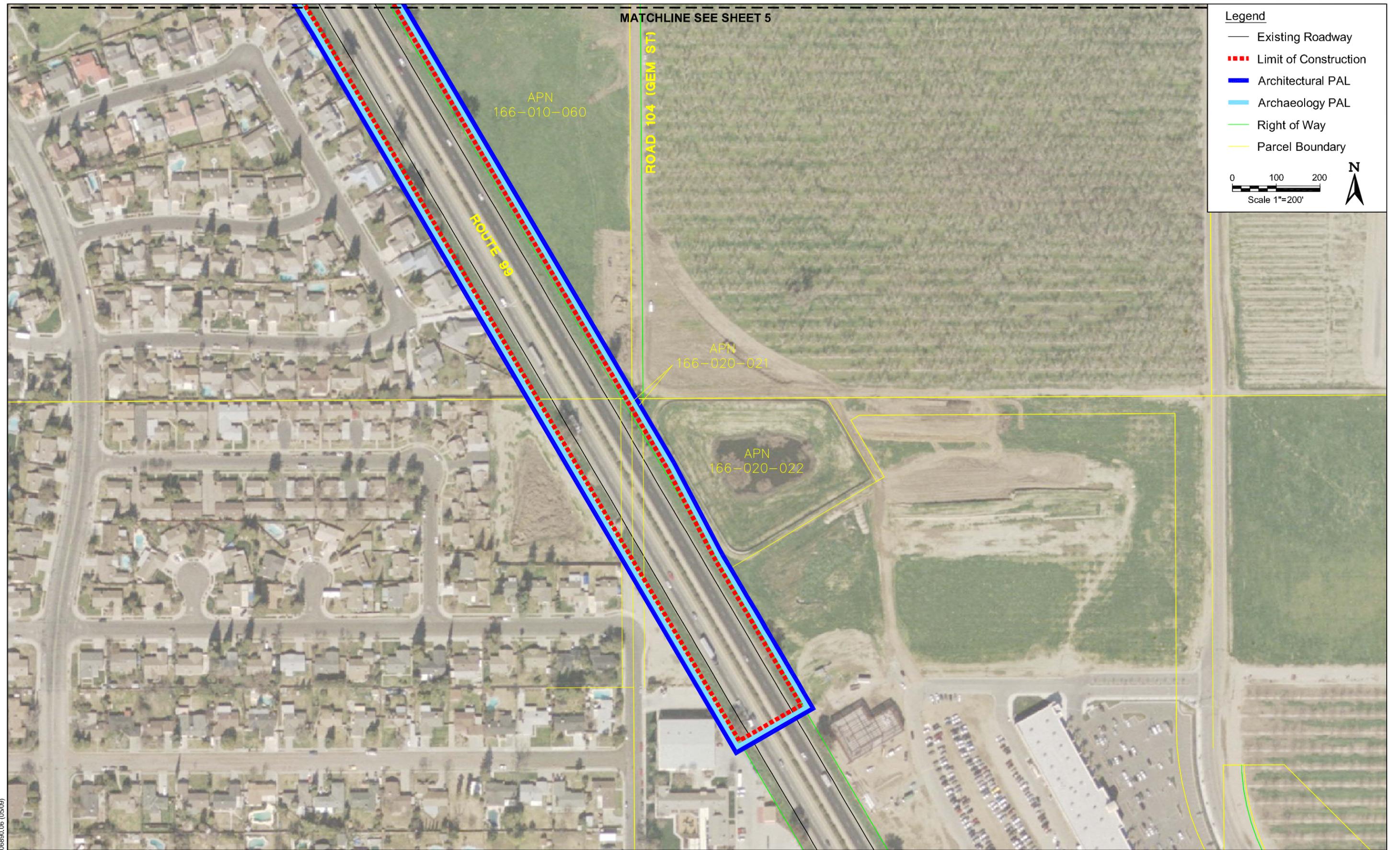
**Legend**

- Existing Roadway
- Limit of Construction
- Architectural PAL
- Archaeology PAL
- Right of Way
- Parcel Boundary

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Scale 1"=200'

N

**Figure 3**  
**Project Area Limits Map**  
**Sheet 5 of 6**



06890.06 (05/09)

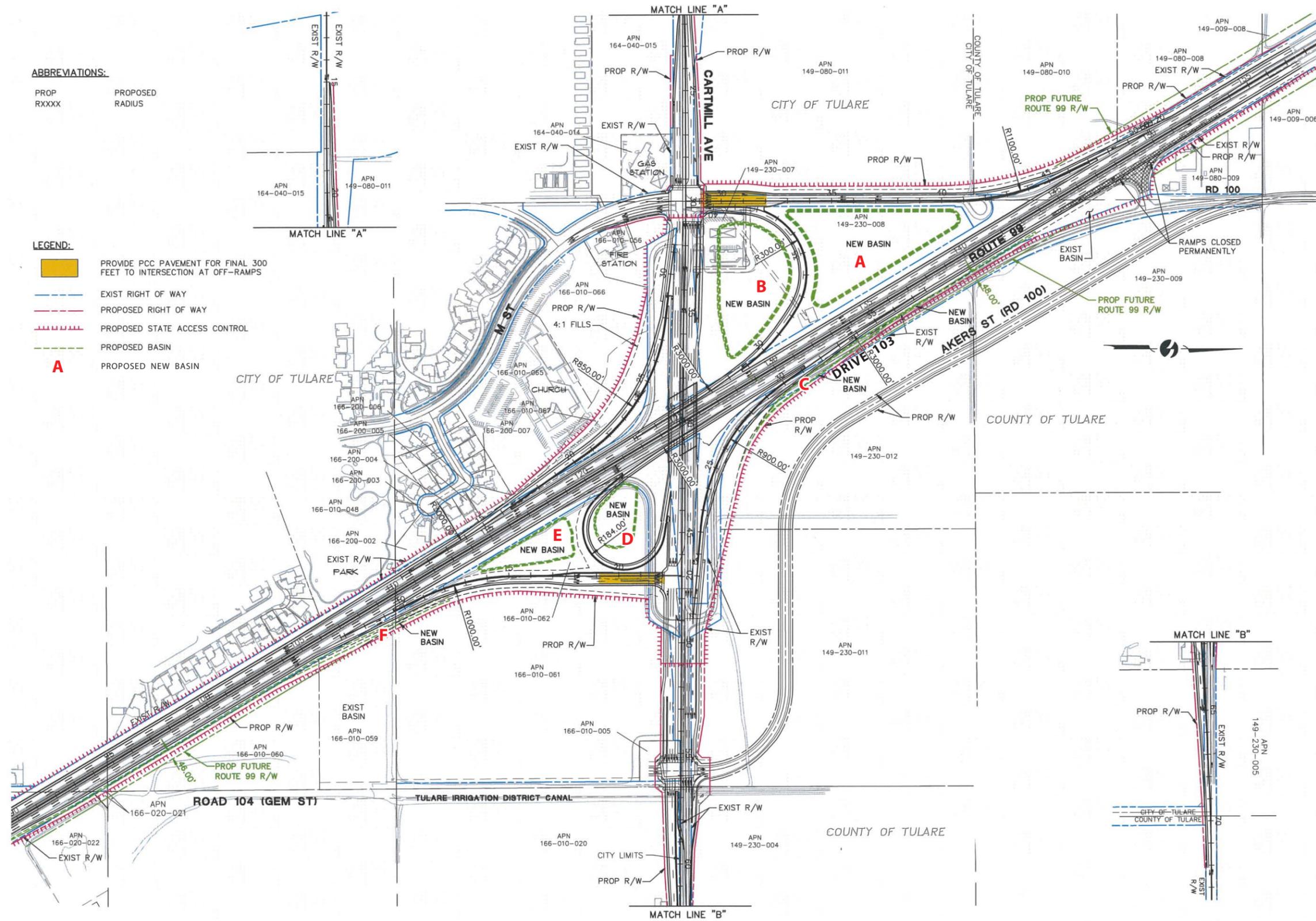
**Figure 3**  
**Project Area Limits Map**  
**Sheet 6 of 6**

**ABBREVIATIONS:**

PROP RXXXX PROPOSED RADIUS

**LEGEND:**

-  PROVIDE PCC PAVEMENT FOR FINAL 300 FEET TO INTERSECTION AT OFF-RAMPS
-  EXIST RIGHT OF WAY
-  PROPOSED RIGHT OF WAY
-  PROPOSED STATE ACCESS CONTROL
-  PROPOSED BASIN
-  PROPOSED NEW BASIN



Graphics...06890.06 HRCR (12-2011) JD

Source: Omni-Means, 12-2-2011.

**Figure 4a**  
**Alternative 1**

**ABBREVIATIONS:**

PROP PROPOSED  
 RXXXX RADIUS  
 RW RETAINING WALL

**LEGEND:**

 PROVIDE PCC PAVEMENT FOR FINAL 300 FEET TO INTERSECTION AT OFF-RAMPS

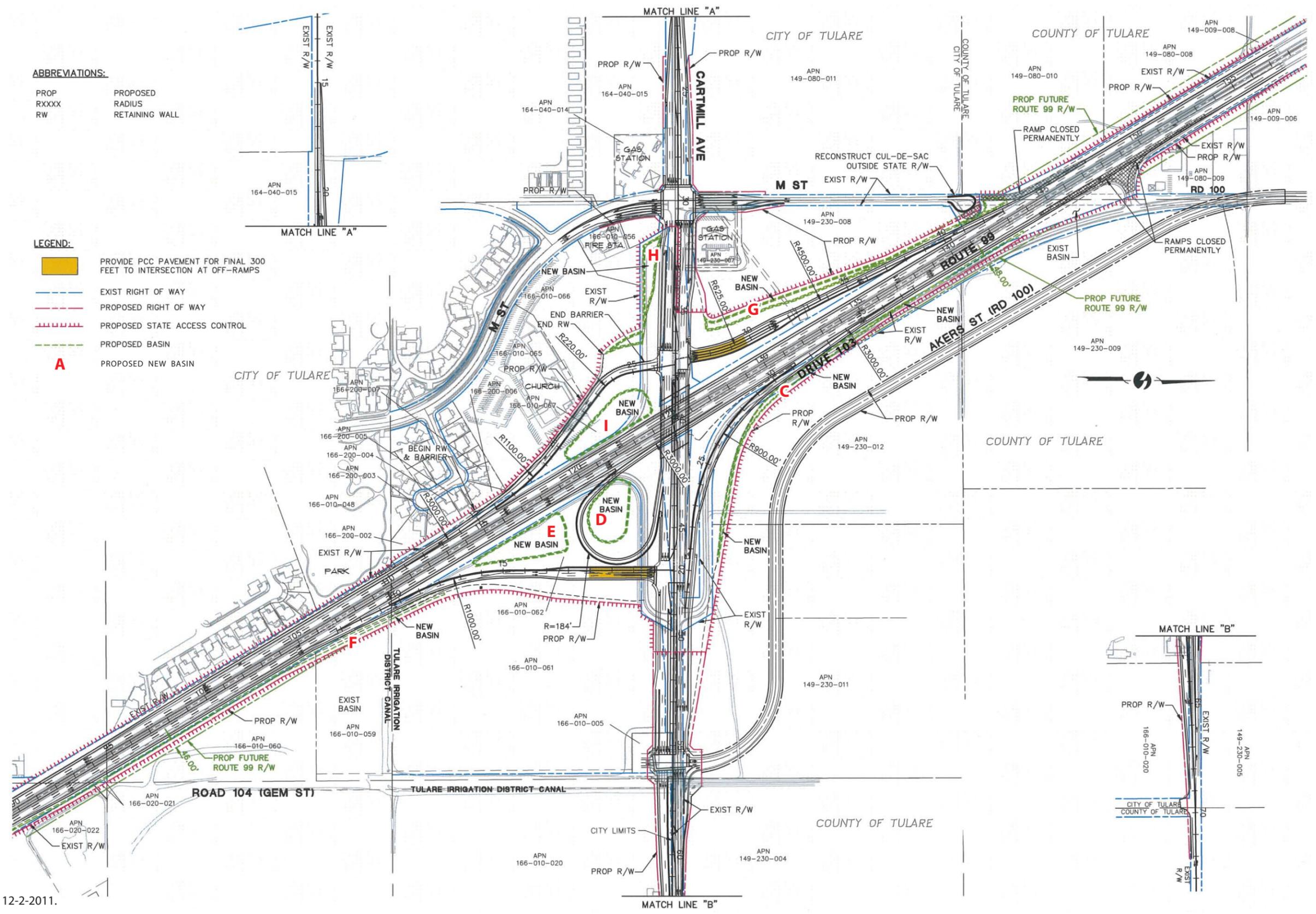
 EXIST RIGHT OF WAY

 PROPOSED RIGHT OF WAY

 PROPOSED STATE ACCESS CONTROL

 PROPOSED BASIN

 PROPOSED NEW BASIN



Graphics...06890.06 HRCR (12-2011) JD

Source: Omni-Means, 12-2-2011.

**Figure 4b  
 Alternative 2**



Appendix B

# **Cultural Resources Assessment Report**





November 10, 2006  
Revised December 21, 2007

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**BASIN**  
RESEARCH  
ASSOCIATES

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1933 DAVIS STREET  
SUITE 210  
SAN LEANDRO, CA 94577  
VOICE (510) 430-8441  
FAX (510) 430-8443

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Mr. Bert Verrips, AICP  
**Environmental Consulting Services**  
5248 Desmond Street  
Oakland, CA 94618

RE: Cultural Resources Assessment Report/Paleontological Review  
*Cartmill Crossing North*, Northeast Corner of Highway 99 and Cartmill Avenue and  
*Highway 99/Cartmill Avenue Interchange*, City of Tulare, Tulare County

Dear Mr. Verrips,

Please let this letter serve as our cultural resources assessment report and paleontological review for the *Cartmill Crossing North* and *SR 99/Cartmill Avenue Interchange* projects located in the City of Tulare, Tulare County. These reviews were requested in order to fulfill the various mandates of the California Environmental Quality Act (CEQA) and cultural resources and planning directives of the City of Tulare. This letter assessment provides the results of a regional clearinghouse records search, a literature review, a field survey of the property, a review of the paleontological sensitivity and presents project management recommendations.

The Environmental Impact Report (EIR) for the project will address: a proposed General Plan Amendment to redesignate the northern portion of the site from Agriculture to Regional Commercial and Residential; rezoning of the northern portion of the project site in advance of proposed annexation; conditional use permit for the project; tentative subdivision maps; and, annexation of the northern portion of the site into the City of Tulare (Environmental Consulting Services (hereafter ECS) 2005-2006).

### **EXISTING SITE CONDITIONS**

The 132-acre *Cartmill Crossing North* project site is located at the northeast quadrant of East Cartmill Avenue and State Route 99 (SR 99). The site is level and vacant (no buildings or structures) with a few scattered valley oaks and cottonwood trees present. The site has been used for the cultivation of row crops such as wheat, corn, and alfalfa. An irrigation canal of the Tulare Irrigation District runs along the eastern site boundary.

The *Highway 99/Cartmill Avenue Interchange* includes agricultural lands and existing State Route 99 and roads including Cartmill Avenue, Oaks Avenue (Road 100), and M Street. The southern end of the Interchange crosses an irrigation canal of the Tulare Irrigation District.

## **PROJECT LOCATION AND LAND USE**

The *Cartmill Crossing North* project site is located in the northeast quadrant of SR 99 (Highway 99) and Cartmill Avenue at the north edge of the City of Tulare in western Tulare County, California. The project site is bounded by SR 99 and N. Oaks Avenue<sup>1</sup> on the southwest/west, Cartmill Avenue on the south, and future Gem Street on the east (USGS Topographic map, 7.5' series; Tulare, Calif., 1969 T 19 South, R W 24 East, most of SW 1/4 of Section 26) [Figs. 1-3].

The *Cartmill Crossing North* project site is a 132-acre site to be developed as a shopping center with approximately 1.4 million square feet of regional retail and commercial service uses. The complex will include a range of retail outlets and services (e.g., discount warehouse, medium and small size general merchandise retail, grocery sales, hotels, and entertainment center, and restaurants).

The *Highway 99/Cartmill Avenue Interchange* project area is located on both sides of SR 99 centered on the Cartmill Interchange and adjacent to the west and south sides of the proposed *Cartmill Crossing North* project site. The Area of Potential Effects (APE) includes the Cartmill Avenue Interchange north and south along SR 99 and west to a point just past M Street and east to a point just short of the Tulare Irrigation Ditch where it crosses Cartmill Avenue. On the west side of SR 99 the APE extends north along M Street to SR 99 and then extends slightly north of the highway at its intersection with Oaks Avenue. On the south it extends roughly to a City park between E. Cartmill Avenue and E. Wilson Avenue. On the east side of SR 99 the APE extends north up to and follows Oaks Street north for a short distance. On the south, it terminates just south of an unimproved road west of E. Wilson Avenue opposite the park (USGS Topographic map, 7.5' series; Tulare, Calif., 1969 T 19 South, R W 24 East, parts of Section 26-27, 34-35) [Figs. 1-3].

The interchange project includes the construction or modification of access ramps within all four quadrants of the SR 99/Cartmill Avenue Interchange. Most of the APE consists of existing Caltrans right-of-way with adjacent undeveloped areas to be acquired for right-of-way as needed.

## **RESEARCH SOURCES CONSULTED**

A prehistoric and historic site records search was conducted by the California Historical Resources Information System, Southern San Joaquin Valley Information Center, California State University (CSU) Bakersfield (CHRIS/SSJVIC File RS# 05-244 dated June 23, 2005). In addition, a review of pertinent literature and archival records on file at Basin Research Associates were consulted.

Specialized listings consulted include the *Historic Properties Directory for Tulare County* (CAL/OHP 2005) with the most recent updates of the *National Register of Historic Places*,

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1. Oaks Avenue on the 1969 USGS Tulare topographic quadrangle [Fig. 2].

*California Historical Landmarks, California Register of Historical Resources California Points of Historical Interest, and California Register* as well as other evaluations of properties reviewed by the State of California Office of Historic Preservation. Other sources consulted include: the *California History Plan* (CAL/OHP 1973); *California Inventory of Historic Resources* (CAL/OHP 1976); *Five Views: an Ethnic Sites Survey for California* (CAL/OHP 1988) and available local and regional surveys/inventories, historic maps, etc. (see REFERENCES CITED AND CONSULTED).

## INDIVIDUALS/GROUPS CONTACTED

A search of the *Sacred Lands Inventory* file was requested of the Native American Heritage Commission. The NAHC response regarding the *Cartmill Crossing North* project site was negative for "Native American cultural resources in the immediate project area" and noted an absence of specific site information in their files (Busby 2005a; Wood 2005b). The NAHC response regarding both the *Cartmill Crossing North Highway 99/Cartmill Avenue Interchange* projects was the same (Busby 2006b; Wood 2006b). The five individuals/groups "who may have knowledge of cultural resources in the project area" on the list provided by the NAHC were not contacted for this report.<sup>2</sup>

## BACKGROUND REVIEW

### NATIVE AMERICAN

#### Prehistoric

The general study area appears to have been located in a generally favorable prehistoric environment with many sources of permanent and seasonal water available within a ten-mile radius.<sup>3</sup> The abundance of water resulted in freshwater marshes,<sup>4</sup> riparian environments and inland resources near the project. Native American occupation and use of the general area appears to extend over 5000-7000 years and possibly longer. The early-type flaked projectile points found on the ancient shoreline of Tulare Lake have been interpreted as indicating prehistoric occupation earlier than 11,000 B.P. [before present]. Archaeological information suggests an increase in the prehistoric population over time due to more efficient resource

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2. In October 2006, the Planning Director, City of Tulare provided the listed tribes with information on the proposed project. No responses were received from the five tribes. Under Senate Bill (SB) 18, a local government must notify the tribes listed on the NAHC contact list, request, and conclude consultation regarding cultural places, prior to the adoption or amendment of a general plan or specific plan (CAL/GOPR 2005).
  3. The lower Kaweah River area, north of Tulare Lake Basin [in Kings County], had seasonal and permanent water with Cameron Creek to the west and north (approximately 1.25 miles west/1.75 miles north of the project), Packwood Creek between present-day Tulare and Visalia, as well as Deep Creek, Bates Slough (Outside the Deep Creeks?; Note: Latta (1977 shows Packwood and Outside creeks north of the Tule River); Kroeber (1925:Plate 47) shows Packwood and Cameron creeks north of Tulare and Deep Creek, Outside Creek and Tule River south of the project); Elk Bayou, and the Tule River south of the project (approximately 10.2 miles) (e.g., Kroeber 1925:Plate 47; USGS 1969 Tulare).
  4. For example, the Government Land Office (GLO) 1853 survey plat shows various flows including "Packwood Creek" through Sections 12, 14-17 into a "Swamp" in Section 18-19; a "Dry Slough" in Sections 13, 22-23, 27-28, 33; and portions of a swamp in part of Section 6 within the NW corner and Sections 35-36 in the SE corner of Township T19S R24E (US/BLM v.d.).

procurement, storage and increasing political complexity (Moratto 1984:81-82, v.p.; Wallace 1978b:449).

A number of Indian Mounds have received attention in Tulare County including a group of mounds 15 miles west of Tulare within the seasonal flood waters of Tulare Lake on the "old Jacobs Ranch"; the large "Paige Mound", on an old channel of Cameron Creek about two miles east of the settlement of Paige three miles southwest of Tulare; "Atwell's Island" and "Skull Island" located several miles from the eastern shore of Tulare Lake;<sup>5</sup> "Broder's Mound" on Cameron Creek; "Sweet Mound" on west bank of Elk Bayou on the east short of Tulare Lake<sup>6</sup> (Hoover et al. 1966:560; Mitchell 1983:122).

Wallace (1978a-b) and Moratto (1984) should be consulted for an overview and perspective on regional prehistory. Hoover et al. (1966:560) also reviews a number of major mound sites in the general study area.

### *Ethnography*

The project is located within Southern Valley Yokuts territory. The Southern Valley Yokuts occupied the areas surrounding Tulare, Buena Vista and Kern lakes and their connecting sloughs, and the lower portions of the Kings, Kaweah, Tule and Kern rivers. The groups spoke a Southern Valley-type dialect of the Yokuts language of the Penutian family of languages. The identity of the Yokuts tribes was residential, linguistic, and cultural. They were hunters and gatherers who depended on almost year-round fishing, hunting waterfowl and collecting shellfish, roots and seeds. Villages were selected for proximity to water and many were on small open flats at the water's edge. Within a geographic area, villages functioned as the center of each tribe.

The Lower Kaweah River, including the study area, was occupied (from north to south) by the *Telamni* (alternatively *Talumne*), *Wo'lasi*, and *Choynok* (alternatively *Choinok*). Kroeber places the *Wolasi* just north of Tulare between Cameron and Deep Creeks; Cook places the *Wolsai* north of Tulare and *Choinok* south of Tulare; and Latta places the *Telamne* north of Tulare, occupying the Cross, Mill and Packwood creeks (Kroeber 1925:Plate 47; Gayton 1948:Maps 1-2; Cook 1955b:Map 3; Latta 1977:175, #47; Wallace 1978b:448-449).

Two Native American villages appear to have been located in the general study area (see also Prehistoric above).

- The *Telamni* village known as *Waitatshulul* or *Waitachuiyui* with an estimated population of 550, appears to have been located on the north bank of Packwood Creek north of Tulare (Kroeber 1925:Plate 47; Gayton 1948:8-9, Map 2, #14;<sup>7</sup> Latta 1977:175, #47; Wallace 1978b:448, #19 [*Telamni*]).

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5. Bubal on Atwell's Island, near Alpaugh (Cook 1955b:43)

6. Reportedly one of the most extensive permanent rancherias, occupied through 1860.

7. Gayton places the village of *waita'cuiyui* on the south side of Packwood Creek in a swampy area within *Wolasi* tribal territory.

- The *Choinok* village of *Chi'uta* was located south of Tulare, south of Outside Creek (Kroeber 1925:Plate 47) or midway between Deep Creek and the Tule River (Gayton 1948:8-9, Map 2, #16; Wallace 1978b:448, Fig. 1, #22). Latta places this village, "*Cheutah*" with an estimated population of at least 450, near the present city of Tulare (Latta 1977:191, #52).

Note: Gayton (1948:8-9, Map 2, #15) places a modern rancheria, "*pi'sras* (Pierce's Ranch?)" about midway between the two other villages, on the south side of Deep Creek near a swampy area in *Choinok* territory.

An epidemic devastated the Native American population in 1832-1833 (Cook 1955a). Later, the discovery of gold in 1848 and the ensuing flow of miners and immigrants further decimated the indigenous populations. The 1850 Lieut. G.H. Derby Expedition describes about 17 rancherias in the area northeast of Tulare Lake with a population of about 3,000 (Gifford and Schenck 1926:25-26). Wallace (1978b:449) estimates that the pre-contact *Telamni*, *Wo'lasi*, and *Choynok* population of 3,800 was reduced to 800 by 1850. The Mariposa Indian War, waged from December 1850 through May 1851, also had a major impact on Native Americans in the general study area (Cook 1955b;<sup>8</sup> Hoover et al. 1966:560; Theodoratus Cultural Research, Inc. and Archaeological Consulting and Research Services, Inc. (hereafter TCR/ACRS) 1984:315; Hart 1987:303).

### *Contemporary Native Americans*

Two federally recognized Native American tribes/entities are located in the general study area. The Tule River Indian Tribe of the Tule River Reservation, California (*Yokuts*, *Western Mono*, *Tubatulabal*, *Kitanemuk*, and others) is located southeast of Porterville about 33 miles southeast of Tulare and the project at the end of Reservation Road/Highway J42 since 1873.

The Santa Rosa Indian Community of the Santa Rosa Rancheria (*Tachi Yokuts*), California is located about 23 miles west of the project near Lemoore in Kings County, off State Route 41 between Jersey and Kent avenues, west of 17<sup>th</sup> Avenue (Hoover et al. 1966:562; Eargle 1986:32, Map II, 93, 101-102; Wallace 1978b:448, Fig. 1, 460; CAL/OHP 1990:277, #388; CA-AAA 1995; USOFR 2000).

## HISTORIC PERIOD

### *Hispanic Period*

After the initial era of exploration within the province of Alta California, four institutions were used to settle the land: the missions, the presidios, the pueblos, and the ranchos. For the most part, Spanish occupation in California was mainly along the coast while exploration parties also included the interior (e.g., Cook 1960; Beck and Haase 1974:#20).

Exploration and Hispanic settlement in what was to become Tulare County was minimal due to geographic features including the almost impenetrable *tulares* (tule marsh) of the San Joaquin

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8. *Telamni* and *Wolasi* as 3,200 (Cook 1955b:46-47).

Valley, absence of reliable freshwater, and generally dry, sandy washes which became raging streams after heavy rainfall.

Father Crespi who accompanied Pedro Fages in 1772 was probably the first EuroAmerican to see the San Joaquin valley during wet season and thereafter other groups generally referred to it as the *Valle de los Tulares* and *Llano del Tular* (plain). The Sierra Nevada was first seen by Father Juan Crespi, but the mountains were not named at this time. In 1776, Pedro Font mapped and used the name "*sierra nevada*," a name which appears to have been in use (as suggested by a reference by Padre Garces on April 25, 1776). Crespi also viewed the San Joaquin River in March 1772 while attempting to reach Point Reyes (Gudde 1998:337, 361-362, 402). In 1804, Juan Martin entered the Kaweah River delta and called the people *Telame* (Cook 1955b:42, 45). In 1806, Gabriel Moraga, who named the San Joaquin, went through present-day Tulare County in search of mission sites, noting a number of rancherias and crossing seven miles east of Visalia at Venice Hills.<sup>9</sup> Moraga also went to Buena Vista Lake in 1807. In 1808, Jose Palomares passed through the southern tip of the San Joaquin Valley. In 1814, another party, possibly under Juan Ortega accompanied by Father Juan Cabot went into the *tulares*, also in search of mission sites. The following year, in 1815 Juan Ortega and Father Cabot, in their search for runaway Indians, proceeded from Mission San Miguel up Kings River crossing over to Kaweah River on to Venice Hills. Expeditions in the general study area were along major rivers; expeditions to the Kaweah River/study area vicinity include: the 1815 Jose Dolores Pico expedition, 1816 Father Luis Antonio Martinez, 1816 Padre Presidente Mariano Payeras, and the 1819 Lieutenant Jose Maria Estudillo expedition to the Tule River. After 1822, expeditions in the study area were made to recover stolen animals and punish Native Americans. These included Jose Dolores Pico's 1826 expedition along the San Joaquin and Kings rivers and Sebastian Rodriques' 1828 expedition along the San Joaquin River (Gifford and Schenck 1926:20-24; Cook 1955b:45; Cook 1960:247-257, 268-273; Hoover et al. 1966:560-561; Beck and Haase 1974:#20-22; TCR/ACRS 1984:314; Gudde 1998:337).

The later Mexican policy (1822-1848) stressed individual ownership of the land. None of the ranchos granted under this policy were within present-day Tulare County (e.g., Beck and Haase 1974; Hart 1987; Tulare County 2004:9-40).

Mountain Men also passed through present-day Tulare County along the "Tulare Trail"<sup>10</sup> reportedly a Native American trail along the eastern side of the San Joaquin Valley. They included Jedediah Strong Smith in 1826 and 1827; Ewing Young in 1832; Joseph R. Walker in 1834; and, John C. Fremont in 1844. The first party of immigrants led by John Bartleson-John Bidwell in 1841 also traveled through present-day Tulare County (Gifford and Schenck 1926:25-

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9. Known as the Kaweah Hills to local Native Americans and early pioneers.

10. This road crossed the Kaweah River delta at "Four Creeks," the part of the delta south of Venice Hills. The Butterfield Stage Route is State of California Landmark #471. The same trail was also called the "Fremont Trail," Emigrant Trail, the Stockton-Los Angeles [Stage] Road, the Butterfield Stage Route [Overland Mail] (1858-1901). Highway 65 includes part of the trail (Hoover et al. 1966:562; Mitchell 1983:120, 131; CAL/OHP 1990:277).

26;<sup>11</sup> Hoover et al. 1966:560-561; Beck and Haase 1974:#43-44; Mitchell 1983:130-131; TCR/ACRS 1984:315).

### *American Period*

In the mid-19<sup>th</sup> century, most of the rancho and pueblo lands in California were subdivided as the result of population growth and the American takeover. The initial explosion in population was associated with the Gold Rush beginning in 1848, followed later by the construction of the transcontinental railroad beginning in 1869. The United States Government encouraged the settlement of the west by permitting individuals and corporations to patent public domain lands under the Homestead Act of 1862 (Hart 1987; Bean 1978:187).

Mining was responsible for the early disruptive intrusion of EuroAmericans into the study area and resulted in eventual retaliation by Native American groups and, later, a military presence. Tulare County was created in 1852 from the southern part of Mariposa County and its boundaries were modified in 1856, 1866, 1872, 1874, 1876, 1893, and 1923. It was named for the *Tule* or *Tular* marshlands (cattail or bulrush and similar plants), common on the west side of the lower San Joaquin Valley prior to the reclamation projects of the late 19th and early 20th centuries.

The first county seat was Wood's Cabin, later known as Woodville, a landing at "Four Creeks County." The county seat moved in 1853 to Visalia (Hoover et al. 1966:558; Coy 1973:282-287; Mitchell 1983:11; Hart 1987:529; Gudde 1998:402). John Wood, the namesake of Woodville, reportedly led a party from the Mariposa mines to settle on the southern bank of the Kaweah River<sup>12</sup> in December 1849 or early 1850. They erected their substantial log cabin seven miles east of present-day Visalia. They were warned to leave within a 10-day period by Native Americans in retaliation for mistreatment by the Wood party. They did not and all but three of the party were murdered. The "Wood Massacre" on the Kaweah River was followed by the Lieut. G.H. Derby Expedition into the San Joaquin Valley in April 1850 (Gifford and Schenck 1926:25-26; Hoover et al. 1966:560-561; TCR/ACRS 1984:315).

The Mariposa Indian War started with an attack on Savage's Trading Post at Fresno Crossing (now inundated by Hidden River Dam) in December 1850. The war was concluded on May 22, 1851 (Hoover et al. 1966:172; Hart 1987:303). In 1852, a log fort for protection against the numerous Native Americans in the general study area was constructed. Fort Visalia was built on the north bank of Mill creek, a few miles southeast of the Wood Cabin in the area bounded by Oak, Center, Garden and Bridge streets in present-day Visalia. The name Visalia appears to have been an amalgam of the names of Nathaniel Vise and his wife, Salia. Reportedly Vise and [?first name] O'Neil located and surveyed "Visalia" in 1852. After its selection as the Tulare County seat, Visalia was renamed Buena Vista, but returned to the name Visalia shortly afterward in 1854.

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11. They note ca. 1830, "Peg-Leg Smith," ". . . this American renegade and horse thief is reported to have made the San Joaquin valley his headquarters."
  12. The first creek/stream located north of Packwood Creek. Viewed and named San Gabriel in 1806 by the Spanish, named after *Kawia* or *Ga'wia* Yokuts and also known as *Pipiyuna* or Four Creeks (Gudde 1998:190).

*Goddard's* 1857 of Map of the State of California shows two roads branching in the southern part of Fresno County proceeding into the general study area. The road on the west terminated at Visaija [*sic*] while the road on the east proceeded to Four Creeks and Woodville just east of the Kaweah River delta. Various creeks/streams are shown flowing into northeastern Tule Lake - the "Kaweah or Pipiyuna R.", "Visaija C." south of Visaija, "Deer", "Tule River", and "Dry" and unnamed creeks.

Visalia, the next town north of Tulare, was the most important town on the Old Stockton-Los Angeles Stage Road and was a stop on the Butterfield Overland Mail (1861-1901) and the Stockton, Albuquerque & Kansas City Mail routes. Six stations were located in Tulare County, each about 20 miles apart (Outland 1973:Map; Beck and Haase 1974:#52; Patera 1991:225; Gudde 1998:412-413; Mitchell 1983:3, 11-13; TCR/ACRS 1984:316).

Tulare County has been dependent on agriculture - initially cattle and sheep ranching. The railroad facilitated the transportation of wheat, olive raising and packing around Lindsay (about 15 miles east of Tulare), and citrus fruit growing and packing around Porterville (about 21 miles southeast of Tulare), grapes, sugar beets, walnuts, alfalfa, and other fruits and vegetables as well as livestock raising including poultry and dairying (Hart 1987:529). Visalia's and Tulare's importance in this predominantly agricultural region is underscored by the presence of various contemporary rail connections in the study area.

The railroads include the Southern Pacific Transportation Company (SPT), the present-day Union Pacific Company line parallel to State Route 99 about 0.4 miles west of the project, and the north-south Atchison, Topeka & Santa Fe Railway (AT&SF) Company (AT&SF) about 1.9 miles southeast of the project. The SP tracks were crossed the Atchison, Topeka & Santa Fe Railway (AT&SF) Company (AT&SF) in the City of Tulare about 2.0 miles south/southwest of the project. The former San Francisco & San Joaquin Valley Railway Company (SF&SV) and Visalia & Tulare Railroad Company (VTRR) ran along the former AT&SF alignment. The SF&SV was incorporated in February 1895 and operated briefly from July 1900 through April 1901 while the VTRR, an 11.5-mile line between Visalia and Tulare which ran from October 1888 to July, 1900 when it was abandoned. The Tulare Valley Railroad (TVRR) has operated along the former AT&SF route in operation since 1995. The San Joaquin Valley Railroad Company (SJVR), incorporated in November 1891 was in operation from January 1892 onward between Fresno south to Famoso and had a branch line to Visalia and south through Tulare. The SJVR was acquired in a foreclosure sale in December 1893 and became part of the UP/SP "Fresno Line" (US War Dept. 1942; Hatoff et al. 1995a:2-119 after Carothers 1934:56-57, 2-121; Walker 1997:Map CA-25, CA-28b; Robertson 1998:220, 212-213, 289, 293)).

### *Project Specific and Vicinity*

The *Cartmill Crossing North* project is within the SW 1/4 of Section 26 of Township No. 19 South, Range No. 24 East (T19S R24E). The *Highway 99/Cartmill Avenue Interchange* project is located adjacent to the east and south side of the *Cartmill Crossing North* project. The *Interchange* project is located within the NW and SW 1/4 of Section 25, the NE and SE 1/4 of Section 27, the NE 1/4 of Section 34, and the NW 1/4 of Section 35 of Township No. 19 South, Range No. 24 East (T19S R24E).

The Government Land Office (GLO) survey plats of 1853 and 1853-1854 show no sloughs, creeks, ditches, roads, or structures in or adjacent to the *Cartmill Crossing North* and *Interchange*. At the time, individuals owned property along the roads to Visalia and on the north side of Packwood Creek. The Master Title Plat indicates that *Cartmill Crossing North* was within #1889, a cash entry for 120-acres dated July 10, 1874 and the southern part of #90867 a military patent for 160-acres dated November 15, 1860. The *Interchange* was also within #3, a railroad grant of 6941.16-acres<sup>13</sup> dated December 12, 1874 and #396, a cash entry for 40-acres dated November 1, 1860 (US/BLM v.d.).

William F. Cartmill, namesake of Cartmill Road/Avenue, arrived in the study area in 1861 and purchased land just north of the present-day City of Tulare from Joe Gashwiler to start a cattle ranch/dairy operation. William Cartmill (1822-1906) ". . . is credited with laying the foundation of Tulare County's multi-million dollar dairy industry" while "His son, Wooster B. Cartmill (1857-1938), built and operated the first creamery in Tulare"<sup>14</sup> (Mitchell 1983:126-128; Kielty and Fey ca. 1987:2, 4/TU-1059).<sup>15</sup>

Whitney's 1873 *Topographical Map of Central California* includes the tracks of Central Pacific, San Joaquin Valley Division through Goshen proceeding south and also Visalia to the west. The area further south including Tulare is not shown on this map.

Tulare, a railroad town, was named by the Southern Pacific Railroad for its division headquarters and repair center. It was established within a 160-acre parcel patented by Isaac Wright (1823-1910) who built a one-room structure. This house was moved to 457 South H Street after his parcel was traded to the SPRR for what was to become Tulare. The first train into the present-day City of Tulare arrived on July 25, 1872. The Tulare post office was established December 31, 1872. The first church in Tulare, the First Congregation Church, was organized in November 1874 and the church building dedicated in June 1876. The town was incorporated in April 1888 and dependent on the SP. As a result, the town suffered when the railroad shops and roundhouse were moved to Bakersfield and division headquarters to Fresno in the early 1890s (Mitchell 1983:134-136; Hart 1987:529; Kielty and Fey ca. 1987:2-3; Chavez 1989:9; Patera 1991:217).

Thompson's 1892 *Official Historical Atlas Map of Tulare County* shows Packwood, Cameron, and Deep Creeks as well as various irrigation ditches and canals, and the SPRR track (Section 27 just west of the project. At the time, a finger of a slough crossed the *Interchange* into the southwest corner of the *Cartmill Crossing North* project. No structures or irrigation features (canals, ditches, etc.) were present in or adjacent to the project. D.K. Zumwalt owned the Section 26 and 27 portions of the project. A parcel owned by W.A. James which included the Section 34 of T19 R24E portion of the project was located on the north side of Zumwalt's Subdivision. This subdivision was situated Section 34 mostly of south of the slough, adjacent to the east side of the SPRR. The N 1/2 of the NW 1/4 of Section 35 was owned by Jno. Warner with the adjacent S 1/2 of the NW 1/4 of Section owned by J.S. Urton. (Thompson 1892:42).

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13. The grant included all of Section 27 and most of Section 35 as well as other sections of T19S R24E.

14. The Cartmill House is/was located at 304 W. Tulare Street and was occupied in 1983 by Ms. Mary Cartmill, granddaughter of William.

15. TU-# assigned by the SSJVIC.

Tulare is/was situated directly south of the project in T20S R24E flanking the SPRR tracks (op cit. 88).

The available 1942 US War Department Tulare topographic map shows relatively minor change in the configuration of Tulare. The arrival of the Atchison Topeka and Santa Fe (from Visalia southwesterly to Paige) and the oval County Fairgrounds racetrack are the most notable changes between 1892-1942.

The 1942 topographic map indicates a single structure situated near Cartmill Avenue, west of Oaks Street (not labeled) within *Cartmill Crossing North* project site. This structure appears to have been removed as a result of the construction of State Route 99. At this time, the City of Tulare was about 1.5 miles south of the *Cartmill Crossing North* project site and "U.S. Route 99" ran along the east side of the Southern Pacific tracks about 0.3-0.4 miles west of the project site.

State Route 99 (Highway 99) paralleling the SPRR about 0.4 miles west of the *Cartmill Crossing North* project site was completed in the 1950s. "Bypass" Highway 99, adjacent to the west side of the project (south of Oaks Road), was built between 1950 and 1969 (USGS 1969; Tulare County 2004:9-41).

The 1969 USGS Tulare topographic map shows the City of Tulare within an agricultural area with various irrigation features. For example, part of the Tulare Irrigation District Canal<sup>16</sup> parallels the southern half of future Gem Street on the east side of the *Cartmill Crossing North* project site and is crossed by the *Interchange*. The District was incorporated in 1889 with construction commencing in 1891 (Wickstrom and Anderson 1997:20/TU-00103).

Between 1949 and 1969, a single structure in the southeast corner of the project and a landing strip to its west appear to have been constructed within the *Cartmill Crossing North* project site. A review of a 1969 USGS aerial photograph shows a faint suggestion of a landing strip with an unpaved east-west road through the middle of the project with a north-south road at about midpoint along the east-west road dividing the southern half along Cartmill Avenue into two subunits. The photograph shows at least three structures and a variety of vehicles and miscellany in the southeast corner of the *Cartmill Crossing North* project site as well as 14(?) isolated trees. A portion of this complex, including a large structure, is also located opposite on the south side of Cartmill Avenue.

A 2004 aerial view shows the *Cartmill Crossing North* project site subdivided into approximately four quadrants. The dirt roads shown on the 1969 aerial view are present along with another north-south road offset to the west of the road subdividing the southern half. This aerial also shows the complex in the southeastern corner of the project site (Note: No structures are now present; see Field Inventory below).

Aerial views show the *Interchange* bounded by mostly agricultural fields. Exceptions include a cluster of structures are situated adjacent to the *Interchange* in the triangular area formed by SR 99 on the west and N. Oaks Street on the east and contemporary buildings on M Street adjacent

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16. The District was incorporated in 1889 with construction commencing in 1891 (Wickstrom and Anderson 1997:20/TU-00103).

to the west side SR 99 south of Cartmill Avenue. The west side of southern end of the *Interchange* appears to terminate at the northeast corner of a golf course.

## PALEONTOLOGY

Paleontological resources (fossils) are the remains or traces of prehistoric animals and plant. Fossils are considered important to scientific and educational research.<sup>17</sup> They are classified as non-renewable resources and must be considered as part of the review mandated by the California Environmental Quality Act (CEQA, Sections 15023, Appendix G, Section XIV, Part a; Public Resources Code Section 15000 et seq.).

The project area is within the Great Valley geomorphic province. Its main feature is the Great Valley or Central Valley, a nearly level alluvial plain between the Sierra Nevada on the east and the Coast Ranges on west. The north end is defined by the Klamath Mountains while the south is defined by the Tehachapi Mountains. The valley is divided into two valley systems: the Sacramento Valley to the north and the San Joaquin Valley to the south. Elevation ranges from several hundred feet to approximately 1,000 feet.

The project area is on the valley-floor within sediments mapped as Quaternary Great Valley recent alluvial fan deposits. These consist of sediments deposited from streams emerging from the highlands surrounding the San Joaquin Valley and are derived from granitic and associated rocks of the Sierra Nevada to the east (Modesto Formation). These Holocene deposits are underlain at depth by older (Pleistocene) alluvium and/or basin deposits in the project vicinity followed by Tertiary strata at a greater depth reflecting marine, estuarine and terrestrial conditions. The base rock consists of Mesozoic sedimentary rocks.

Fossil remains are common in Pleistocene units in California and alluvial sediments of middle to late Pleistocene age can contain diverse vertebrate faunas. There is a paucity of published literature and data for the immediate project area and vicinity for paleontological resources. A database records search at the University of California Museum of Paleontology (UCMP) was negative although vertebrate faunal remains including horses, camels, and mammoths are known from Pleistocene localities over 25 miles to the east suggesting general sensitivity for Pleistocene sediments in Tulare County.

The project parcel is within or immediately adjacent to the paleontological study alignments in the Tulare area reviewed for the *California High-Speed Train Program Environmental Impact Report/Environmental Impact Statement, Sacramento to Bakersfield Paleontological Resources Technical Evaluation*, EIP Associates 2004) (CHSTP). The alignments consist of routes paralleling either the Union Pacific Railroad right-of-way or State Route 99 within and adjacent to the project footprint. This document defined the paleontological significance for nine sedimentary units crossed by the potential rail alignments (EIP 2004:12). The Fresno to Tulare "E" Alignments and the Tulare to Bakersfield "F" Alignments are within or adjacent to the project area and do not cross any potential paleontological deposits within a 0.5 mile buffer of the alignments (EIP 2004:18-19, Table 2).

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17. Significant paleontological resources may include vertebrate fossils and their associated taphonomic and environmental indicators; invertebrate fossils; and/or plant fossils

Additional geological and paleontological information pertinent to the immediate project area was reviewed in the *DRAFT Preliminary Environmental Analysis Report (PEAR) for the Cartmill Ave/State Route 99 Interchange Improvements* (Jones & Stokes and OMNI-MEANS 2007). Exposures of Pleistocene strata in the project area were evaluated as highly sensitive for vertebrate materials based on a review of the UCMP database while Holocene strata sensitivity for paleontological resources in the project area was considered undetermined but potentially locally sensitive due to their potential for paleoenvironmental information (see Jones & Stokes and OMNI-MEANS 2007). The study concluded that the construction excavation for various proposed support structures could disturb potential paleontological resources and a Paleontological Identification Report was recommended.

The data and the available literature viewed for this report suggest a low potential for unique paleontological resources to be present within the proposed project. The Holocene sediments are within an area previously disturbed by agricultural operations, there do not appear to be any Pleistocene basin exposures and the depths to be disturbed by construction at the proposed project are relatively shallow.

## **REGULATORY OVERVIEW**

Cultural resources include prehistoric and historic archaeological sites, districts and objects; standing historic structures, buildings, districts and objects; and locations of important historic events or sites of traditional/cultural importance to various groups. The analysis of cultural resources can provide valuable information on the cultural heritage of both local and regional populations. Paleontological resources (fossils) are the remains or traces of prehistoric animals and plants. Fossils are considered important to scientific and educational research.

The California Environmental Quality Act (CEQA) requires review to determine if a project will have a significant effect on archaeological sites or a property of historic or cultural significance to a community or ethnic group eligible for inclusion in the California Register of Historical Resources (CRHR) (*CEQA Guidelines*). Fossils are classified as non-renewable resources and must be considered as part of the review mandated by CEQA (Sections 15023, Appendix G, Section XIV, Part a; Public Resources Code Section 15000 et seq.).

## **FIELD INVENTORY**

### *Cartmill Crossing North*

A pedestrian field survey of the *Cartmill Crossing North* project site was conducted between November 21-23, 2005 by Mr. Christopher Canzonieri (M.A.). The field inventory was divided into four quadrants using existing dirt roads. The survey used 30-meter transect intervals; north to south in the southern quadrants and east to west in the northern quadrants. A 15-meter buffer was also surveyed on the north and northeast of the project. The soil throughout consisted of a very fine grayish brown silt. No prehistoric or significant historic archaeological materials were observed within the project.

Southeast Quadrant: This quadrant is bounded by East Cartmill Avenue on the south and a Tulare Irrigation District canal on the east. The quadrant had been recently plowed at the time of the survey in 2005 resulting in approximately 85-95 percent visibility with limited visibility present around the standing trees (oaks and cottonwoods). No evidence of the

former landing strip was observed on the property (USGS 1964; Google Earth 2004). A small amount of structural debris from the former structure complex located in the southeastern corner of this quadrant was observed. A single isolated beige brick fragment impressed with the letters Co and a STAR was observed.

Southwest Quadrant: This quadrant was similar to the Southeast Quadrant – it had recently been plowed resulting in approximately 85-95 percent visibility with visibility limited around the trees (Oaks and Cottonwoods). A very fine grayish brown silt was present throughout the quadrant. No evidence of the past airstrip which extended into the northeastern part of this quadrant was observed.

Northeast Quadrant: This quadrant was in alfalfa resulting in approximately 5 percent visibility. Numerous rodent burrows were inspected for cultural material. Three isolated trees were present - two oaks within the field and a Eucalyptus on the east side of the dirt road. An irrigation pump station was present in the northeast corner of the quadrant.

Northwest Quadrant: This quadrant is similar to Northeast Quadrant - both were in alfalfa resulting in approximately 5 percent visibility. Two oak trees were present.

#### *Highway 99/Cartmill Avenue Interchange*

Mr. Christopher Canzonieri (M.A.) conducted a pedestrian field survey of the interchange project on September 27-28, 2006. The survey was subdivided into four sections: northwest, northeast, southwest and southeast and excluded the fenced right-of way of SR 99. The overall visibility within the sections was excellent, 80-100 percent surface visibility. The soil observed consists of brown silty clay and numerous ground squirrel burrows were examined for cultural material. No prehistoric or significant historic cultural material was observed during the survey conducted for the project.

Northwest Section: The northeast section consists of a triangular wedge of land located west of SR 99, north of Cartmill Avenue; a portion of Cartmill Avenue to the west; a small section of land to the north of Cartmill Avenue; and the southbound Cartmill Avenue exit. The survey relied on 15-meter north to south transects. The area includes a large "Welcome to Tulare" sign, a billboard, several Eucalyptus trees, a culvert (at the north end), and a recently constructed ARCO gas station at the northwest corner (in the APE). Survey transects within the sliver of land north of the Cartmill Avenue exit and Cartmill Avenue were less than two-meters apart.

Northeast Section: This section is a thin sliver of land located north of Cartmill Avenue and south of Oaks Street, and a portion of Oaks Street north past the Magic Touch RV Store (at 3567 Oaks Street adjacent to the APE) as well as areas north and west of the RV store. The area includes an on-ramp and off-ramp on Oaks Street at the RV store. The survey in this section used east-west transects spaced at three meters. Fields planted with corn are present within the area east of Oaks Street and a Walnut orchard occupies the area north of the RV store, west of Oaks Street.

Southwest Section: This section includes "M" Street, Cartmill Avenue and the southbound SR 99 on-ramp. The sliver of land located north of the southbound on-ramp had been

burned. The area along "M" Street was surveyed north to south. The field east of "M" Street and west of SR 99 was inventoried using surveyed in 3-meter north to south transects. The existing SR 99/Cartmill Avenue overpass, which separates the Southeast from the Southwest section is marked BR NO 46-110 1962. A recently built Fire Station is located adjacent to the APE at 2900 "M" Street (southwest quadrant of SR 99 at Cartmill Avenue).

Southeast Section: This section consists of the northbound SR 99 off-ramp, a field to the east, and Cartmill Avenue. The survey of the field associated with the off-ramp used 3-meter spaced east to west transects. The large field east of the highway was surveyed using 15-meter north to south transects. This field contained two culverts; one of corrugated steel pipe and the other a concrete pipe associated with the irrigation canal. An apparently abandoned storage building with the word "FERTILIZER" painted on the north side is located adjacent to the APE at the far east end of this section at 597 Cartmill Avenue (near an irrigation canal). The building was associated with a former crop dusting operation which was located east of the APE on the south side of Cartmill Avenue just west of the Tulare Irrigation Canal. The building and a concrete loading dock south of the building are surrounded by fencing. The approximately 50-foot north/south by 30-foot east/west building is of wood-frame construction and is approximately 20-feet high at its peak and has a convex roof ("balloon" roof). With the exception of the exposed 12-foot high vertical wooden planks used as sheathing on the east side, the building is covered with corrugated steel sheathing. A large hanging sliding access door is located on the north side of the building.

## **FINDINGS**

The intent of this archaeological resources assessment was to identify cultural properties including prehistoric and historic archaeological sites, which may be potentially eligible for inclusion on the California Register of Historical Resources (CRHR). In addition, a paleontological review was conducted to determine if significant fossil resources were present or a potential for fossil resources existed.

### **RECORDS SEARCH RESULTS (CHRIS/SSJVIC File RS# 05-244)**

#### *Prehistoric/Historic Sites*

No prehistoric or historic era sites have been recorded, reported or identified in, adjacent or within 0.25 miles of the *Cartmill Crossing North* project site.

No prehistoric or historic era sites have been recorded, reported or identified in or adjacent to the *Highway 99/Cartmill Avenue Interchange* project.

#### *Compliance Reports*

Four cultural resources compliance reports on file at the CHRIS/SSJVIC include portions of property adjacent to the project. All reports were negative for cultural resources in the vicinity of the project.

The *Cultural Resources Inventory Report for the Proposed Mojave Northward Expansion Project* (Hatoff et al. 1995/TU-00102) includes Cartmill Avenue adjacent to the project as well as the Union Pacific Company right-of-way west of the project. The report includes records searches, background, and the results of a field investigation.

The *Cultural Resource Survey for the Selma to Bakersfield Fiberoptic Line, Southern San Joaquin Valley, California* (Wickstrom and Anderson 1997/TU-00103) proceeds along State Route 99 adjacent to the commercial retail portion of the project. This report provides a review of the natural environment and cultural background (including 19<sup>th</sup> century maps), results of records searches and field survey. Various irrigation canals were recorded, but none are present in the vicinity of the project.

A *Negative Archaeological Survey Report (ASR) Upgrading Bridge Rails on Seven Bridges along State Route 99* (Hovey 1999/TU-01008) includes a brief background review, records search, sources consulted, and field survey. The ASR was negative for archaeological sites.

The *City of Tulare Historic Resources Inventory* (Kielty and Fey ca. 1987/TU-1059) includes the area south of Cartmill Avenue on the west side of Highway 99 within a "secondary area within city limits." This document provides an Overview of the Developmental History of Tulare, a Statement of Purpose, Recommendations and a listing of all pre-1946 structures by property address. Other report components include Office of Historic Preservation (OHP) survey grant documentation; project contractual information; resumes/professional qualifications; phased action plan; research sources, guidelines, and procedures; and, the text of City Ordinance No. 1513 "Establishing Certain Review Requirements for Historic Structures as an Emergency Ordinance."

#### *Listed Resources*

No local, state or federal historically or architecturally significant structures, landmarks, or points of interest have been identified in, adjacent or within 0.25 miles of the project.

#### NATIVE AMERICAN RESOURCES

The Native American Heritage Commission (NAHC) review of the *Sacred Lands Inventory* was negative for cultural resources in the immediate project area and noted an absence of specific site information in their files. In October 2006, the Planning Director of the City of Tulare sent information on the proposed project to the tribes listed by the NAHC as having an interest in the area. No responses were received from the five listed tribes.

No Native American villages, known trails or contemporary use areas are situated in or adjacent to the project area.

#### FIELD SURVEY

No evidence of prehistoric or significant historic archaeological resources was observed during the field inventories completed for this report.

None of the former buildings in the southeast corner of the *Cartmill Crossing North* project site or the former airstrip within the project site were observed. A small amount of structural debris including a single brick fragment was observed in the southeast corner and a pump station was observed in the northeast corner of the Northeast Quadrant of the *Cartmill Crossing North* project site.

Buildings within and immediately adjacent to the Interchange APE include a new ARCO gas Station, the Magic Touch RV Store (3567 Oaks Street), a Fire station (2900 "M" Street), and an abandoned storage building (597 Cartmill Avenue) formerly associated with a crop dusting business.

## PALEONTOLOGY

The project area is within or immediately adjacent to the study alignments in the Tulare area reviewed for the *California High-Speed Train Program Environmental Impact Report/Environmental Impact Statement, Sacramento to Bakersfield Paleontological Resources Technical Evaluation*, EIP Associates 2004). The Fresno to Tulare "E" Alignments and the Tulare to Bakersfield "F" Alignments within the project area do not cross any potential paleontological deposits within a 0.5 mile buffer of the alignments (EIP 2004:18-19, Table 2). The 2007 *PEAR for Cartmill Avenue/State 99 Interchange* concluded that, due to the inherent significance of vertebrate materials, any exposures of Pleistocene strata in the project area should be considered highly sensitive for paleontological resources while any Holocene strata in the project area are considered to have an undetermined sensitivity.

However, the available literature and a review of the paleontological database information from the University of California Museum of Paleontology suggests a low potential for paleontological resources to be present within the Holocene alluvium that characterizes the project area especially at the shallow depths to be disturbed by construction at the proposed project.

## SUMMARY

No prehistoric or Historic era archaeological resources or architectural resources have been recorded, reported or identified in, adjacent or near the proposed project.

The results of the archaeological records search, archival research, and field review suggests a very low potential for significant subsurface archaeological resources in and/or adjacent to the proposed project.

The results of the paleontological records search and literature review of reports within and adjacent to the project parcel, suggest that project development will have no impacts on known or potential paleontological deposits.

## MANAGEMENT RECOMMENDATIONS

It is the considered opinion of Basin Research Associates, based on a review of pertinent records, maps and other documents, and an archaeological field inventory, that the proposed project can

proceed as planned in regard to prehistoric and historic archaeological resources and paleontological resources with the following recommendations.

### Archaeology

1. The completion of an archaeological subsurface testing program and/or monitoring program during subsurface construction is not recommended due to the absence of any formally recorded archaeological sites within or adjacent to the project; the lack of current surface evidence for archaeological resources; and, the very low potential for significant prehistoric and/or historic cultural deposits based on archival documentation.
2. If any significant cultural materials<sup>18</sup> are exposed or discovered during either site preparation or subsurface construction, operations should stop within 100 feet of the find<sup>19</sup> and a qualified professional archaeologist contacted for evaluation and further recommendations.

### Paleontology

1. The results of the project geotechnical/soils investigation shall be reviewed by a registered professional geologist (PG) or qualified professional paleontologist to assess the project's sensitivity for paleontological resources. If the assessment determines that any of the substrate units that would be

18. Significant prehistoric cultural resources may include:

- a. Human bone - either isolated or intact burials.
- b. Habitation (occupation or ceremonial structures as interpreted from rock rings/features, distinct ground depressions, differences in compaction (e.g., house floors).
- c. Artifacts including chipped stone objects such as projectile points and bifaces; groundstone artifacts such as manos, metates, mortars, pestles, grinding stones, pitted hammerstones; and, shell and bone artifacts including ornaments and beads.
- d. Various features and samples including hearths (fire-cracked rock; baked and vitrified clay), artifact caches, faunal and shellfish remains (which permit dietary reconstruction), distinctive changes in soil stratigraphy indicative of prehistoric activities.
- e. Isolated artifacts

Historic cultural materials may include finds from the late 19th through early 20th centuries. Objects and features associated with the Historic Period can include.

- a. Structural remains or portions of foundations (bricks, cobbles/boulders, stacked field stone, postholes, etc.).
- b. Trash pits, privies, wells and associated artifacts.
- c. Isolated artifacts or isolated clusters of manufactured artifacts (e.g., glass bottles, metal cans, manufactured wood items, etc.).
- d. Human remains.

In addition, cultural materials including both artifacts and structures that can be attributed to Hispanic, Asian and other ethnic or racial groups are potentially significant. Such features or clusters of artifacts and samples include remains of structures, trash pits, and privies.

19. City of Tulare General Plan Policy COS-5.9 - Discovery of Archaeological Resources. In the event that archaeological resources are discovered during site excavation, grading, or construction, the City shall require that work on the site be suspended within 100 feet of the resource until the significance of the features can be determined by a qualified archaeologist. If significant resources are determined to exist, an archaeologist shall make recommendations for protection or recovery of the resource.

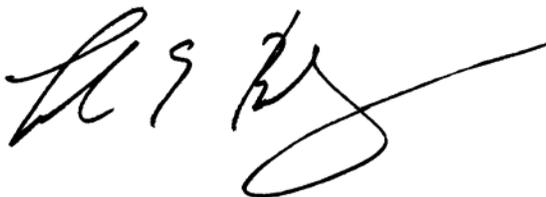
affected by proposed construction excavation are highly sensitive for paleontological resources, a treatment plan shall be prepared with recommendations for appropriate and feasible procedures to avoid or minimize damage to any potential resources.

2. If no treatment plan is required, and in the event any paleontological resources are exposed or discovered during subsurface construction, ground-disturbing operations shall stop within 100 feet of the find and a registered professional geologist or a qualified professional paleontologist contacted for evaluation and further recommendations.

## CONCLUDING REMARKS

Please do not hesitate to contact Basin Research Associates if we can provide any further information.

Sincerely,  
BASIN RESEARCH ASSOCIATES, INC.



Colin I. Busby, Ph.D., RPA  
Principal

CIB/dmg  
Enclosures

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Abbreviations

n.d. no date

N.P. no publisher noted

v.d. various dates

n.p. no place of publisher noted

Note: TU-#, "CHRIS/SSJVIC, CSU Bakersfield" is used for material on file at the California Historical Resources Information System, Southern San Joaquin Valley Information Center, California State University in Bakersfield. "CHRIS/CCIC, CSU Stanislaus, Turlock" is used for material on file at the California Historical Resources Information System, Central California Information Center, California State University Stanislaus in Turlock.



# **ATTACHMENTS**

## **LIST OF FIGURES**

- |          |  |
|----------|--|
| Figure 1 | General Project Location   |
| Figure 2 | Project Location (USGS Visalia, Calif. 1969 and Tulare, Calif. 1969) |
| Figure 3 | Aerial View of Project Area  |





Figure 1: General Project Location

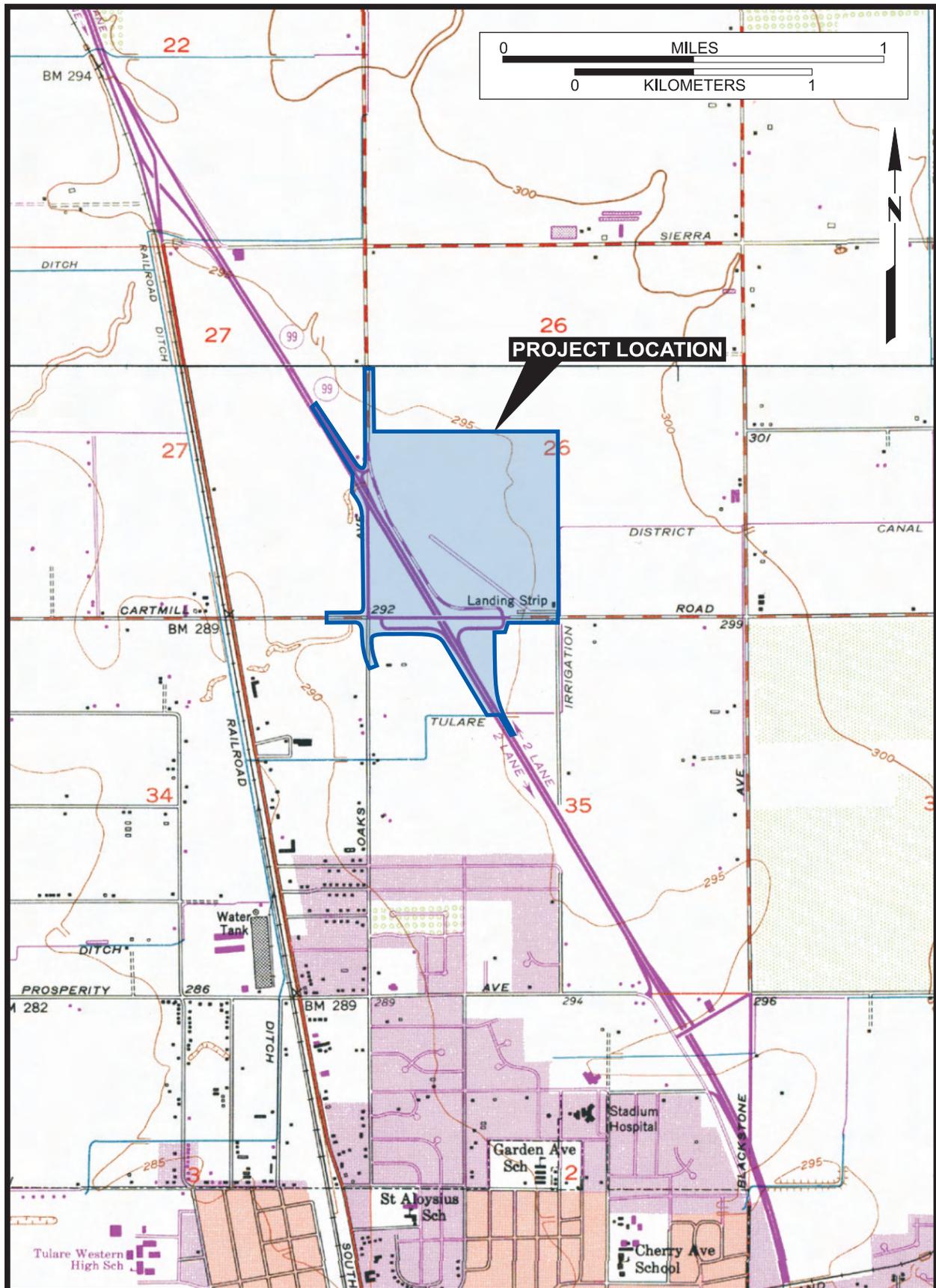


Figure 2: Project Location (USGS Visalia, Calif. 1969 and Tulare, Calif. 1969)



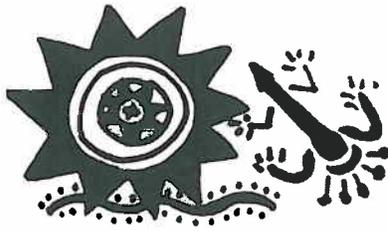
Figure 3: Aerial View of Project Area



Appendix C

# **Cultural Resources Records Search**





**TO:** Christiaan Havelaar, Archaeologist  
Jones & Stokes  
2600 V Street  
Sacramento, CA 95818-1914

**(RS# 07-127)**

**DATE:** June 22, 2007

**RE:** Feasibility Study for Interchange Improvement on Highway 99, North of the City of Tulare

**County:** TULARE

**Map(s):** Tulare and Visalia 7.5's

**PRIORITY**

### **CULTURAL RESOURCES RECORDS SEARCH**

The Southern San Joaquin Valley Information Center is under contract to the State Office of Historic Preservation and is responsible for the local management of the California Historical Resources Inventories. The following are the results of a search of the cultural resources files at the Southern San Joaquin Valley Archaeological Information Center. These files include known and recorded archaeological and historic sites, inventory and excavation reports filed with this office, and properties listed in the Historic Property Data File, (6/3/07), on the National Register of Historic Places, the California Register, the California Historical Landmarks, the California Inventory of Historic Resources, and the California Points of Historical Interest.

#### **PRIOR CULTURAL RESOURCE INVENTORIES WITHIN THE PROJECT AREAS AND A ½ MILE RADIUS**

According to the information in our files, there have been (6) six cultural resource studies conducted within the project area. There has been one survey conducted within a ½ mile radius, TU-13124. Surveys and their associated report numbers are plotted on the project map.

#### **KNOWN/RECORDED CULTURAL RESOURCES WITHIN THE PROJECT AREAS AND A ½ MILE RADIUS**

There are no recorded cultural resources within the project area or within a ½ mile radius.

**PRIORITY**

(RS # 07-127)

There are no recorded cultural resources within the project area that are listed in the National Register of Historic Places, The California Register, State Historic Landmarks, California Points of Historical Interest, or the California Inventory of Historic Resources.

**COMMENTS**

**PRIORITY**

Enclosed are copies of the title pages for the reports referenced above. If you have any questions or need additional information, please don't hesitate to contact me at (661) 654-2289.

By



Adele Baldwin  
Assistant Coordinator

Date: June 22, 2007

Fee: \$225.00/hr.

Invoice #A4412

**PRIORITY**

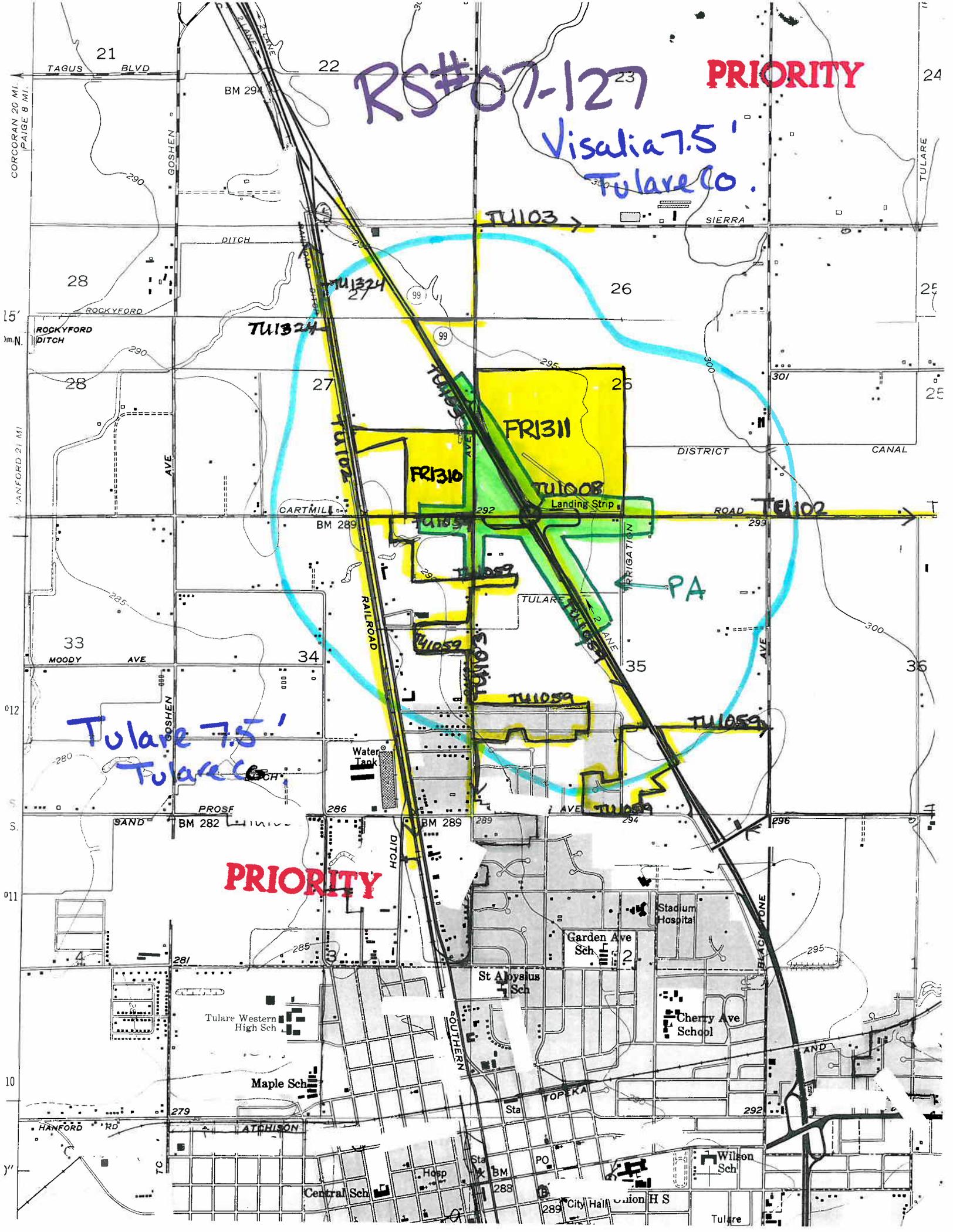
RS#07-127

PRIORITY

Visalia 7.5'  
Tulare Co.

Tulare 7.5'  
Tulare Co.

PRIORITY





Appendix D

**Native American Heritage  
Commission Consultation**



STATE OF CALIFORNIA

Arnold Schwarzenegger, Governor

**NATIVE AMERICAN HERITAGE COMMISSION**

915 CAPITOL MALL, ROOM 364  
SACRAMENTO, CA 95814  
(916) 658-6251  
Fax (916) 657-5390  
Web Site [www.nahc.ca.gov](http://www.nahc.ca.gov)  
e-mail: [de\\_nahc@pacbell.net](mailto:de_nahc@pacbell.net)



November 20, 2008

Ms. Traci O'Brien, Senior Archaeologist  
**ICF Jones & Stokes**  
630 "K" Street, Suite 400  
Sacramento, CA 95814

Sent by FAX to: 916-737-3030  
No. of Pages: 2

Re: Request for a Sacred Lands File records search and Native American Contacts list for the proposed Development Project located in the City of Tulare, Tulare County, California

Dear Ms. O'Brien:

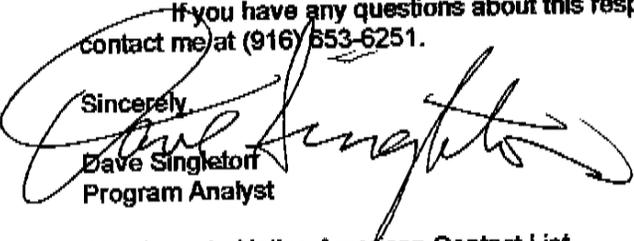
The Native American Heritage Commission (NAHC) was able to perform a record search of its Sacred Lands File (SLF) for the affected project area/area of potential effect (APE). The SLF failed to indicate the presence of Native American cultural resources in the immediate project area. The absence of specific site information in the Sacred Lands File does not guarantee the absence of cultural resources in any project area.

Early consultation with Native American tribes in your area is the best way to avoid unanticipated discoveries once a project is underway. Enclosed are the names of culturally affiliated Native American Contacts that may have knowledge of cultural resources in the project area. A list of Native American contacts is attached to assist you. It is advisable to contact the persons listed; if they cannot supply you with specific information about the impact on cultural resources. A local tribe or Native American individual may be the only source of information about a cultural resource.

Lead agencies should consider avoidance, as defined in Section 15370 of the California Environmental Quality Act (CEQA) when significant cultural resources could be affected by a project. Also, Public Resources Code Section 15064.5(f) and Section 15097.98 and Health & Safety Code Section 7050.5 provide for provisions for accidentally discovered archeological resources during construction and mandate the processes to be followed in the event of an accidental discovery of any human remains in a project location other than a 'dedicated cemetery. Discussion of these should be included in your environmental documents, as appropriate.

If you have any questions about this response to your request, please do not hesitate to contact me at (916) 653-6251.

Sincerely,

  
Dave Singleton  
Program Analyst

Attachment: Native American Contact List

**Native American Contacts  
Tulare County  
November 20, 2008**

Santa Rosa Rancheria  
Clarence Atwell, Chairperson  
P.O. Box 8  
Lemoore , CA 93245  
(559) 924-1278  
(559) 924-3583 Fax

Tache  
Tachi  
Yokut

Santa Rosa Rancheria  
Lalo Franco, Director - Cultural Department  
P.O. Box 8  
Lemoore , CA 93245  
(559) 924-1278

Yokuts  
Tachi

Tule River Indian Tribe  
Neil Peyron, Chairperson  
P.O. Box 589  
Porterville , CA 93258  
chairman@tulerivertribe-nsn.  
(559) 781-4271  
(559) 781-4610 FAX

Yokuts

Wukchumni Tribe  
John Sartuche  
929 N. Lovers Lane  
Visalia , CA 93292  
(559) 636-1136

Wukchumni

Wukchumni Tribe  
Susan Weese  
1540 S. Bollinger Court  
Visalia , CA 93277  
(559) 303-0606

Wukchumni

Esohm Valley Band of Indians  
Kenneth Woodrow, Chairperson  
1179 Rock Haven Ct.  
Salinas , CA 93906  
831-443-9702

Foothill Yokuts  
Mono

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed Development Project located in the City of Tulare; Tulare County, California for which a Sacred Lands File search and Native American Contacts list were requested.



December 8, 2008

Wukchumni Tribe  
John Sartuche  
929 N. Lovers Lane  
Visalia, CA 93292

Re: Proposed Cartmill Avenue/Highway 99 Project

Dear Mr. Sartuche,

ICF Jones & Stokes is conducting a cultural resources study for a proposed improvement project in the city of Tulare. The City of Tulare (City), in conjunction with the California Department of Transportation (Caltrans), proposes to modify the existing State Route 99 (SR 99)–M Street–Cartmill Avenue interchange located at post mile (PM) 31.9 in the City of Tulare.

A map of the project location is enclosed and the project area is highlighted.

The research conducted included a records search at the Southern San Joaquin Valley Information Center (SSJVIC) of the California Historical Resources Inventory System (CHRIS) located at CSU Bakersfield in Bakersfield, California and a cultural resources pedestrian survey. No cultural resources were found in the project area.

ICF Jones & Stokes is requesting input from the Native American community regarding traditional cultural properties, concerns about the project and other issues pertinent to this project. Any information you have regarding Native American sites or traditional cultural properties in the area would be helpful in identifying potential cultural resources issues. Please contact me at 916-737-3000, or [tobrien@jsanet.com](mailto:tobrien@jsanet.com) if you have any questions or concerns about this project. Thank you for your attention to this matter.

Sincerely,

A handwritten signature in black ink, appearing to read 'Amy Fransen', written over a horizontal line.

Amy Fransen for  
Traci O'Brien  
Senior Archaeologist

enc: map



December 8, 2008



Santa Rosa Rancheria  
Lalo Franco, Director- Cultural Department  
PO Box 8  
Lemoore, CA 93245

Re: Proposed Cartmill Avenue/Highway 99 Project

Dear Mr. Franco,

ICF Jones & Stokes is conducting a cultural resources study for a proposed improvement project in the city of Tulare. The City of Tulare (City), in conjunction with the California Department of Transportation (Caltrans), proposes to modify the existing State Route 99 (SR 99)-M Street-Cartmill Avenue interchange located at post mile (PM) 31.9 in the City of Tulare.

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Sincerely,

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Amy Fransen for  
Traci O'Brien  
Senior Archaeologist

enc: map



December 8, 2008



Esohm Valley Band of Indians  
Kenneth Woodrow, Chairperson  
1179 Rock Haven Court  
Salinas, CA 93906

Re: Proposed Cartmill Avenue/Highway 99 Project

Dear Mr. Woodrow,

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Amy Fransen for  
Traci O'Brien  
Senior Archaeologist

enc: map



December 8, 2008

Wukchumni Tribe  
Susan Weese  
1540 S. Bollinger Court  
Visalia, CA 93277



Re: Proposed Cartmill Avenue/Highway 99 Project

Dear Ms. Weese,

ICF Jones & Stokes is conducting a cultural resources study for a proposed improvement project in the city of Tulare. The City of Tulare (City), in conjunction with the California Department of Transportation (Caltrans), proposes to modify the existing State Route 99 (SR 99)-M Street-Cartmill Avenue interchange located at post mile (PM) 31.9 in the City of Tulare.

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Amy Fransen for  
Traci O'Brien  
Senior Archaeologist

enc: map





December 8, 2008

Tule River Indian Tribe  
Neil Peyron, Chairperson  
P.O. Box 589  
Porterville, CA 93258

Re: Proposed Cartmill Avenue/Highway 99 Project

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Amy Fransen for  
Traci O'Brien  
Senior Archaeologist

enc: map





December 8, 2008

Santa Rosa Rancheria  
Clarence Atwell, Chairperson  
PO Box 8  
Lemoore, CA 93245

Re: Proposed Cartmill Avenue/Highway 99 Project

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