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April 1, 2008

Mr. Christopher Meyer
Project Manager
California Energy Commission
1516 Ninth Street MS-15
Sacramento, CA 95814

Re: Transmittal of CHRIS Cultural Resource Reports for the Avenal Energy Application for Certification (08-AFC-1)

Dear Mr. Meyer:

On behalf of Avenal Power Center, LLC, and pursuant to our recent discussions, enclosed are five paper copies and one CD-ROM copy of cultural resource reports obtained from the California Historical Resources Information System (CHRIS) database for the Avenal Energy Application for Certification (08-AFC-1). Copies of the following four reports are enclosed: FR 253; FR 2015; FR 2027; and FR 2052. These reports are referenced in Attachment C.1 of the Supplement to the Application for Certification submitted by Avenal Power Center, LLC on March 27, 2008. CHRIS report FR 1878, which is also referenced in Attachment C.1 of the Supplement, is not enclosed because that report was prepared specifically for the Avenal Energy Project and is included in Appendix 6.7-1 of the Application for Certification.

If you have questions regarding this submittal or other aspects of the project, please call Jim Rexroad at (713) 275-6147, or myself at the telephone number in the letterhead.

Sincerely,

Joseph L. Stenger

Joseph L. Stenger
Project Director

cc. Jim Rexroad, Avenal Power Center, LLC (w/ 1 paper enclosure and one CD)
Tracey Gilliland, Avenal Power Center, LLC (w/o enclosure)
Jane Luckhardt, Downey Brand (w/ 1 paper enclosure and one CD)
Tom Jackson, Pacific Legacy (w/ 1 CD enclosure)

DEPARTMENT OF TRANSPORTATION
NEGATIVE ARCHAEOLOGICAL SURVEY REPORT
DPD-EP-25 (REV. 2/83)

I. HIGHWAY PROJECT DESCRIPTION

District	County	Route	Kilometer Post	Expenditure Authorization
06	FRE	269	0.0/20.5 (PM 0.0/12.75)	39810K

The proposed project is to rehabilitate, widen (including two bridges), and upgrade FRE-269 from kilometer post 0.0 (Fresno-Kings county line) to kilometer post 20.5. Intersections are to be upgraded and shoulders widened. The area of concern is located north and south of the town of Huron (see Figure 1). The project area extends along FRE-269 from 0.5 km west of Route 5 to the intersection of FRE-269 and FRE-198 (see Figure 2). The area surveyed extends from kilometer post 0.0 to kilometer post 20.5 (Marmon Avenue) (see Figure 3). The portion of the project area north of Marmon Avenue (KP 17.28 to KP 20.5) was previously surveyed by Caltrans (see Weigel 1988, Osborne 1994, and Nissen 1995) and, for this reason, was not resurveyed.

II. FINDINGS

No archaeological resources were identified within or immediately adjacent to the project area.

Additional archaeological survey will be required if the project plans are changed to include previously unsurveyed areas. If buried cultural materials are encountered during construction, work is to stop in the area of the find until a qualified archaeologist can evaluate the nature and significance of the find.

III. INTRODUCTION

Name of Surveyor	Qualifications	Date of Fieldwork
Jeanne Day Binning	Caltrans District 6 Archaeologist; Ph.D. in Anthropology; 25 years archaeological field experience in California.	9-2-98 & 9-3-98
Don Laylander	Caltrans District 6 Archaeologist; B.A. in history, M.A. in anthropology; 20 years archaeological field experience in California.	9-2-98

Present Environment: In general, the project area is on the west side of the southern San Joaquin Valley, at the base of the Diablo Mountain Range (Figures 1, 2, and 3). Most all of the project area consists of agricultural fields. During September, cotton plants cover the fields.

Ethnography: The project area lies within the territory ascribed ethnographically to the Yokuts (Kroeber 1925; Latta 1977; Wallace 1978). More specifically, the project area is within the territory of the Tachi tribe of the Southern Valley Yokuts, one of the largest Yokut divisions (Kroeber 1925:484:; Wallace 1978:448). Fremont, in 1845, refers to the Francis or Kaweah River and notes that it runs west into Tache Lake. Tulare Lake is the lake to which Fremont refers.

The name he used, Tache or Tachi, identifies the Southern Valley Yokut group that lived in the area (Latta 1949:29 discusses Fremont's observations). The town of Huron was the Tachi village of Golon (Kroeber 1925:484; Latta 1949:13, Wallace 1978:448). The country of the Tachi tribe was

> . . . the tract from northern Tulare Lake and its inlet or outlet, Fish Slough, west to the Mount Diablo chain of the Coast Range, where they bordered the Salinan Indians. Here they wintered at Udjiu, downstream from Coalinga, and at Walna, where the western hills approach the lake. (Kroeber 1925:484).

Yokut is a Penutian language; however, the Yokutian language family is not closely related to any of the other families within the Penutian Stock. This suggests that a group of people, speaking the proto-Yokutian language, moved into California a very long time ago (Morrato 1984:538-539). Southern Yokuts provided for themselves by hunting and gathering. Acorns were an important food staple.

IV. SOURCES CONSULTED

- ☒ National Register of Historic Places
- ☒ California Inventory of Historic Resources
- ☒ California Historical Landmarks
- ☒ California Points of Historical Interest
- ☒ California Register of Historical Resources
- ☒ Cultural Resources Site Records of the California Archaeological Inventory, Southern San Joaquin Valley Information Center, California State University, Bakersfield

Results: Five previous archaeological surveys covered portions of the project area. No previously recorded cultural resources were reported within or adjacent to the project area. The Tachi (Southern Yokut) village of Golon was reported to have been at the site of present-day Huron.

V. FIELD METHODS

Single, fifty-foot transects were walked on each side of FRE-269 from kilometer post 0.0 to kilometer post 17.28 (see Figure 3). This survey covered the portion of the project area that had not been previously surveyed. In general, ground visibility was excellent.

VI. REMARKS

Additional survey will be required if project plans are changed to include previously unsurveyed areas. If buried cultural materials are encountered during construction, it is the policy of Caltrans that work stop in the area of the find until a qualified archaeologist can evaluate the nature and the significance of the find. If human remains are exposed during project activities, State Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to Public Resources Code 5097.98.

VII. CERTIFICATION

Preparer: Jeanne Binning **Title:** Archaeologist, District Archaeologist

Signature: **Date:** September 21, 1998

VIII. MAPS

Project Vicinity Map: Figure 1
Project Location Map: Figure 2, La Cima (1971), Huron (1971), and Calflax (1971) USGS 7.5-minute topographic maps
Project Area Map: Figure 3

IX. PHOTOGRAPHS

Yes ___ **(File No**_____**)** **No** _X_ **Attached** ___

X. BIBLIOGRAPHY

Kroeber, A. L.
1925 *Handbook of the Indians of California*. Bureau of American Ethnology Bulletin 78. Smithsonian Institution, Washington, D.C.

Latta, F. F.
1949 *Handbook of Yokuts Indians*. Oildale: Bear State Books.

Nissen, Karen
1995 Negative Archaeological Survey Report: FRE-169, PM 11.2/12.2. Fresno: Caltrans.

Osborne, Richard
1994 Negative Archaeological Survey Report: FRE-269, PM 12.21. Fresno: Caltrans.

Wallace, William J.
1978 Southern Valley Yokuts. In: *California*, edited by Robert F. Heizer, pp. 448-461. *Handbook of North American Indians*, William C. Sturtevant, general editor, vol. 8. Smithsonian Institution, Washington, D.C.

Weigel, Larry
1988 Negative Archaeological Survey Report. FRE-269, PM 10.6/12.8. Fresno: Caltrans.

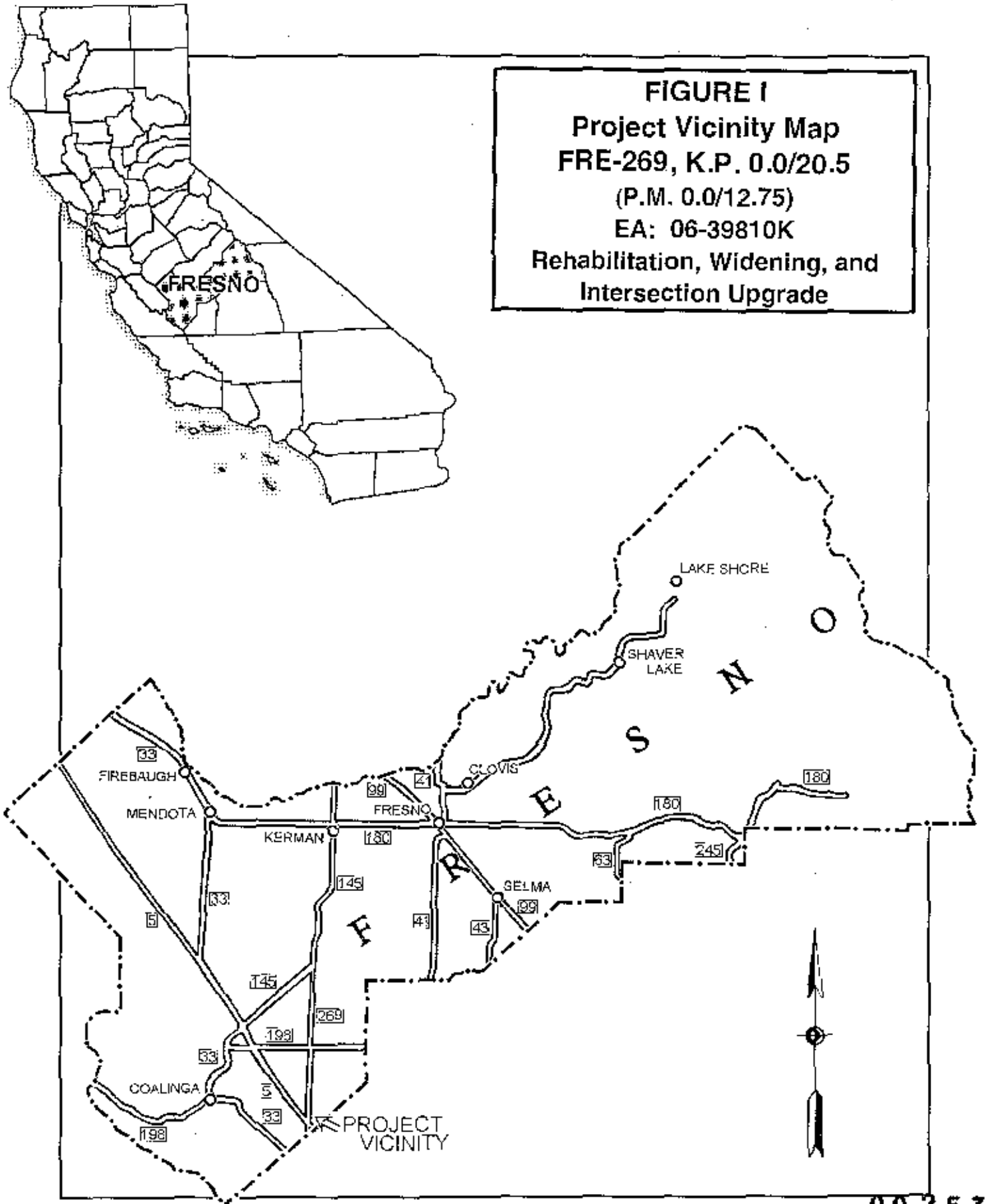


FIGURE 1
Project Vicinity Map
FRE-269, K.P. 0.0/20.5
(P.M. 0.0/12.75)
EA: 06-39810K
Rehabilitation, Widening, and
Intersection Upgrade
FRESNO
LAKE SHORE
SHAVER LAKE
FRESNO
CLOVIS
FIREBAUGH
MENDOTA
KERMAN
SELMA
COALINGA
PROJECT VICINITY
33
99
41
180
145
5
43
269
198
245

00253

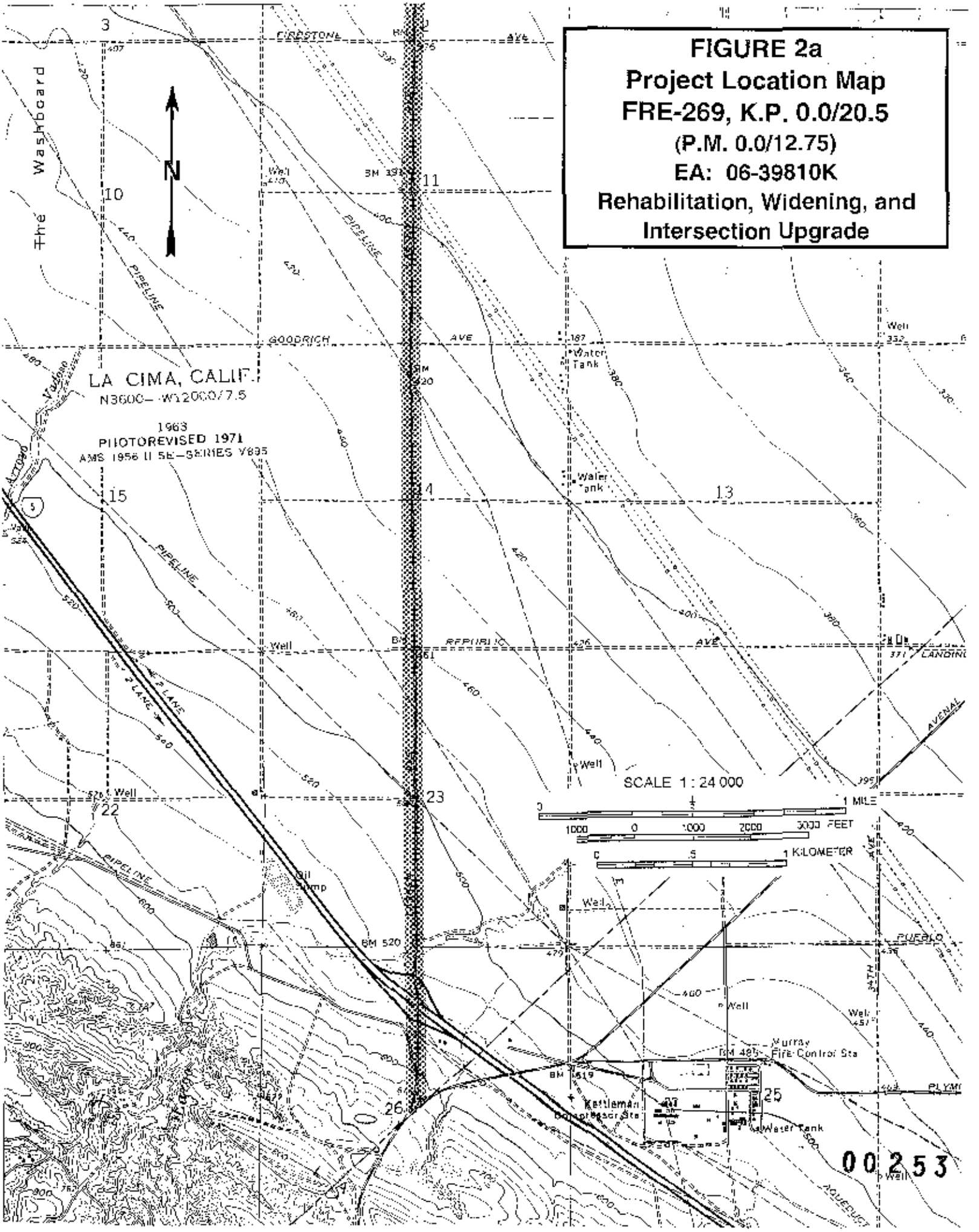


FIGURE 2a
Project Location Map
FRE-269, K.P. 0.0/20.5
(P.M. 0.0/12.75)
EA: 06-39810K
Rehabilitation, Widening, and
Intersection Upgrade
LA CIMA, CALIF.
N3600—W11500/7.5
1963
PHOTOREVISED 1971
AMS 1956 II SE—SERIES V895
SCALE 1 : 24 000
1 MILE
1000 0 1000 2000 3000 FEET
1 KILOMETER
N
The Washboard
FIRESTONE AVE
GOODRICH AVE
REPUBLIC AVE
PIPELINE
2 LANE
Water Tank
Well
Murray Fire Control Sta
Kettleman Compressor Sta
AQUEDUCT
00253

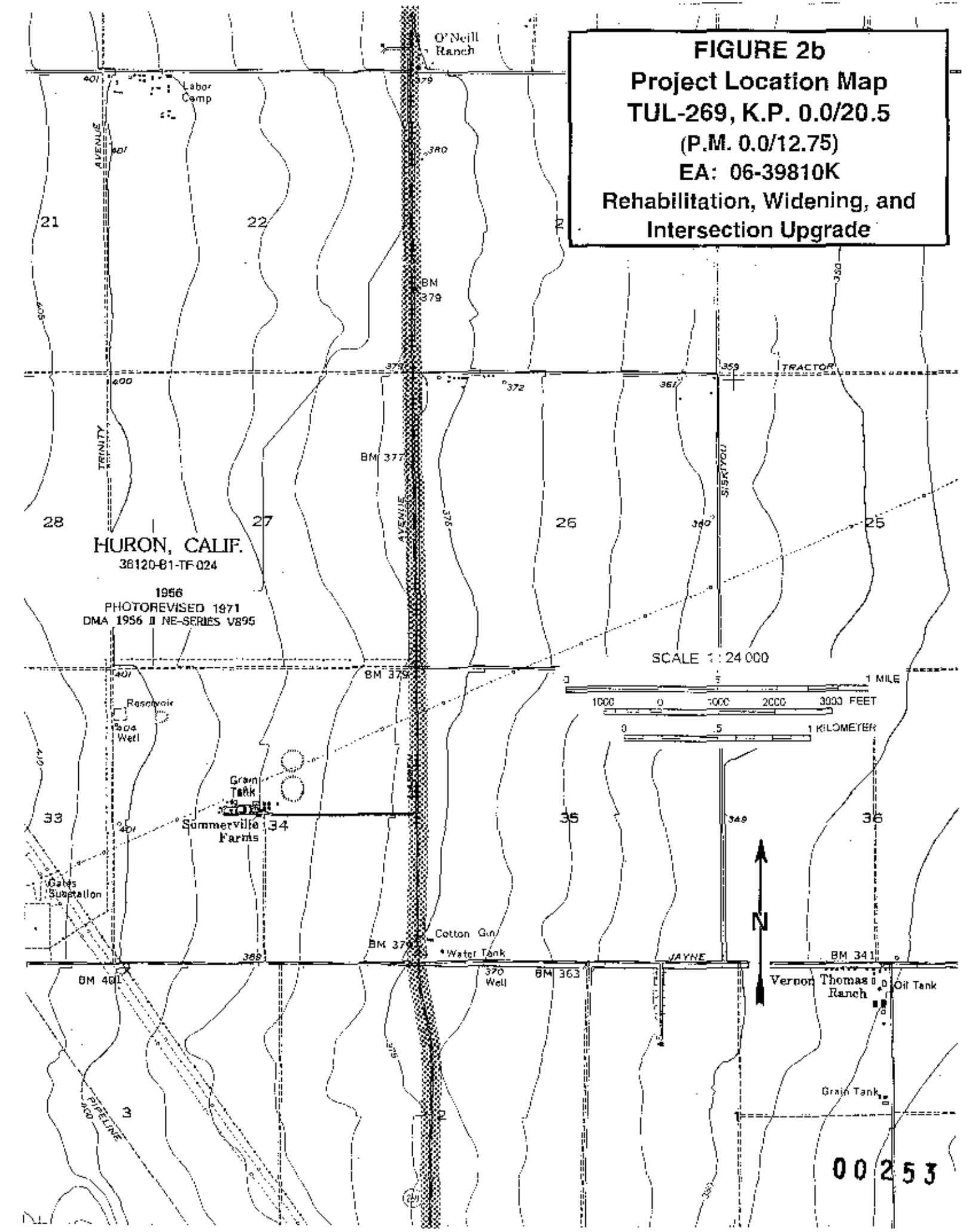
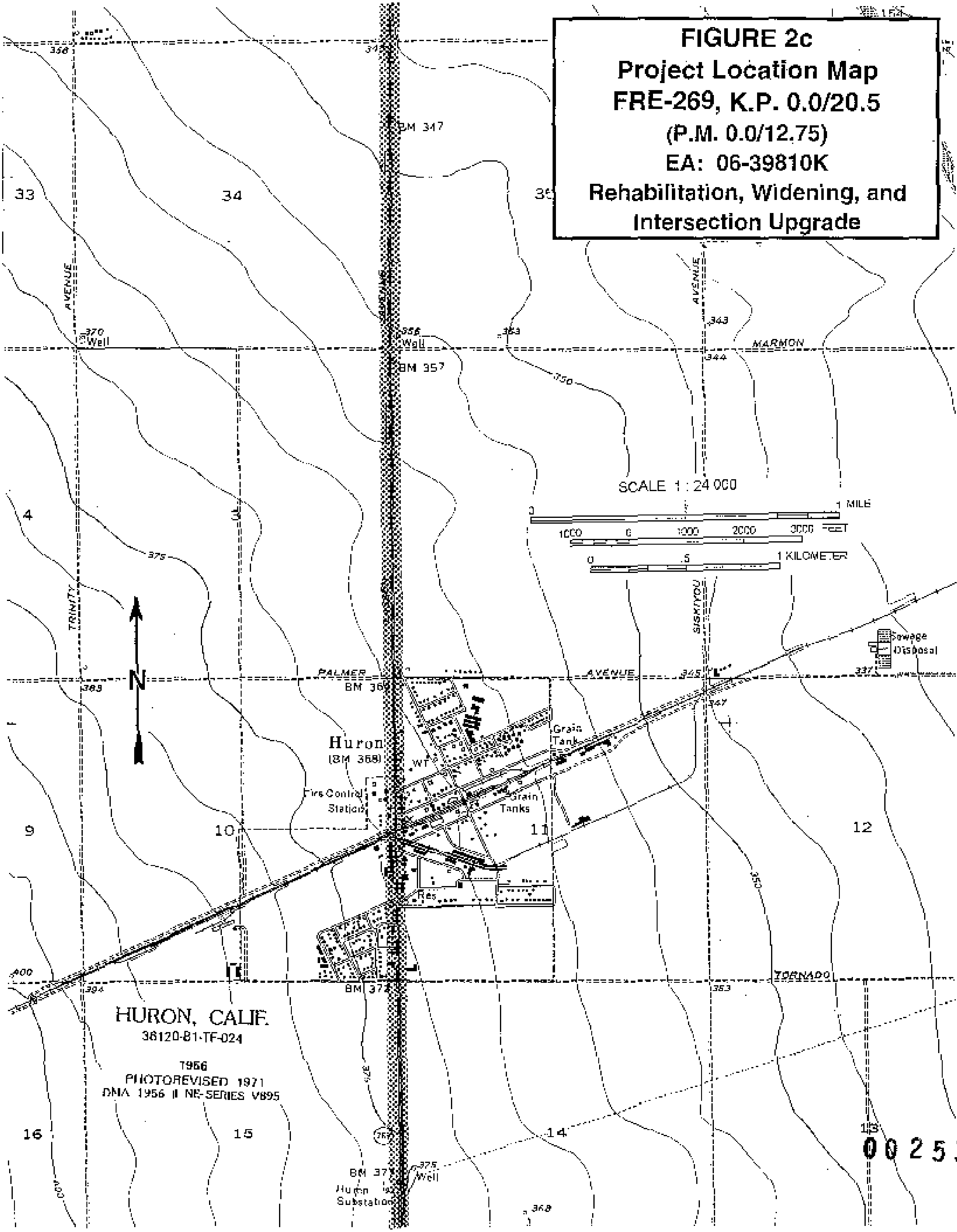


FIGURE 2b
Project Location Map
TUL-269, K.P. 0.0/20.5
(P.M. 0.0/12.75)
EA: 06-39810K
Rehabilitation, Widening, and
Intersection Upgrade
HURON, CALIF.
36120-B1-TF-024
1956
PHOTOREVISED 1971
DMA 1956 II NE-SERIES V895
SCALE 1:24 000
1 MILE
1000 0 1000 2000 3000 FEET
0 .5 1 KILOMETER
O'Neill Ranch
Labor Camp
AVENUE
TRINITY
AVENUE
SISKIYOU
TRACTOR
BM 379
BM 377
BM 379
Reservoir
304 Well
Grain Tank
Summerville Farms
Gates Substation
Cotton Gin
Water Tank
370 Well
BM 379
BM 401
BM 363
JAYNE
BM 341
Vernon Thomas Ranch
Oil Tank
Grain Tank
PIPELINE
N
21
22
28
27
26
25
33
34
35
36
3
2
1
00253

FIGURE 2c
Project Location Map
FRE-269, K.P. 0.0/20.5
(P.M. 0.0/12.75)
EA: 06-39810K
Rehabilitation, Widening, and Intersection Upgrade



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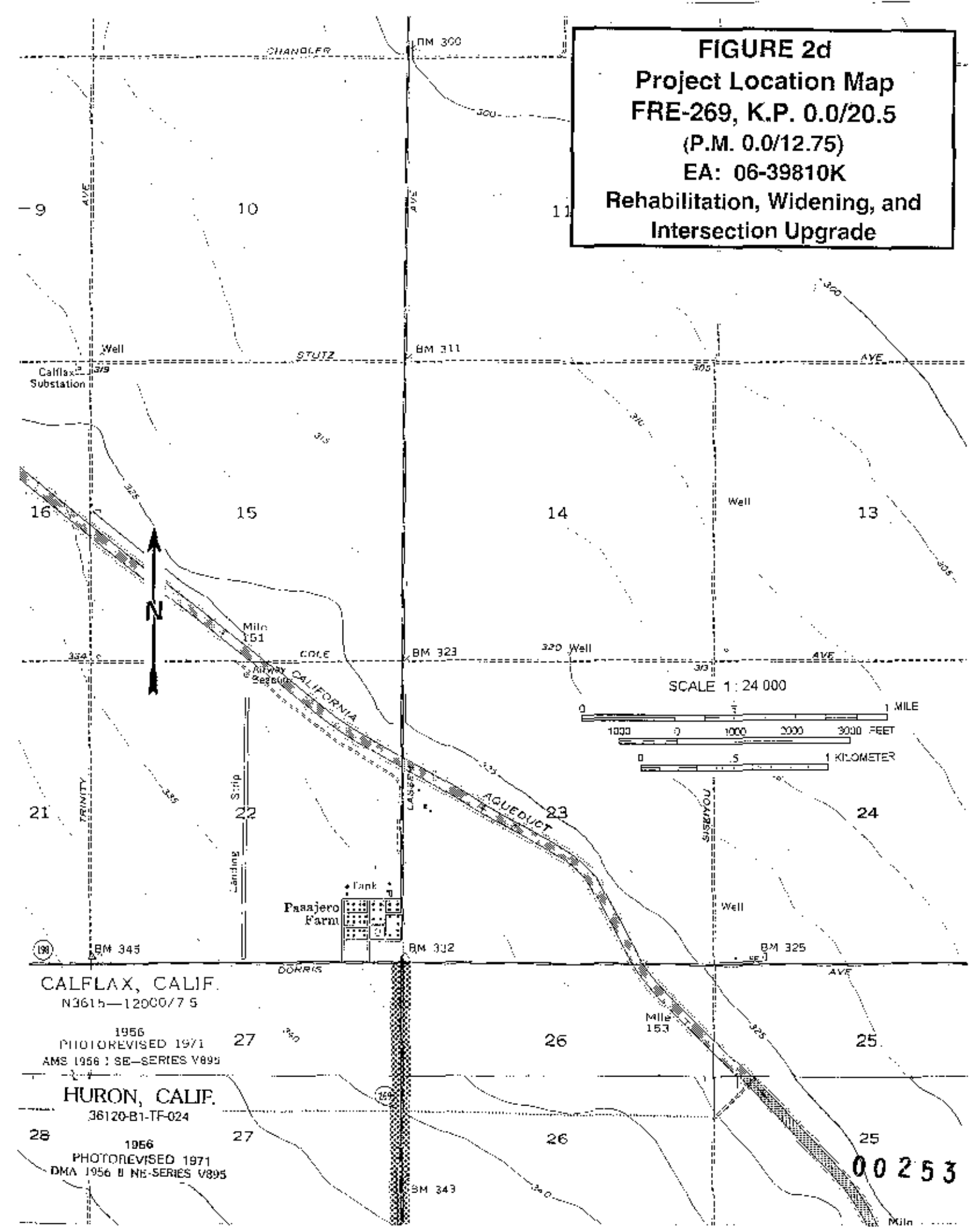


FIGURE 2d
Project Location Map
FRE-269, K.P. 0.0/20.5
(P.M. 0.0/12.75)
EA: 06-39810K
Rehabilitation, Widening, and
Intersection Upgrade
CHANDLER
BM 300
AVE
9
10
11
Well
STUTZ
BM 311
Calflax Substation
16
15
14
13
N
Mile 151
COLE
BM 323
320 Well
SCALE 1 : 24 000
1 MILE
1000 0 1000 2000 3000 FEET
1 KILOMETER
CALIFORNIA AQUEDUCT
TRINITY
Strip
Landing
LASSEN
SISKIYOU
21
22
23
24
Tank
Pasajero Farm
Well
BM 345
BM 332
BM 325
DORRIS
CALFLAX, CALIF.
N3615—12000/7 5
1956
PHOTOREVISED 1971
AMS 1956 I SE—SERIES V895
Mile 153
27
26
25
HURON, CALIF.
36120-B1-TF-024
28
1956
PHOTOREVISED 1971
DMA 1956 II NE-SERIES V895
BM 343
00253

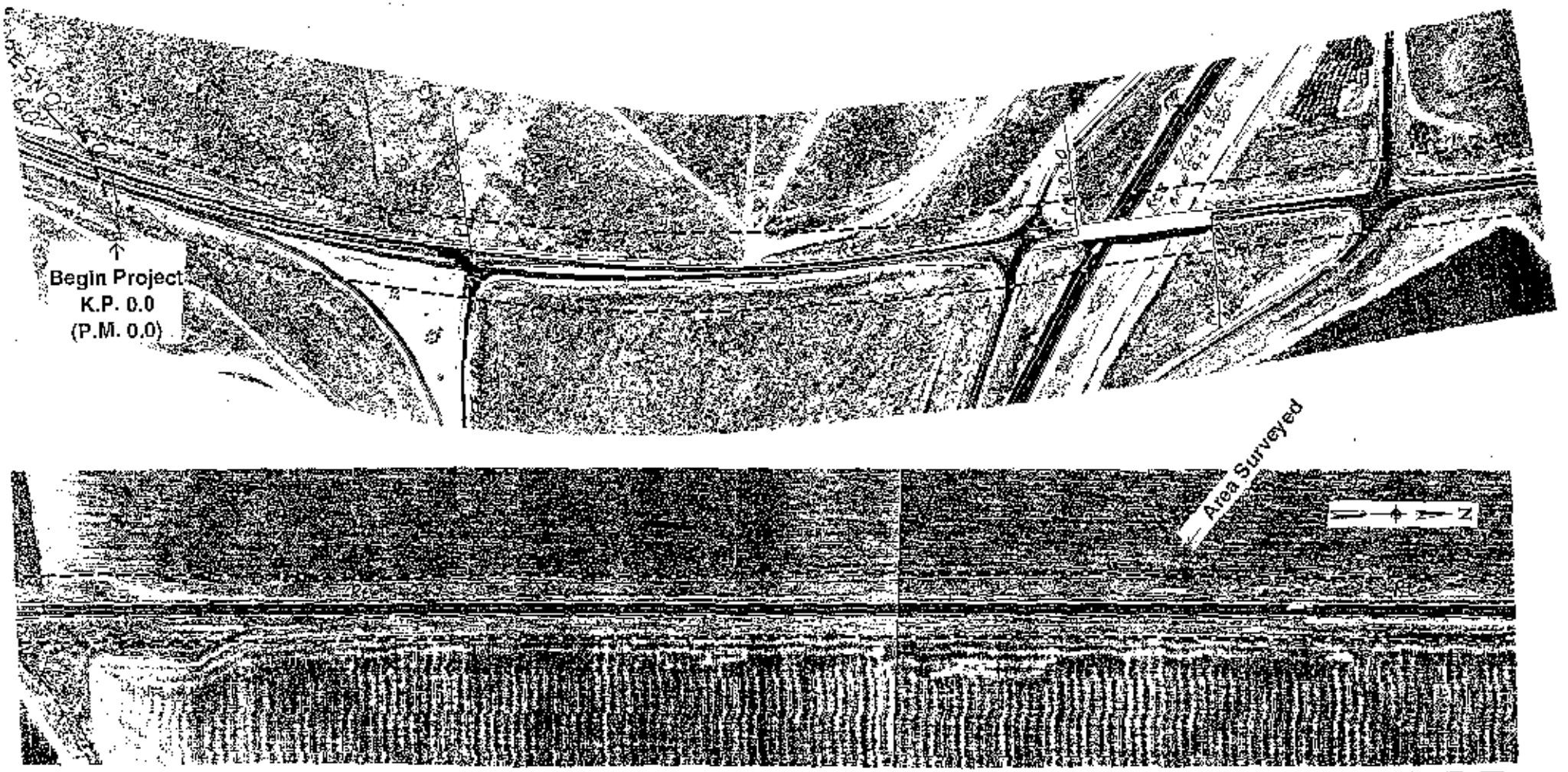


FIGURE 3a
Archaeological Survey Area
K.P. 0.0/17.28
(P.M. 0.0/10.74)
FRE-269, K.P. 0.0/20.5
(P.M. 0.0/12.75)
EA: 06-39810K
Rehabilitation, Widening, and Intersection Upgrade

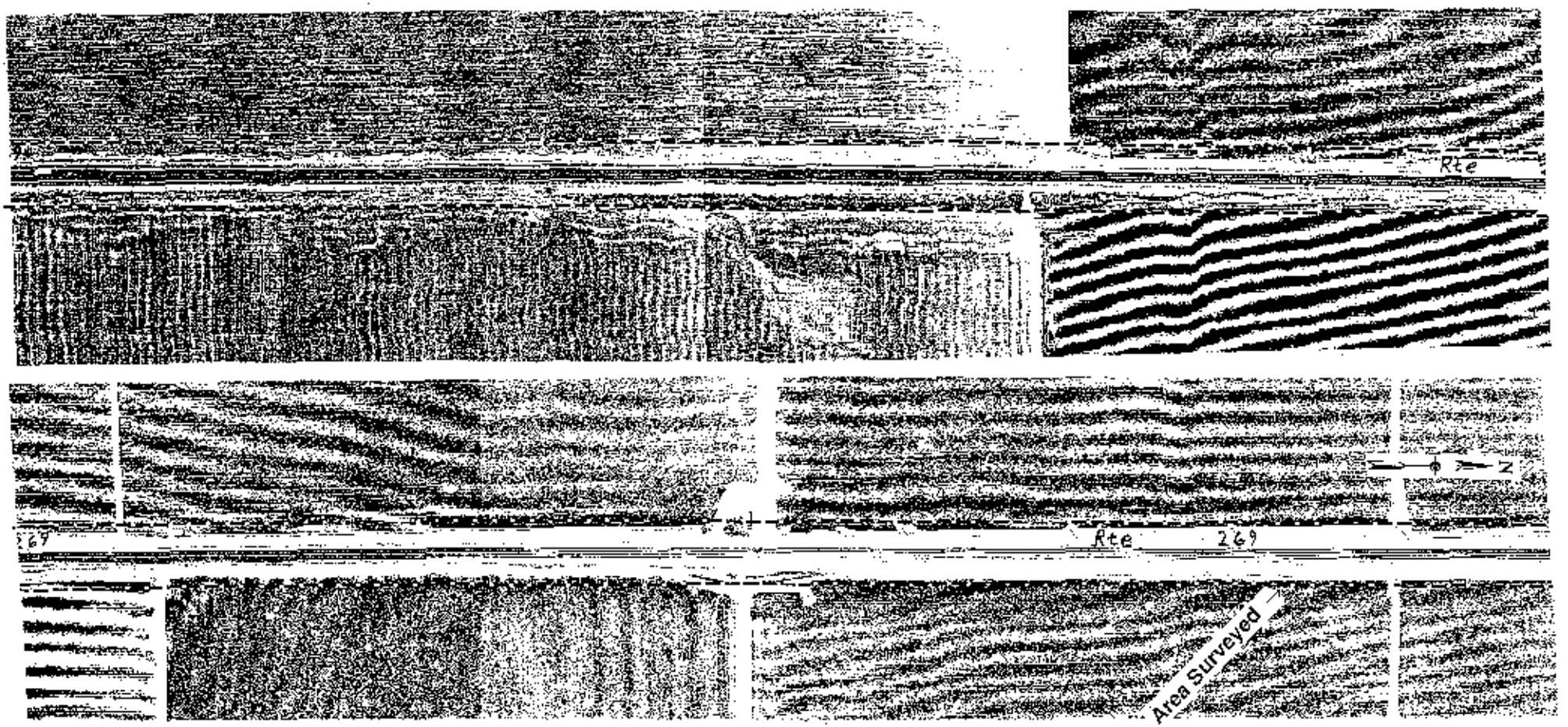


FIGURE 3b
Archaeological Survey Area
K.P. 0.0/17.28
(P.M. 0.0/10.74)
FRE-269, K.P. 0.0/20.5
(P.M. 0.0/12.75)
EA: 06-39810K
Rehabilitation, Widening, and Intersection Upgrade

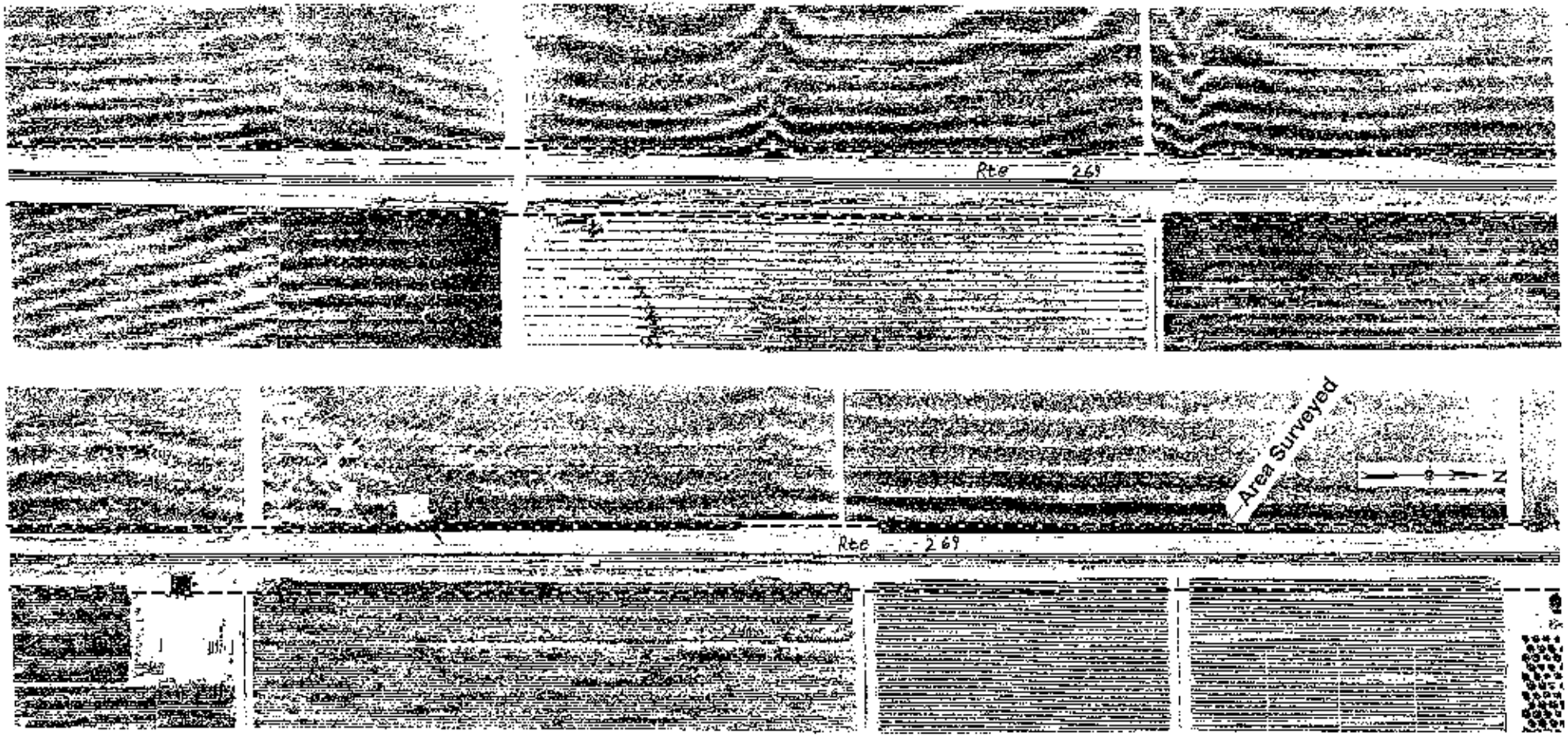


FIGURE 3c
Archaeological Survey Area
K.P. 0.0/17.28
(P.M. 0.0/10.74)
FRE-269, K.P. 0.0/20.5
(P.M. 0.0/12.75)
EA: 06-39810K
Rehabilitation, Widening, and Intersection Upgrade

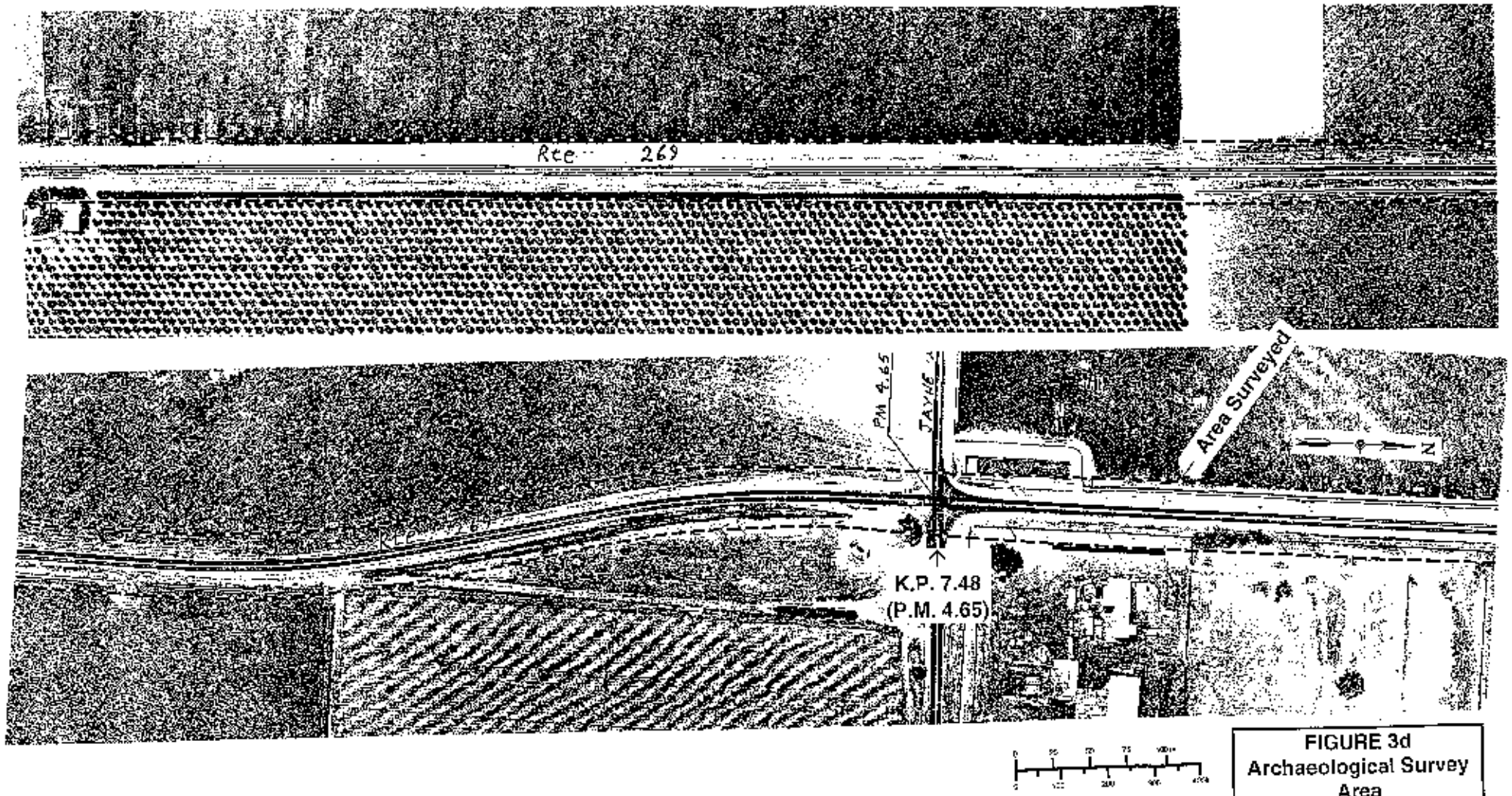


FIGURE 3d
Archaeological Survey Area
K.P. 0.0/17.28
(P.M. 0.0/10.74)
FRE-269, K.P. 0.0/20.5
(P.M. 0.0/12.75)
EA: 06-39610K
Rehabilitation, Widening, and Intersection Upgrade

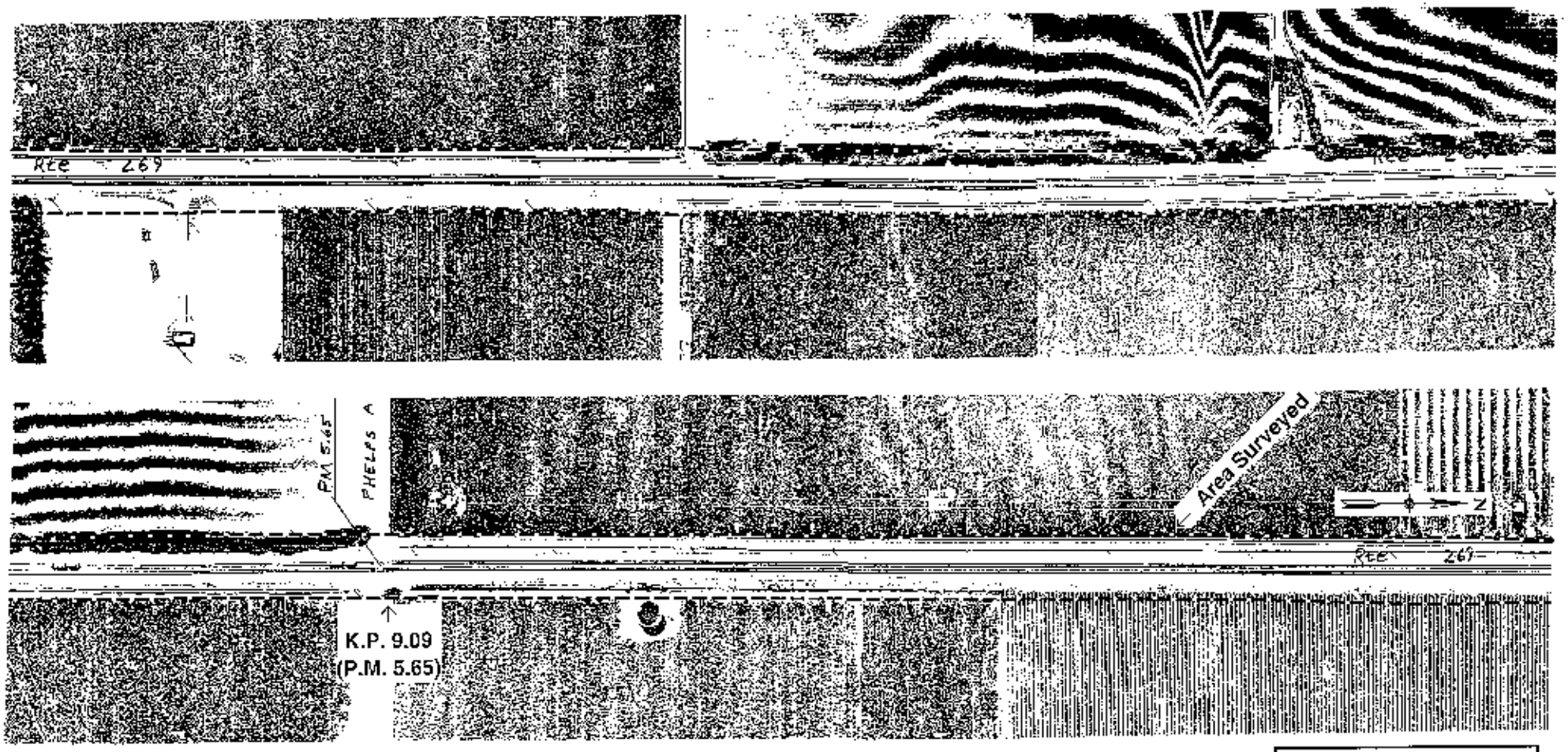


FIGURE 3e
Archaeological Survey Area
K.P. 0.0/17.28
(P.M. 0.0/10.74)
FRE-269, K.P. 0.0/20.5
(P.M. 0.0/12.75)
EA: 06-39810K
Rehabilitation, Widening, and Intersection Upgrade

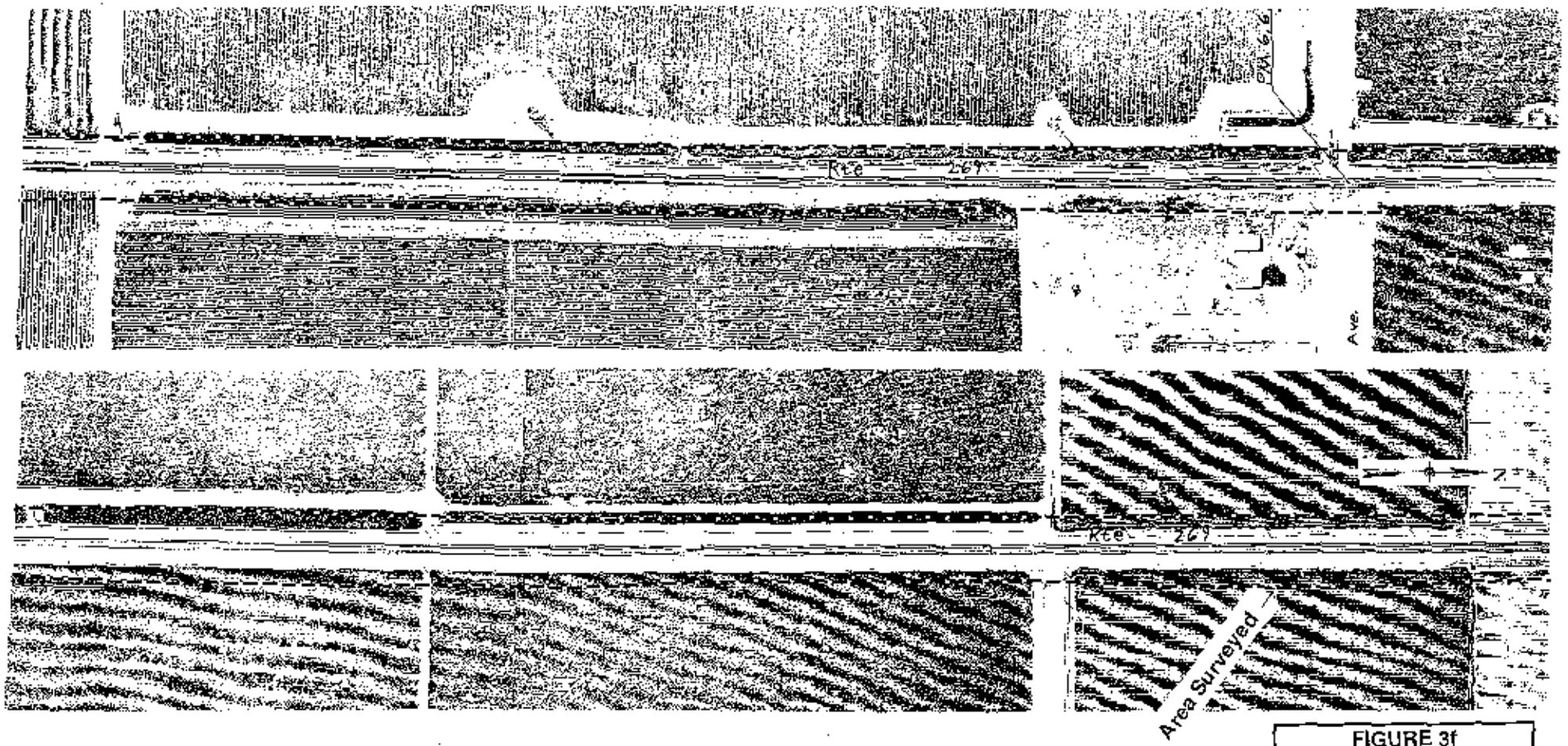


FIGURE 3f
Archaeological Survey Area
K.P. 0.0/17.28
(P.M. 0.0/10.74)
PRE-269, K.P. 0.0/20.5
(P.M. 0.0/12.75)
EA: 06-39810K
Rehabilitation, Widening, and Intersection Upgrade

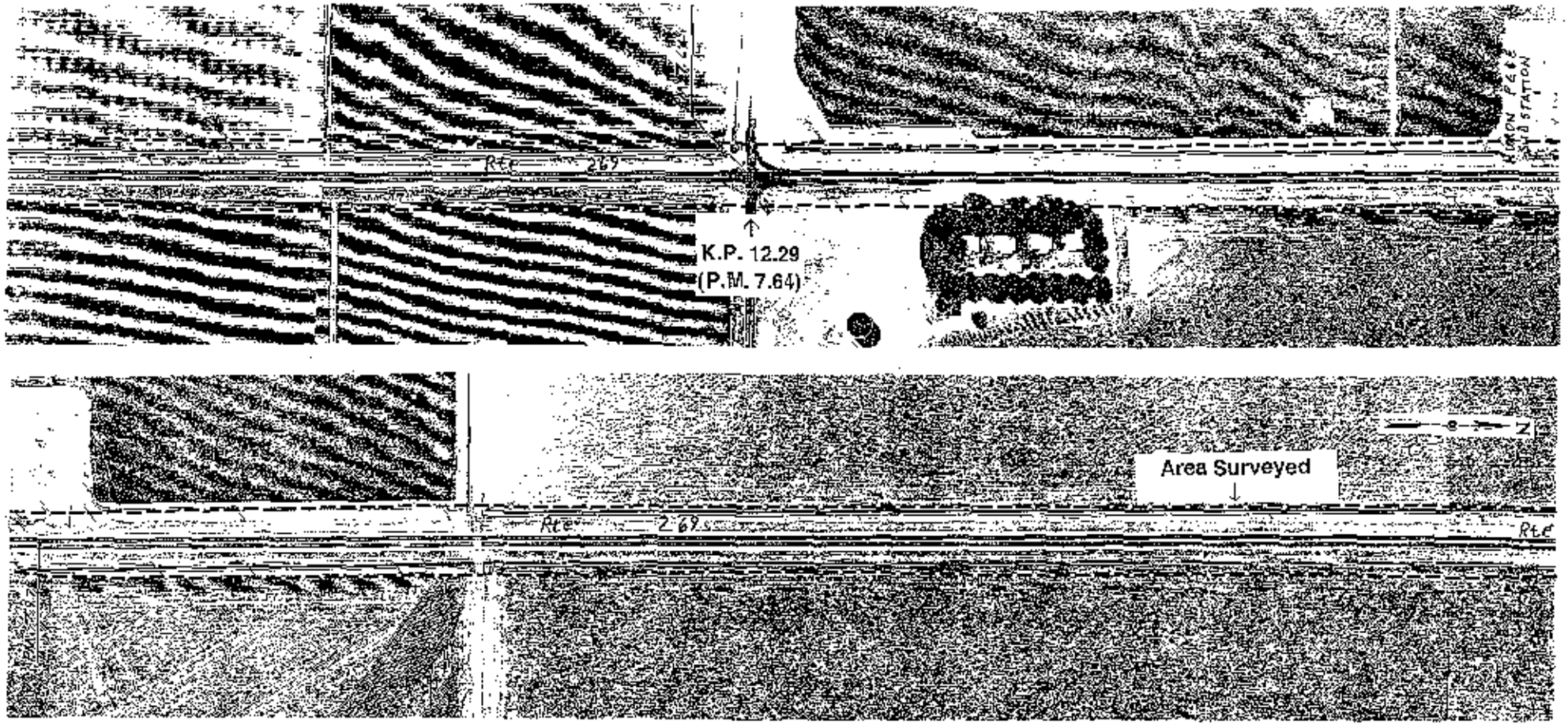


FIGURE 3g
Archaeological Survey Area
K.P. 0.0/17.28
(P.M. 0.0/10.74)
FRE-269, K.P. 0.0/20.5
(P.M. 0.0/12.75)
EA: 06-39810K
Rehabilitation, Widening, and Intersection Upgrade

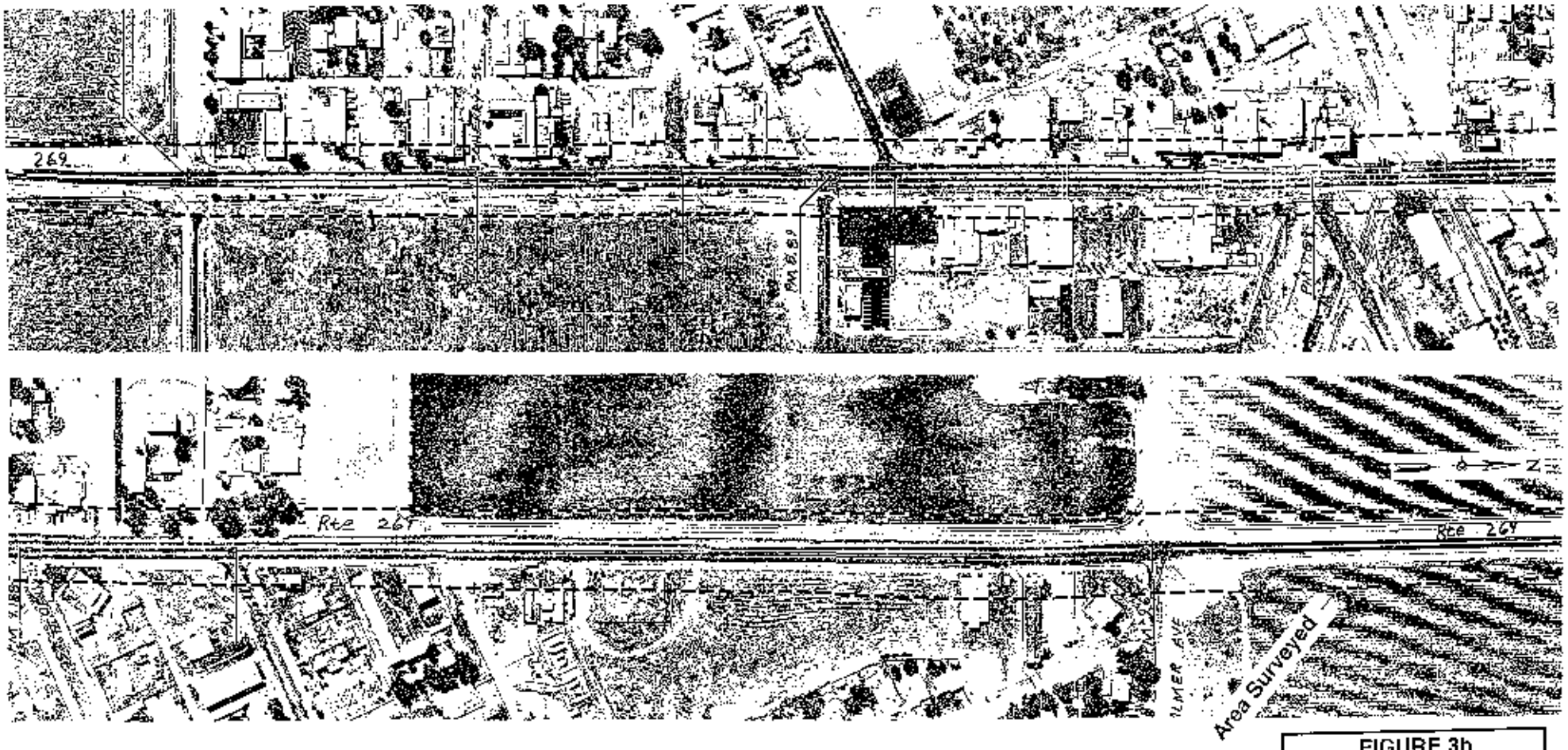


FIGURE 3h
Archaeological Survey Area
K.P. 0.0/17.28
(P.M. 0.0/10.74)
FRE-269, K.P. 0.0/20.5
(P.M. 0.0/12.75)
EA: 06-39810K
Rehabilitation, Widening, and Intersection Upgrade

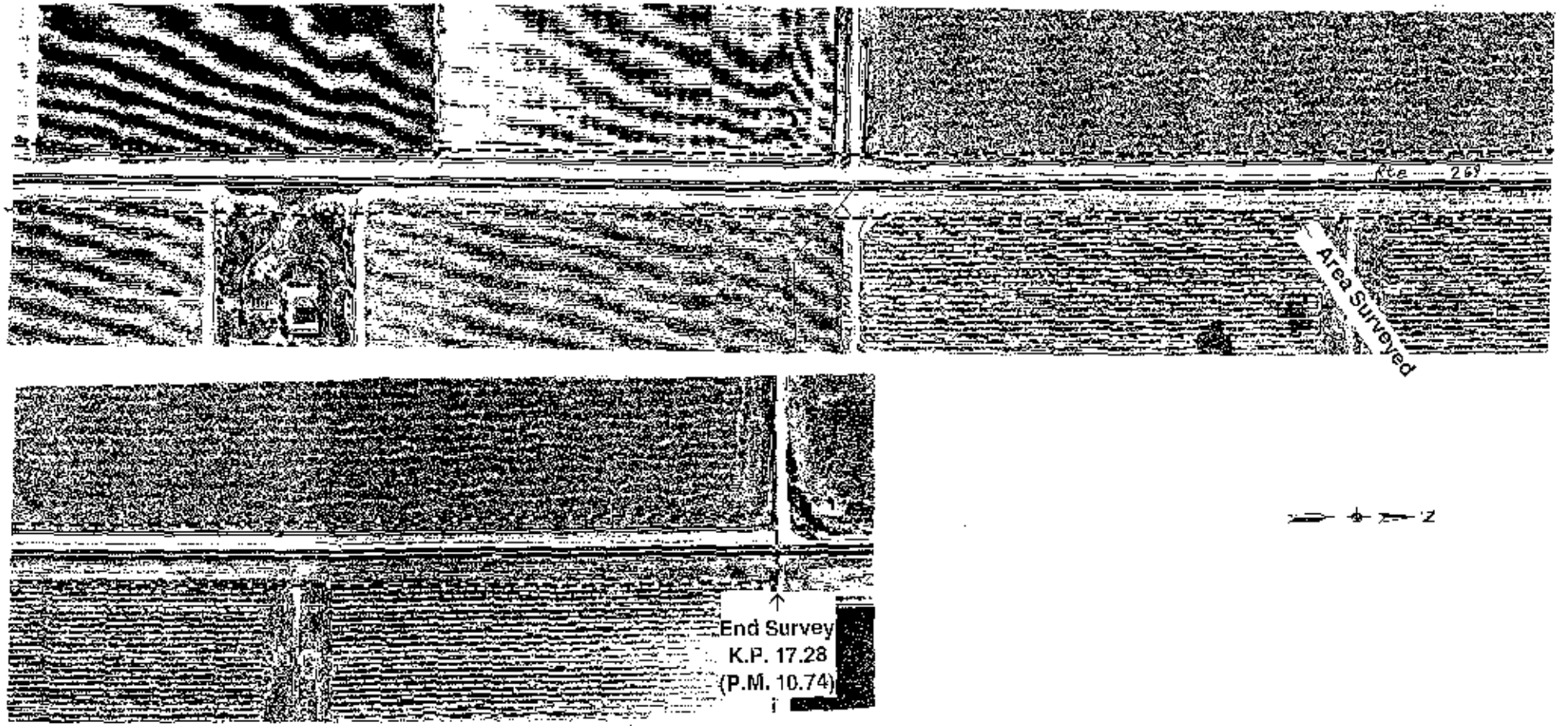


FIGURE 3i
Archaeological Survey Area
K.P. 0.0/17.28
(P.M. 0.0/10.74)
FRE-269, K.P. 0.0/20.5
(P.M. 0.0/12.75)
EA: 06-39810K
Rehabilitation, Widening, and Intersection Upgrade

Los Banos-Gates
500 kV Transmission Project

Application No. 01-04-012

Report in FRESNO County
also in to Kings & KERN Counties

Draft Supplemental Environmental Impact Report

[Cultural Resources Sections]

California Public Utilities Commission

Prepared by
Aspen Environmental Group

October 2001

Los Banos-Gates
500 kV Transmission Project

Application No. 01-04-012

Report in FRESNO County
also in to Kings & KERN Counties

Draft Supplemental Environmental Impact Report

[Cultural Resources Sections]

California Public Utilities Commission

Prepared by
Aspen Environmental Group

October 2001

EXECUTIVE SUMMARY

1. INTRODUCTION/BACKGROUND

On April 13, 2001, Pacific Gas and Electric Company (PG&E) filed an application (A.01-04-012) with the California Public Utilities Commission (CPUC) for a Certificate of Public Convenience and Necessity (CPCN) for the Los Banos-Gates 500 kV Transmission Project (Proposed Project). According to PG&E, the Proposed Project is needed to decrease congestion on the electric transmission route known as "Path 15"[1]. The Proposed Project is intended to improve system reliability by reducing or eliminating the need for load interruptions in Northern California due to constraints on Path 15, reduce overall energy supply costs to consumers in the Independent System Operator (ISO) grid, primarily in Northern California, and unify the California energy market by allowing increased power transfers between Northern and Southern California. According to PG&E's schedule, the Proposed Project would be built and operational by 2004.

The CPUC is the state lead agency for purposes of conducting environmental review of A.01-04-012 in compliance with the California Environmental Quality Act (CEQA). A Final Environmental Impact Statement/Environmental Impact Report (FEIS/EIR) was prepared for the Los Banos-Gates Transmission Project and certified in 1988. However, utility participation in the project was not approved by the CPUC. Consistent with the requirements of CEQA, the CPUC is now preparing a Supplemental EIR (SEIR) to update the analysis of potential environmental effects of the Proposed Project and alternatives, and to propose measures to mitigate any significant effects identified.

CEQA Guidelines §15163(a) state that a Supplemental EIR should be prepared if "only minor additions or changes would be necessary to make the previous EIR adequately apply to the project in the changed situation." Because the Proposed Project is essentially identical to that proposed in 1986 and the circumstances and analysis indicate that relatively minor additions and changes are necessary to update the prior analysis, the Supplemental EIR was determined to be the appropriate form for CEQA compliance. The SEIR identifies the potential for new significant impacts in the areas of biological resources, air quality, and safety, and presents substantially updated mitigation measures in all environmental issue areas that will more effectively reduce impacts on the environment.

Sections B and C of this SEIR present relevant comparison information for the Proposed Project as well as project alternatives, including the No Project Alternative, that were considered in the 1988 FEIS/EIR. CEQA did not require an evaluation of new or different alternatives in this SEIR because either the impacts of the Proposed Project could be adequately addressed based on the existing set of alternatives or no new feasible alternatives were identified which would substantially reduce one or more significant effects on the environment.

The purpose of this SEIR is to update information on the environmental setting and environmental impacts, and to identify the environmentally superior alternative for use by the CPUC in conducting the

[1] Path 15 is a series of high-capacity transmission lines that connect Northern and Southern California. These transmission lines also link the Pacific Northwest and Oregon to Southern California.

proceeding to determine whether to grant PG&E's requested CPCN. As presented in analysis in this document, the environmentally superior alternative is the Proposed Project (Western Corridor), with Alternative Segment 2A.

2. DESCRIPTION OF PROPOSED PROJECT AND ALTERNATIVES

CEQA Guidelines Section 15126.6 requires that, in addition to evaluation of the Proposed Project, an EIR evaluate feasible alternatives. This SEIR considers PG&E's Proposed Project (Western Corridor), one complete alternative corridor (Eastern Corridor), four Alternative Segments of the Western Corridor, and the No Project Alternative.

2.1 PROPOSED PROJECT (WESTERN CORRIDOR)

The major elements of PG&E's Proposed Project include:

- Construction of approximately 84 miles of 500 kV overhead transmission line following a route called the Western Corridor, between the Los Banos Substation and the Gates Substation;
- Realignment of the existing Los Banos-Midway No. 2 500 kV transmission line into Gates Substation;
- Modifications to Los Banos and Gates Substations to accommodate the new transmission line and realignment; and
- Reconductoring or upgrading portions of the Gates-Arco-Midway 230 kV transmission line.

The Proposed Project would be located in the western portion of the San Joaquin Valley, as illustrated in Figure ES-1. The Los Banos Substation, the northern terminus, is approximately 10 miles west of the City of Los Banos, just south of State Route 152 (SR-152) near San Luis Reservoir in western Merced County. The Gates Substation, the southern terminus of the new 84-mile transmission line, is approximately 5 miles southwest of Huron, in southern Fresno County. Upgrades to the existing Gates-Arco-Midway 230 kV transmission line are within Kings and Kern Counties. The Proposed Project area is mostly grassland and generally parallels the foothills of the Coast Range, Interstate 5 (I-5), and two existing 500 kV lines known as the Pacific Intertie. The straight-line distance between the Los Banos and Gates Substations is approximately 80 miles.

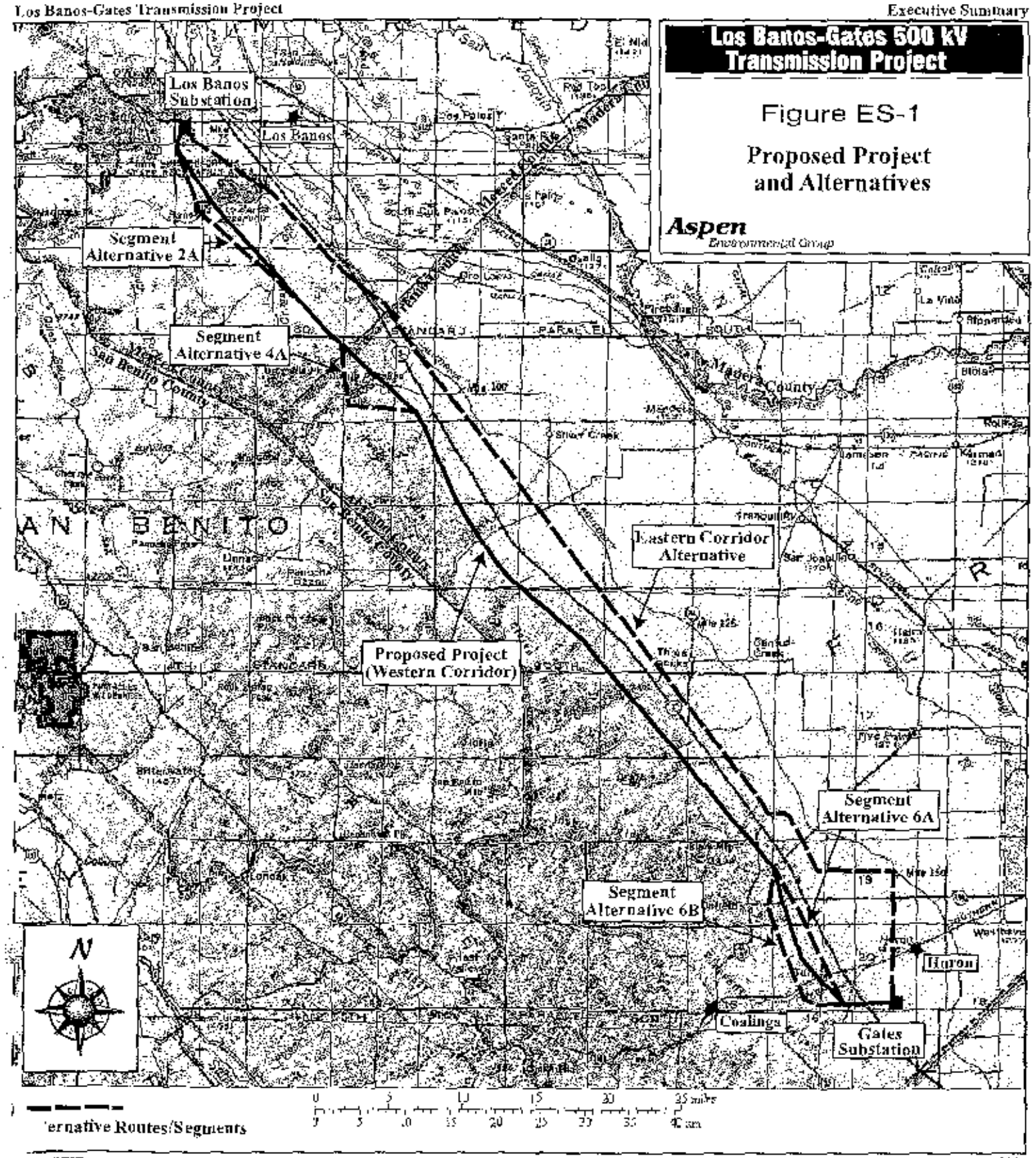
The Western Corridor that is studied in this SEIR is approximately 1,500 to 2,000 feet wide, but the actual right-of-way that PG&E will use for project construction and operation will be 200 feet wide.

2.2 PROJECT ALTERNATIVES

2.2.1 Eastern Corridor Alternative

The Eastern Corridor Alternative, as also illustrated in Figure ES-1, would connect the Los Banos and Gates Substations by following a path that is generally located on the east side of I-5 on the western fringe of the San Joaquin Valley. This entire route is also approximately 84 miles long. The primary objective in the design of this alternative corridor was to parallel existing 230 kV transmission lines to the extent possible. The Eastern Corridor Alternative accomplishes this objective along most of its route.

FR-02015
KE-141



FR-02015
KI-141
DE-092

The Eastern Corridor Alternative would parallel the existing 230 kV line (with the new 500 kV transmission line located approximately 130 feet east of that line), which leaves the Los Banos Substation to the south-southeast and continuing for approximately 68 miles. The Eastern Corridor Alternative would diverge from the 230 kV lines at the southernmost end because of the proximity of the 500 kV lines in this area; the route was modified to allow the Eastern Corridor Alternative to pass through agricultural fields a north-south or east-west direction to minimize impacts on agricultural operations. This orientation would reduce the impacts on existing agricultural land uses by siting the corridor parallel or perpendicular to established agricultural practices (e.g., irrigation or spraying).

Approximately 90 percent of the Eastern Corridor Alternative is composed of intensive, irrigated farmlands. The California Aqueduct, a Delta-Mendota Canal, and the Outside Canal are within the northern third of the corridor and represent the major water conveyance systems present within the corridor.

2.2.2 Western Corridor Segment Alternatives

The primary routing objective for the Western Corridor was to parallel the existing 500 kV line wherever possible, while maintaining the required minimum separation of approximately 2,000 feet. Following are the alternative segments that were designed and the reasons for their creation.

- **Segment 2A.** This 12.9-mile segment provides a route option avoiding the Los Banos Reservoir recreation area while maintaining adequate separation from the Intertie.
- **Segment 4A.** This segment is 9.0 miles long and provides a route option that would be to the west of Little Panoche Reservoir, rather than crossing near the dam which is an area more heavily used for recreation.
- **Segments 6A and 6B.** There are two separate alternatives to Proposed Segment 6: only one of these segments (6, 6A, or 6B) would be constructed. **Segment 6A,** 10.3 miles long, would cross primarily agricultural land but avoids oil field equipment. **Segment 6B**, 11.7 miles long, is the westernmost routing option, crossing oil field equipment, oil wells, and water wells, but avoiding most cultivated agricultural land.

2.2.3 No Project Alternative

In accordance with CEQA requirements, this SEIR evaluates the No Project Alternative that must include (a) the assumption that conditions at the time of the Notice of Preparation (i.e., baseline environmental conditions) would not be changed since the Proposed Project would not be installed, and (b) the events or actions that would be reasonably expected to occur in the foreseeable future if the project were not approved. Two general possibilities are considered:

- **No Action Taken by PG&E.** In this scenario, authorization would not be granted for construction of the Proposed Project or any of the project alternatives. Although project objectives would not be achieved, no environmental impacts would occur since there would be no new construction.
- **Reasonably Foreseeable Actions.** If neither the Proposed Project nor any alternative were approved by the CPUC, PG&E or other entities could implement alternative courses of action intended to improve Path 15 capacity constraints. These actions are speculative at this time; however, PG&E has identified the following actions that could be considered: (1) New generation projects (power plants) could be constructed North of Path 15; in fact, several projects are currently under construction, or (2) Smaller Transmission System Upgrades could occur, in which a 400 to 500 MW capacity increase to Path 15 could be obtained by installation of a second 500 kV/230 kV transformer bank at the Gates Substation and reconductoring of the Gates-Panoche 230 kV transmission line.

3. SUMMARY COMPARISON OF THE PROPOSED PROJECT AND ALTERNATIVES

3.1 INTRODUCTION

CEQA requires that an EIR determine which of the Proposed Project or Alternatives is environmentally superior. This SEIR applies an assessment methodology to achieve this goal, which includes establishing an environmental baseline, updating information in the 1988 FEIS/EIR regarding environmental impacts of the Proposed Project and Alternatives, evaluating feasible mitigation measures, and comparing this information to reach a conclusion.

3.2 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

For the reasons briefly summarized below, this SEIR concludes that the Proposed Western Corridor (including Segments 1, 2A, 3, 4, 5, and 6) is determined to be the environmentally superior alternative. This determination was based on impact analysis in the following 10 environmental issue areas:

- Air Quality
- Biological Resources
- Cultural Resources
- Geology, Soils, and Minerals
- Hydrology and Water Resources
- Land Use and Recreation
- Public Safety, Health, and Nuisance
- Socioeconomics and Public Services
- Transportation and Traffic
- Visual Resources

3.2.1 Western Corridor Vs. Eastern Corridor

Both the Western Corridor and the Eastern Corridor Alternative were designed to follow established transmission corridors. The Proposed Western Corridor was developed in order to minimize impacts on agricultural land and to parallel, but maintain a safe (2,000 foot) distance from, the existing 500 kV lines. This corridor is generally described as non-cultivated/non-irrigated hilly land used primarily for livestock grazing.

The Eastern Corridor Alternative was designed to follow existing transmission corridors (primarily, a 230 kV line) and to minimize impacts to recreation, waterways, and cultural and biological resources. This corridor is primarily agricultural, and crosses more roadways and major travel corridors.

The 1988 FEIS/EIR concluded that the Western Corridor was environmentally superior primarily due to the extensive and unmitigable agricultural impacts in the Eastern Corridor and because the Western Corridor is less visible. Although the Western Corridor project presented more conflict with vegetation and wildlife, as well as cultural and paleontological resources, these impacts could be substantially reduced or eliminated with proper siting, careful construction practices, and adequate mitigation.

The conclusions of this SEIR regarding the comparison of the Western Corridor with the Eastern Corridor Alternative are presented in Table ES-1 below.

Table ES-1 SEIR Conclusions: Western Vs. Eastern Corridors

Issue Area	Preferred Corridor	Issue Area	Preferred Corridor
Air Quality	Eastern	Land Use & Recreation	Western
Biological Resources	Eastern	Public Safety, Health, and Nuisance	Western
Cultural Resources	Eastern	Socioeconomics & Public Services	No Preference
Geology, Soils, & Minerals	Western	Transportation & Traffic	Western
Hydrology & Water Resources	Eastern	Visual Resources	Western

This SEIR identified the following related and significant and unmitigable (Class I) impacts for the Eastern Corridor: loss of use of productive agricultural land, loss of agricultural soils, impacts on agricultural equipment and operations, safety impacts on aerial applicators, and effects on irrigation practices.

Based on information presented in this SEIR, the strongest preferences in favor of the Eastern Corridor are in biological and cultural resources. Based on available information, most impacts in these two issue areas are mitigable to less than significant levels if mitigation recommended in Section C is implemented. However, without completion of site-specific biological surveys at defined tower sites and access roads, the effectiveness of mitigation for impacts on special status wildlife species is not assured so a significant impact on special status species is identified in this SEIR. Despite this, the significant land use and safety impacts on the Easter Corridor result in this SEIR confirming the conclusion of the 1988 FEIS/EIR in finding the Western Corridor to be the environmentally superior alternative.

3.2.2 Western Corridor Alternative Segments

Alternative Segment 2A is Preferred to Proposed Segment 2. The FEIS/EIR determined that Proposed Segment 2 was preferred over Western Corridor Alternative Segment 2A. This SEIR does not identify any significant unmitigable impacts associated with either segment. However this SEIR concludes that Alternative Segment 2A is preferred because of the potential long-term impacts of Proposed Segment 2 to recreation and visual resources.

Proposed Segment 4 is Preferred to Alternative Segment 4A. Both this SEIR and the FEIS/EIR determined that Proposed Segment 4 was preferred and that no significant unmitigable impacts occur on this segment. Alternative Segment 4A would have somewhat greater biological and geologic impacts and is one-half mile longer than the proposed segment, increasing overall construction impacts and imposing additional towers on permanent views.

Proposed Segment 6 is preferred to Alternative Segments 6A and 6B. Both this SEIR and the FEIS/EIR determined that Proposed Segment 6 is preferred over the two alternative segments. The diverse land uses in these segments make analysis difficult: Alternative Segment 6B (in the oil fields and west of agricultural lands) is preferred in Land Use, Public Safety, and Socioeconomics because it avoids agricultural land uses which have associated significant and unmitigable (Class I) impacts related to Alternative Segment 6A's potential effects on agricultural operations/equipment and aerial spraying. Segment 6A (in agricultural land) is preferred in biological and cultural resources, geology, and

hydrology because it would avoid the oil field and habitat impacts of Alternative Segment 6B. The FEIS/EIR selected Proposed Segment 6 because it offered an opportunity to minimize impacts on both agricultural land and oil operations. Proposed Segment 6 may have a significant unmitigable impact related to aerial spraying, but Segment 6B is 1.2 miles longer than Proposed Segment 6, requiring additional construction impacts and long-term visibility of more towers. Overall, Proposed Segment 6 appears to be the best solution to minimizing impacts in this area. Therefore, Proposed Segment 6 is environmentally superior to Alternative Segments 6A and 6B.

3.2.3 Western Corridor Vs. No Project Alternative

Two courses of action are currently envisioned as possible under the No Project scenario: the construction of new generation north of Path 15 and smaller transmission upgrade activities.

The environmental impacts of large thermal (natural gas fired) power plants can be significant, especially with respect to air quality, water resources, biological resources, and visual resources. By contrast, the environmental impacts of constructing a transmission line are substantially less because the operational impacts are insignificant. Therefore, the Proposed Project (or any transmission related alternative) is environmentally superior to the new generation option under the No Project Alternative.

The environmental impacts of transmission upgrades would have impacts that are much less extensive and severe than those of the Proposed Project, particularly for smaller upgrades to provide an additional 400 to 500 MW of capacity. Therefore, if the need is justified for only 500 MW or less, this alternative is environmentally superior to the Proposed Project.

4. ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Impact Assessment Methodology. The analysis within each issue area began with an examination of the FEIS/EIR, the environmental setting at the time that document was prepared, and the impacts and mitigation measures presented. Then the current environmental setting was evaluated in order to determine the changes in the setting since the FEIS/EIR was prepared. The regulatory setting, which includes applicable government rules, regulations, plans, and policies, was reviewed for changes since 1988, and this information is also presented. For the purpose of this document, and pursuant to CEQA Guidelines, the baseline used for the impact analysis reflects conditions at the time of issuance of the Notice of Preparation (July 10, 2001).

The most noticeable change in the environmental setting of the project area since preparation of the FEIS/EIR is that agricultural land use has increased. Other changes relate to the regulatory environment (e.g., air quality regulations, lists of threatened and endangered species). A third type of change since preparation of the FEIS/EIR is the methodology now used for impact analysis differs from that used in 1986 (e.g., visual resources and evaluation of seismic hazards).

The SEIR then addresses the environmental consequences and potential impacts that the Proposed Project and the Alternatives would have related to each issue area. This SEIR identifies over 70 separate impacts in 10 environmental issue areas for the Proposed Project and Alternatives. About

two-thirds of these impacts are mitigable to less than significant levels with implementation of recommended mitigation measures. The following impacts are identified as significant and unmitigable:

- Engine emissions from construction equipment (Proposed Project and all alternatives)
- Loss of agricultural soils and loss of productive agricultural lands (along the Eastern Corridor Alternative)
- Transmission towers and lines presenting safety hazards to aerial applicators (along the Eastern Corridor Alternative and the southern portion of the Western Corridor).
- Potentially significant impacts on special status plant and wildlife species (Western Corridor).

Impacts were evaluated in each issue area using the following system of classification of the impacts:

Class I:	Significant; cannot be mitigated to a level that is not significant
Class II:	Significant; can be mitigated to a level that is not significant
Class III:	Adverse, less than significant
Class IV:	Beneficial impacts.

The impacts of the No Project Alternative are summarized in Section 4.11. Growth-inducing impacts, significant irreversible changes, and cumulative impacts are summarized in Section 4.12.

Mitigation Measures. CEQA Guidelines (Section 15226.4) require that an EIR describe feasible measures that could minimize significant adverse impacts. The FEIS/EIR recommended 64 mitigation measures for the proposed project and alternatives. This SEIR presents about the same number of measures, but the mitigation measures in the SEIR are considerably more rigorous, requiring specific compliance documentation and actions that were omitted from the FEIS/EIR. Within each issue area, the mitigation measures from the FEIS/EIR are presented and the disposition of those measures is explained (i.e., whether the measure has been incorporated into a new measure, retained, or eliminated). Once an impact was identified, diligent effort was taken to identify mitigation measures that will reduce the impact to a level that is not significant. Since some reviewing agencies require a demonstration of reduction of impacts to the maximum extent possible, mitigation measures were identified for all classes of impacts (except beneficial impacts). The mitigation measures recommended by this study have been identified in the impact assessment sections and presented in a Mitigation Monitoring Program table at the end of the analysis for each issue area.

The following sections summarize the findings from the environmental analysis for each of the 10 environmental issue areas evaluated in the SEIR.

4.1 AIR QUALITY

The entire Proposed Project and Alternatives area is within the San Joaquin Valley Air Basin (SJVAB). This air basin is classified as "severe non-attainment" for the Federal ozone standard, "serious non-attainment" for the State ozone standard, and "serious non-attainment" for the Federal standard for small particulate matter (PM_{10}). Emissions associated with either the Proposed Project or Alternatives would contribute to the overall decline in air quality in the SJVAB.

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Since the issuance of the 1988 FEIS/EIR, air quality in the SJVAB has declined. As a result, the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) has established construction emissions thresholds for ozone precursors. The Proposed Project or Alternatives would exceed this threshold, creating a significant impact because emissions would be over threshold levels even with implementation of mitigation.

Impacts of the Proposed Project. The Proposed Project would create significant air emissions during construction (short-term). The pollutants of greatest concern to the SJVUAPCD are particulate matter less than 10 microns (PM_{10}) and ozone precursor emissions [reactive organic compounds (ROC) and nitrogen oxides (NO_x)]. PM_{10} construction emissions can be mitigated to levels that are less than significant. However, as stated above, despite mitigation measures, NO_x emissions generated during construction activities would remain significant because pollutant levels would exceed APCD guidelines.

Mitigation Measures for the Proposed Project. Three mitigation measures are recommended. Fugitive dust emissions (PM_{10}) would be reduced by the SJVUAPCD's required control measures, as well as additional measures controlling construction equipment and activities. Two additional measures are designed to reduce NO_x construction emissions, but impacts of ozone precursor emissions remain significant.

Comparison of Alternatives. The Alternatives would have the same types and levels of impacts (construction PM_{10} and NO_x emissions) that are associated with the Proposed Project. The Eastern Corridor Alternative would have fewer air quality impacts than the Proposed Western Corridor because fewer new access roads would be required and construction would occur primarily in irrigated land.

4.2 BIOLOGICAL RESOURCES

Construction of the Proposed Project could result in temporary or permanent impacts to vegetation and wildlife species and their habitats. All identified impacts to biological resources are potentially significant, but mitigation recommended in this SEIR would reduce most impacts to less than significant levels. Significant impacts could remain to special status plant and wildlife species; this impact cannot be further determined until tower and access road locations are defined and biological surveys are completed. The list of plant and animal species in the project area has changed substantially due to considerable changes to the legal status of many plant and animal species since the 1988 FEIS/EIR. While the FEIS/EIR determined that all biological impacts would be mitigable to less than significant levels, this SEIR identifies that a significant impact on special status plant and wildlife species may occur.

Impacts of the Proposed Project. Impacts include the direct removal of plants or of wildlife habitat, wildlife mortality caused by construction vehicles, and the risk of bird collision with towers and transmission lines. Construction occurring in sensitive habitats (wetlands or riparian areas) would be more likely to affect sensitive plants and wildlife. There are 37 sensitive plant species that could be

present in the project area, but only 9 have been observed in surveys. Eight species of special status wildlife were observed in the project area.

Mitigation Measures for the Proposed Project. Twelve mitigation measures are recommended to reduce impacts on biological resources, including the following:

- Pre-construction surveys for rare plants, wetland/riparian habitat, and wildlife
- Use of exclusion flagging or fencing to mark and protect sensitive vegetation communities
- Selectively placing towers to span sensitive habitats
- Maximizing the use of existing access roads
- Restoration of disturbed areas or off-site compensation for permanent vegetation losses
- Implementing a *Worker Environmental Awareness Program* for construction crews
- Scheduling project activities to avoid critical breeding seasons and establishing buffer zones around nests and burrows
- Installing bird flight diverters in areas with high bird use to reduce bird collision impacts.

After implementation of these measures, if residual impacts to special status plant and/or animal species remain, PG&E would be required to consult with appropriate resource agencies to determine specific additional actions that would offset remaining impacts to listed species.

Comparison of Alternatives. The Eastern Corridor Alternative would have far fewer impacts to species and their habitats because it passes primarily through agricultural lands, eliminating impacts to all but a few special status plant and wildlife species that grow, den, burrow, and forage in agricultural land. Consequently, from a biological standpoint, the Eastern Corridor Alternative is strongly preferred over the Western Corridor.

4.3 CULTURAL RESOURCES

Archaeological expeditions in the San Joaquin Valley have discovered archaeological, ethnographic, and historic artifacts as old as 12,000 years old that define distinct cultural traditions and provide a link to the development of human history.

Since publication of the 1988 FEIS/EIR, several additional cultural sites have been recorded along the Proposed and Alternative corridors. In addition, mitigation measures have been substantially strengthened to ensure that cultural resources would be protected during construction. With implementation of these expanded mitigation measures, this SEIR concludes that all impacts on cultural resources would be less than significant.

Impacts of the Proposed Project. The Proposed Project could affect National Register and/or California Register prehistoric, ethnographic/contemporary, and historic era eligible cultural resources. The most serious impact would be the destruction or disturbance of cultural resources during construction. Project construction could also affect recorded cultural resources in several parks, Wilderness Study Areas, and recreational areas. The Proposed Project would require access roads to remote areas previously inaccessible, resulting in an increased potential for vandalism or inadvertent

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disturbance of unknown resources. All these impacts would be less than significant with implementation of recommended mitigation.

Mitigation Measures for the Proposed Project. Five mitigation measures are recommended to reduce cultural resource impacts to less than significant levels. Measures require PG&E to develop a Cultural Resources Management Plan covering all project activities, and defining actions to be taken if resources are discovered. Pre-construction field surveys and the identification and recording of any previously unrecorded cultural resources are required. Mitigation measures also require consultation with Native Americans and with land management agencies or parks to identify specific known resources that should be avoided.

Comparison of Alternatives. The Eastern Corridor Alternative would affect fewer cultural resources than the Western Corridor because it would pass through areas that have been disturbed, and are also located farther from the areas that were historically more occupied. In addition, because the Eastern Corridor Alternative has had more heavy agricultural uses, potential historic resources in that area would likely have already been destroyed or recovered.

4.4 GEOLOGY, SOILS, AND MINERALS

The Proposed Project and Alternatives are located along the boundary of the Diablo Range of the Coast Ranges and the Central Valley physiographic provinces, dividing the rough varied terrain of the hills and mountains from the nearly level plains of the valley floor.

The environmental setting of the Proposed Project area has not significantly changed since the publication of the FEIS/EIR with respect to the geology, soils, mineral and paleontologic resources of the region; however, the general understanding of the processes underlying the observed conditions have advanced and seismic standards have changed. The SEIR presents a revision of the seismic hazard analysis reflecting changes in the governing regulations and an improved understanding of the faulting in the Project area. Five revised mitigation measures are proposed, which, if implemented, would ensure that all impacts would be less than significant.

Environmental Impacts of the Proposed Project. Specific impacts associated with the Proposed Project and Alternatives include the potential for surface fault rupture and strong ground shaking. Certain soil characteristics can affect project facilities. Existing landslides and potentially unstable slopes are present throughout the foothills of the Diablo Range, and erosion and/or destabilization of slopes could occur as a result of construction activities, particularly access roads. The permanent conversion of agricultural soils to a non-agricultural use is considered a significant impact, but all other impacts are mitigable to less than significant levels.

Mitigation Measures for the Proposed Project. Five mitigation measures are proposed to minimize the effects of hazardous geologic conditions. These measures require site-specific geotechnical testing to define soil conditions and faults, avoidance of unstable slopes, and development of a Paleontologic Resources Monitoring Plan.

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Comparison of Alternatives. The Eastern Corridor Alternative would have greater impacts than the Western Corridor for two reasons. It has greater potential for loss of agricultural soils and there is a potential hazard from hydrocompactive soils (which could cause differential settlement and tilting or twisting of transmission line support structures).

4.5 HYDROLOGY AND WATER RESOURCES

The Proposed Project is located along the transitional zone between the eastern edge of the Diablo Range and the western edge of the San Joaquin Valley, and crosses or approaches several stream courses, water supply reservoirs, canals, irrigation ditches, and several oil and water wells. Impacts to surface water hydrology and water quality, groundwater hydrology and water quality, and the geomorphology of stream courses were considered.

This SEIR includes a more thorough reporting of hydrologic conditions (including flooding, groundwater, water quality, and wetland issues) that were not addressed in the FEIS/EIR. These issues are addressed in detail, and eight detailed mitigation measures are recommended.

Impacts of the Proposed Project. Construction of the Proposed Project could result in the following hydrologic impacts, each of which would be less than significant with mitigation:

- Alteration of existing drainage patterns could cause increased runoff and erosion
- Accidental discharge of construction-related contaminants (including fuels) could contaminate surface drainages or groundwater
- Excavation for tower foundations and substations could impair groundwater quality.

Mitigation Measures for the Proposed Project. Eight mitigation measures are proposed to reduce potential significant hydrologic impacts to less than significant levels. Erosion, sediment loading, contamination, and other surface water quality impacts would be controlled through development of a comprehensive Erosion Control Plan, a Storm Water Pollution Prevention Plan, Hazardous Substance Control and Emergency Response Plan, and an environmental training program. Impacts to groundwater hydrology and quality would be reduced by reviewing contamination data prior to selecting the final transmission line alignment. Contaminated soil or groundwater that is encountered during construction would be disposed of and treated if necessary. Transmission towers would not be sited in 100-year floodplain locations.

Comparison of Alternatives. The Eastern Corridor Alternative is preferred over the Western Corridor in the area of Hydrology and Water Quality for several reasons. Construction along the flatter Eastern Corridor Alternative will involve less potential erosion, runoff, and sediment transport impacts. The Eastern Corridor Alternative also requires fewer creek, reservoir, and other important wetland crossings (i.e., Salt and Ortigalita Creek wetlands). The Eastern Corridor Alternative does not pass through the oil fields in the Coalinga area and therefore has a smaller chance of encountering contaminated soil or water in that area. The Eastern Corridor Alternative does pass through areas with potentially shallower groundwater depths than the Western Corridor, but this issue is considered less significant than the other impacts addressed above for the Western Corridor.

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4.6 LAND USE AND RECREATION

The Proposed Project and Alternatives cross mainly private land under Merced and Fresno County jurisdictions and the jurisdiction of several public agencies including: the U.S. Bureau of Land Management (BLM); U.S. Bureau of Reclamation (BOR); California Department of Water Resources (CDWR); California Department of Parks and Recreation (CDPR); and California Department of Fish and Game (CDFG). Transmission line siting can create a variety of potential land use conflicts, but most of these (i.e., with residential properties, agricultural operation areas, canals, oil field areas, dams, recreation areas, and pipelines) can be avoided during final alignment of the transmission line. The primary land use concern is interference with agricultural operations because these operations cannot be avoided along several portions of the Proposed and Alternative Corridors.

The land use impact assessment methodology and impact conclusions remain consistent with the 1988 FEIS/EIR. However, due to the increase in agricultural production along the Proposed Project route, the impacts on agriculture along this route are more prevalent than they were in 1988. Along the Proposed Project route, more land is now devoted to intensive agriculture, and agricultural production has also increased along the Eastern Corridor Alternative.

Impacts of the Proposed Project. Impacts related to agriculture include interference with irrigation practices or agricultural operations and loss of productive agricultural land. These potentially significant impacts can be reduced to levels that are less than significant with implementation of mitigation measures. One exception is the southern section of the proposed route, where impacts related to interference with agricultural operations (specifically aerial spraying) are identified as significant and unmitigable.

Mitigation Measures for the Proposed Project. A combination of 10 mitigation measures would reduce the impacts of a variety of construction activities to less than significant levels. Nine other measures are recommended to reduce potential conflicts with specific land uses. These conflicts could be minimized by coordination with landowners, resulting in final design of the tower locations to minimize impacts on specific agricultural practices.

Comparison of Alternatives. Along Proposed Western Corridor, fewer land uses would be permanently affected than along the Eastern Corridor Alternative where the right-of-way is used for intensive farming, including row crops and permanent crops. Due to the predominance of intensive farming, particularly in permanent crops, these agricultural impacts are considered significant and unavoidable for the Eastern Corridor Alternative.

4.7 SOCIOECONOMICS, PUBLIC SERVICES, AND UTILITIES

Socioeconomics and public services are analyzed for Merced, Fresno, and Kings Counties in the San Joaquin Valley. The project area is predominantly characterized by farmland and grazing land. The unemployment rate is relatively high throughout the project area, and all three counties are estimated to grow in population by nearly 50 percent over the next 20 years. All public services are adequately provided in the project area.

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The region surrounding the Proposed Project has experienced dramatic population growth since the publication of the FEIS/EIR. This SEIR presents updated data from the 1990 and 2000 Censuses. However, no difference in overall impact results since the Project and Alternatives would be located in sparsely populated areas of Merced and Fresno Counties.

Impacts of the Proposed Project and Alternatives. Impacts to socioeconomics and public services would be similar for the Proposed Project and Alternatives. A minor beneficial impact would result from the project-generated local purchase of consumable materials, and motels and restaurants could benefit from temporary increases in demand. Construction of the transmission line could result in minor disruption of grazing and crop activity and oil production activities, but this disruption could be reduced to a less than significant level if PG&E coordinates with landowners in tower and line placement. Many parts of the Proposed Project and Alternatives would be difficult to access by public fire personnel and would make it necessary for the construction crews to have on-site equipment and procedures in place to minimize the risk of fire and to quickly eliminate any small fires that might be started.

Mitigation Measures for the Proposed Project and Alternatives. One mitigation measure would require PG&E to submit a Fire Prevention and Suppression Plan to the CPUC for approval prior to construction.

Comparison of Alternatives. The overall level of impact on Western and Eastern Corridors is similar. While the Western Corridor avoids most agricultural land, it would have a greater likelihood of fire, which would places demands on public fire response services.

4.8 PUBLIC SAFETY, HEALTH, AND NUISANCE

For both the Proposed Project and Alternatives, safety, health and nuisance issues associated with transmission line construction and operation include exposure to electric and magnetic fields (EMF); the potential for radio, television, or electrical equipment interference; noise from construction and operation; and safety hazards created by transmission towers to airplanes in agricultural areas.

The SEIR evaluates the same issues considered in the 1988 FEIS/EIR, and the conclusions are similar. No significant impacts are identified for EMF, interference, or noise. However, this SEIR identifies significant and unmitigable impacts associated with the safety hazard of transmission lines to aerial applicators.

Impacts of the Proposed Project and Alternatives. EMF exists in the environment both naturally and as a result of human activities that use electricity. Additional EMF will be generated as a result of the Proposed Project. The CPUC has not adopted any specific limits on EMF, but has issued a decision to create a research program (described below), and requires the use of "low-cost" or "no-cost" mitigation measures for transmission lines and substations such as those included by PG&E in the Proposed Project. Power lines can also generate high frequency energy and EMF that can interfere with broadcast signals or electronic equipment. These interference problems tend to be associated with loose or worn hardware, so the sources of interference can usually be located and corrected.

Transmission lines in agricultural areas present a safety hazard for aerial applicators ("crop dusters") because they present additional obstacles that pilots must avoid. Mitigation is recommended to reduce the level of impact of new transmission lines and towers. However, in some locations, due to the orientation of lines crossing the fields, the safety hazard would remain significant and unmitigable.

Mitigation Measures for the Proposed Project and Alternatives. Two mitigation measures would reduce impacts on radio and television interference to a less than significant level. The measures require PG&E to limit the conductor surface electric gradient in accordance with the IEEE Radio Noise Design Guide during the design and construction process. An additional mitigation measure addresses the potential for induced currents and shock hazards in joint use corridors, requiring PG&E to identify objects that have the potential for induced voltages and to work with the affected parties to determine proper grounding procedures. To help reduce the impact to aerial applicators, mitigation requires that PG&E provide written notification to all aerial applicators of when the new transmission lines and towers will be erected, along with recent aerial photos or topographic maps clearly showing the new lines and towers.

Comparison of Alternatives. The Proposed and Alternative Corridors are similar with respect to EMF health effects, noise, induced currents, or radio/television interference. Safety impacts to aerial applicators would be substantially more severe along the Eastern Corridor Alternative than the Western Corridor.

4.9 TRANSPORTATION AND TRAFFIC

A transmission line project can affect roadways during construction by causing increased or congested traffic, or by damaging road surfaces. The 1988 FEIS/FEIR did not include analysis of these issues.

Impacts of the Proposed Project. Impacts involve increased traffic levels associated with material and supply haul trips and commuting workers, stringing transmission line conductors over Caltrans and county roads resulting in potential lane closure and disruption to bus transit services, and construction vehicles potentially damaging road surfaces.

Mitigation Measures for the Proposed Project. Four mitigation measures are proposed. One would require installation of temporary poles and netting across I-5 and other State Routes when conductors need to cross these roadways. Additional measures requires consultation with Coalinga Transit personnel and development of traffic control plans for locations where the lines would cross Caltrans or county roads. The last mitigation measure requires that roads disturbed by construction vehicles be properly restored to ensure long-term protection of road surfaces.

Comparison of Alternatives. The Proposed Western Corridor would have slightly less severe impacts than the Eastern Corridor Alternative because the Eastern Corridor Alternative crosses more heavily traveled roads.

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4.10 VISUAL RESOURCES

The project area landscapes are comprised primarily of low, rolling grass-covered hills and level grazing land and agricultural fields. Since this type of terrain typically offers few screening opportunities, tall structures such as transmission line towers tend to be very visible if located in close to moderate proximity to roads or other points of public visual access, such as parks and recreation areas. The industrial character of transmission line structures also creates visual contrast with the more natural character of the rural agricultural setting. The primary issue of concern for the Proposed Project and Alternatives is the project's potential to degrade views from local and regionally important roadways (Interstate 5 [I-5]; State Routes 33, 152, and 198; Eldorado Road; and Jayne Avenue) and recreation areas (Los Banos Creek State Recreation Area and Little Panoche Reservoir).

The Project area has not undergone substantial development since the FEIS/EIR was published. However, a considerable amount of open grazing land has been converted to irrigated agriculture, particularly along the southern half of the proposed Western Corridor, and these changes are noticeable in the landscape. The SEIR uses an updated visual resource analytical methodology, but the conclusions reached (all impacts would be less than significant) are the same as those of the FEIS/EIR.

Impacts of the Proposed Project. Most segments of the Proposed Project would experience no significant visual impacts because they are either sufficiently distant from the primary points of public visual access or within the viewshed of the two existing 500 kV transmission lines. The Western Corridor would be visible to the west of Los Banos Creek Recreation Area, but it would be sufficiently distant from the primary use areas that a significant visual impact would not occur. The corridor would pass immediately adjacent to Little Panoche Reservoir and is prominent in views from both the reservoir and Little Panoche Road. Although the resulting visual impact is adverse, it is less than significant due to the presence of the existing two 500 kV transmission lines in the viewshed. Proposed Segments 6 and 7 would be located in close proximity to local roads and I-5 (where it would be crossed by the line). In this area, the resulting visual impact would be adverse but still less than significant.

Mitigation Measures for the Proposed Project. The Proposed Project does not create any potentially significant visual impacts, so no mitigation measures are required. Two measures are suggested, however, based on measures recommended in the 1988 FEIS/EIR. One would ensure that the visual impacts of construction activities remain less than significant and the second would require tower siting to minimize use of hilltops and to use non-reflective materials in construction.

Comparison of Alternatives. The Western Corridor is generally preferred over the Eastern Corridor Alternative due to its more remote location and/or typically greater distance from I-5, which provides the primary visual access in the project study area.

4.11 NO PROJECT ALTERNATIVE

CEQA requires an evaluation of the No Project Alternative that must include (a) the assumption that conditions at the time of the Notice of Preparation (i.e., baseline environmental conditions) would not be changed since the Proposed Project would not be installed, and (b) the events or actions that would

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be reasonably expected to occur in the foreseeable future if the project were not approved. These two scenarios are addressed below.

The No Project Alternative could have two components: new generation north of Path 15 and different transmission upgrades. The environmental impacts of large thermal (natural gas fired) power plants can be significant, especially with respect to air quality, water resources, biological resources, and visual resources. The environmental impacts of a transmission line, because the operational impacts are insignificant, would be substantially less than those associated with power generation. However, because power plants are constructed by merchant power generators or local utilities, their construction will likely proceed regardless of whether Path 15 is built.

The No Project Alternative also includes the possibility of a smaller transmission system upgrade that could provide an additional 400 to 500 MW of capacity between the Los Banos and Gates Substations. This transmission upgrade would have impacts that are much less extensive and severe than those of the Proposed Project.

4.12 GROWTH INDUCING EFFECTS

CEQA requires a discussion of the ways in which a project could be an inducement to growth. Potential growth-inducing impacts of the proposed Los Banos-Gates 500 kV Transmission Project could be manifested in two fundamental ways:

- Growth resulting from the direct and indirect employment needed to construct and operate the Proposed Project.
- Growth resulting from the additional power that would be transmitted by the Proposed Project.

Growth resulting from the direct and indirect employment needed to construct and operate the Proposed Project or Alternatives is unlikely. Construction crews for the project are expected to come from within PG&E, with an emphasis on use of workers from the local San Joaquin Valley Area. It is likely that 50 percent of the workers may come from outside the local area, but these workers would not be expected to permanently relocate with their families. Given the relatively high unemployment rates in the project area and the large local labor force in the construction industry, the project itself would not significantly affect the employment patterns of the area. Over the long term, operation of the Proposed Project or Alternatives would require very few employees.

Growth resulting from the additional power transmitted by the Proposed Project or Alternatives is also unlikely. For California, Path 15 has been operated as a means of importing energy from Northern to Southern California during the winter and exporting energy from Southern to Northern California during the summer. The driving force behind the need to expand the electrical service capacity along Path 15 is to bring reliability in energy service for both Northern and Southern California, and to drive down the costs of wholesale electricity for all California residents. Neither the Proposed Project nor Alternatives would result in the generation of more electricity, just the ability to more effectively transfer existing electricity between Northern and Southern California. Although all three counties in

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the project area anticipate a doubling of the population over the next twenty years, this growth is anticipated to occur regardless of construction of an approved project.

4.13 CUMULATIVE IMPACT ANALYSIS

CEQA Guidelines Sections 15120/15355 require a discussion of cumulative environmental impacts that may result from multiple projects that are reasonably foreseeable and that would be constructed or operated during the life of the Proposed Project. The CEQA discussion of cumulative impacts is not related to any evaluation of project need based on consideration of multiple projects. The issue of project need will be addressed in the CPUC proceeding to determine whether to grant PG&E's CPCN request in A.01-04-012.

This SEIR identifies 12 cumulative projects that would have at least some portion of their area within proximity to the Proposed Project Corridor and facilities or Alternative Corridors and facilities. Most of the future developments identified are either outside of the proposed corridor or are not scheduled for construction at the same time as the Proposed Project. Therefore, for most issue areas these future developments would not result in cumulative impacts. Potential cumulative impacts identified in the SEIR are addressed below.

- Construction of the cumulative projects could further exacerbate the significant NO_x emission impacts and the potentially significant PM_{10} emission impacts (PM_{10} emissions would be controlled by requirements of the San Joaquin Valley Unified APCD) estimated for the construction of the Proposed Project or Alternatives. Therefore, the project's incremental effect would be cumulatively considerable.
- The increasing conversion of open space to agricultural land, urban uses, petroleum extraction, strip mining, canals, pipelines and evaporation and percolation basins in the western San Joaquin Valley contribute to an overall loss of Valley floor and upland habitat for plants and animals. Therefore, the impacts on special status plant species from implementation of the Proposed Project are considered to be cumulatively considerable. In addition, because the impacts of the Proposed Project itself are considered to be potentially significant, potential cumulative impacts to special status wildlife species and their habitat throughout the region is also considered to cumulatively considerable.

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5. PUBLIC PARTICIPATION AND AREAS OF CONTROVERSY

5.1 PUBLIC PARTICIPATION

Three actions have been taken to ensure public involvement in and awareness of the CEQA analysis of the Los Banos-Gates Project:

(1) **Publication of a Notice of Preparation (NOP) of a Supplemental EIR and Notice of Public Scoping Meetings** soliciting comments from affected public agencies and from the public. On July 9, 2001, 200 copies of the NOP were mailed to agencies and members of the public.

(2) **Public Scoping Meetings.** Two meetings were held on July 24, 2001, one at Los Banos City Hall, Council Chambers (1:30 p.m.) and one at Harris Ranch Conference Center (7:00 p.m.).

(3) **Information Sources.** Establishment of an Internet web site, electronic mail address, a telephone hotline, and local Information Repositories.

5.2 PUBLIC NOTICE OF DRAFT SUPPLEMENTAL EIR RELEASE

A Notice of Release of the Draft Supplemental EIR will be sent to property owners and occupants on or adjacent to PG&E 's Proposed Project and the alternative routes in October 2001, including information on how to review or obtain copies of the Draft Supplemental EIR.

5.3 PUBLIC REVIEW PERIOD

In compliance with CEQA Guidelines, the CPUC provides a public review period of 45 days for the Draft SEIR. This public review period commences upon release of the Draft SEIR, on October 5, 2001, and goes through November 19, 2001. Written comments on the Draft SEIR may be submitted at the informational meetings and Public Participation Hearings, discussed below, or via facsimile transmission on the SEIR Hotline **(559-272-2107)**, e-mail at the SEIR e-mail address (Path15@AspenEG.com), or postal mail at:

Billie Blanchard
California Public Utilities Commission
c/o Aspen Environmental Group
235 Montgomery Street, Suite 800
San Francisco, CA 94104

Written comments must be received by **November 19, 2001**. Please remember to include your name and return address in whatever form you make your written comments.

EIR Information and Repository Sites

Five repository sites have been established in the Proposed Project area to provide information about the project to people in the area, and SEIR-related documents are also available at the CPUC in San Francisco. Copies of the SEIR will be mailed to agencies and parties to the CPUC's General Proceeding, and a limited number of copies will be available for distribution upon request to the

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CPUC's Project Manager (contact information on previous page). SEIR-related documents and project information, including the Draft SEIR, will be available upon their release to the public at the locations listed below.

Coalinga District Library
305 North Fourth Street
Coalinga, CA
(559) 935-1676

Huron Public Library
26050 "O" Street
Huron, CA
(559) 945-2284

Hanford Public Library
401 N. Douty Street
Hanford, CA
(559) 582-0261

Los Banos Public Library
1312 Seventh Street
Los Banos, CA
(209) 826-5254

Fresno Free Library
2420 Mariposa Street
Fresno, CA
(559) 488-3195

CPUC Central Files
505 Van Ness Avenue
San Francisco, CA
(415) 703-2045

A telephone hotline for project information has been established at **(559) 272-2107**. This number receives voice messages and faxes.

SEIR information is also available on the Internet, including Proposed Project information and the Draft SEIR. The address below links to CPUC's Los Banos-Gates 500 kV Transmission Project web page (A.01-04-012):

http://www.cpuc.ca.gov/Environment/info/aspen/path15/path15.html

5.4 AREAS OF CONTROVERSY

This Draft SEIR reflects comments made by agencies and the public from the time the CPUC published its Notice of Preparation (July 10, 2001) through September 1, 2001, as well as continuing consultation with local jurisdictions and other agencies throughout preparation of this Draft SEIR. Comments and concerns received were related to the following issues:

- Effects on agricultural lands and oil fields
- Biological impacts of the Western Corridor
- Visual degradation of the landscape
- Negative effect on property values and potential loss of use of land between adjacent parallel corridors.

Agricultural, biological, and visual impacts are summarized in Section 4.6, 4.2, and 4.10 of this Executive Summary, and addressed in more detail in the SEIR Sections C.7, C.3, and C.11, respectively. Consistent with CEQA, the SEIR does not analyze the potential economic impacts of the Proposed Project and Alternatives. CEQA is not intended or designed to protect against a possible decline in the commercial value of property adjacent to a project *(Hecton v. People of the State of California, 1976, 58 Cal.App. 3d 653, 656)*. Therefore, any possible reduction of property value does not constitute a CEQA impact (and would not be expected indirectly to create environmental impacts), and is not analyzed for purposes of determining an environmentally superior alternative.

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6. IMPACT SUMMARY TABLE

The Impact Summary Table that follows is a complete, condensed presentation of the significant environmental impacts and mitigation measures for the proposed Los Banos-Gates 500 kV Transmission Project. Full descriptions of the Proposed Project and each of the alternatives can be found in Part B of the SEIR. The complete environmental analyses, along with the recommended mitigation measures for the Proposed Project and for each of the alternatives, are set out fully in Part C of the SEIR. Each impact identified in the SEIR is listed, followed by the impact determination, relevant mitigation measure(s), and statement of whether there is a residual impact.

Table ES-2 Summary of Impacts: Proposed Project

Impact	Impact Class	Effect	Mitigation	Residual Impact
AIR QUALITY				
2-1: PM_{10} emissions from construction disturbance	II	Less than significant with mitigation	A-1: The following procedures for reducing fugitive dust shall be implemented. Records documenting personnel awareness and the wind speed log shall be maintained at the construction site and shall be provided to CPUC's environmental monitor upon request. • Traffic speeds on unpaved roads shall not exceed 15 mph. PG&E shall insure that all project personnel (including contractors, subcontractors, and service company representatives) sign a statement acknowledging their awareness of the unpaved road speed limit restriction. The signed statement shall specify that 15 mph is the maximum speed limit on any unpaved road. • Wash off all truck tires and equipment leaving the construction site. PG&E shall insure that all project personnel (including contractors, subcontractors, and service company representatives) sign a statement acknowledging their awareness that tires and equipment leaving the construction site are to be washed. • Suspend excavation and grading activity when winds exceed 20 mph for a sustained period of 10 minutes, as measured by an anemometer. PG&E shall measure the wind speed with the anemometer when moderate to high winds occur, based on the fair judgment of a designated PG&E representative. PG&E shall maintain a written log to be maintained at the construction sites that documents day, time, and wind speed of each measurement.	Less than significant
2-2: Construction equipment exhaust emissions of ozone precursors (ROC and NO_x)	I	Potentially significant	A-2: Construction equipment shall be maintained in tune, per manufacturing specifications. PG&E/contractor shall provide a maintenance schedule for all vehicles and equipment. PG&E/contractor shall provide a certification from a third-party certified mechanic stating the timing of all internal combustion construction equipment engines has been properly maintained. PG&E/contractor shall re-certify each piece of construction equipment/vehicle based on the respective manufacturer maintenance schedule. Certifications shall be provided to the CPUC before the start of construction, and on an ongoing basis as new equipment is brought to the construction site. A-3: Vehicles shall not idle in excess of ten minutes. PG&E shall ensure that project personnel operating vehicles (including contractors, subcontractors, and service company representatives) sign a statement acknowledging their awareness of the idling restrictions and these records shall be maintained at the construction site for inspection by the CPUC environmental monitor.	Significant
2-3: Equipment emissions related to inspection and maintenance of the Proposed Project	III	Less than significant	No mitigation measures	None
BIOLOGICAL RESOURCES				
3-1: Temporary and permanent loss of sensitive vegetation communities	II - III	Depending on species: Less than significant with mitigation or less	B-1: A jurisdictional delineation of wetlands within the proposed transmission line corridor shall be performed by PG&E and verified by the U.S. Army Corps of Engineers before specific avoidance measures can be developed. Similarly, a formal mapping and assessment of alkali and riparian habitat will be required to satisfy CDFG 1601 (Streambed Alteration Agreement) requirements, if project activities (i.e., construction roads) cross	Less than significant

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Impact	Impact Class	Effect	Mitigation	Residual Impact
		than significant	the beds or banks of jurisdictional streams. Surveys, mapping and assessment shall be performed at least 60 days before start of construction and results of those surveys (identification of wetlands, alkali, and riparian habitat) shall be utilized to define areas that are to be avoided in tower siting and location of access roads and other project components. The Project Biologist (defined in Mitigation Measure **B-12**) shall evaluate all proposed tower sites and identify those that are located within 200 feet of identified wetlands, alkali, and riparian habitat. A report summarizing habitat findings with respect to tower locations, along with copies of all maps and assessments shall be submitted to the CPUC for review and approval. **B-2:** Pre-construction surveys shall be performed for identification of all special status plant and animal species within 200 feet of project construction activities (including towers, access roads, and work areas). Special status species as well as jurisdictional wetlands and riparian habitat (as determined from Mitigation Measures **B-1** and **B-6**, and as identified during 1986 and 2001 field surveys), shall be flagged prior to the start of construction of any project components. The CPUC shall be notified prior to the start of flagging activities so a CPUC-designated biologist may observe these activities. Maps and reports identifying locations of special status plants and animals found in pre-construction surveys, as well as proposed exclusion-fence locations, shall be provided to the CPUC's approved biological monitor for review and approval prior to the start of construction. If feasible, construction activities within significant plant communities shall be avoided by placing towers so as to span these areas, maximizing the use of existing access roads, minimizing the construction of new access roads, and using temporary spur roads. Prior to confirming final transmission corridor design, the locations of all project components (towers, roads, temporary work areas, etc.) shall be defined on a map that also illustrates locations of wetlands, riparian habitat, and special status plants and wildlife, and this shall be provided to the CPUC for review and approval. If it is determined that special status plant or wildlife habitat cannot be avoided, Mitigation Measure **B-11** shall be implemented. **B-3:** Under conditions where impacts to wetlands, alkali, and riparian habitats cannot be avoided, PG&E shall either restore temporarily disturbed areas to pre-construction conditions following construction or provide off-site compensation for permanent vegetation losses. Where on-site restoration is planned for mitigation of temporary impacts, the Applicant shall develop a Habitat Restoration Plan, which will be submitted to the CPUC and the U.S. Army Corps of Engineers (for wetlands), the California Department of Fish and Game (CDFG) (for riparian habitat), and the Regional Water Quality Control Board (RWQCB) at least 60 days prior to the start of any construction for their review and approval. The plan shall contain information for natural community mitigation, including specifying the location of habitat type to be created, details on soil preparation, seed collection, planting, maintenance, and monitoring for on-site restoration efforts. Quantitative success criteria will also be presented. The mitigation objective for affected significant natural plant communities will be restoration to pre-construction conditions as measured by species cover, species composition, and species diversity. Success criteria will be established by comparison with reference sites approved by the appropriate agencies. Creation or restoration of habitat shall be monitored for five years after mitigation site construction to assess progress and identify problems. Remedial actions will be taken during the five-year period if necessary to ensure the success of the restoration effort. **B-4:** If the CPUC-approved Project Biologist (defined in Mitigation Measure **B-12**), in consultation with project engineers, determines that restoration of temporary impacts is not feasible or where permanent impacts (i.e.,	

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Impact	Impact Class	Effect	Mitigation	Residual Impact
			loss of habitat) to significant plant communities occur from access road or tower installation, off-site mitigation shall be negotiated at agency-approved mitigation banks or otherwise, to a level acceptable by the CPUC, USFWS, CDFG, or USACE. **B-5:** A Worker Environmental Awareness Program (WEAP) shall be implemented for construction crews by a qualified biologist(s) provided by PG&E and approved by the CPUC prior to the commencement of construction activities. Training materials and briefings shall include but not be limited to, discussion of the Federal and State Endangered Species Acts, the consequences on noncompliance with these acts, identification and values of sensitive species and significant natural plant community habitats, fire protection measures, hazardous substance spill prevention and containment measures, and review of mitigation requirements. This training program shall also incorporate the provisions of Mitigation Measure **B-3** (Hydrology and Water Resources). Training materials and a course outline shall be provided to the CPUC for review and approval at least 30 days prior to the start of construction. PG&E shall provide to the CPUC a list of construction personnel who have completed training, and this list shall be updated by PG&E as required when new personnel start work. No construction worker may work in the field for more than 5 days without receiving the WEAP.	
3-2: Temporary and permanent loss of special status plant species or their habitats	II - III	Ranges between less than significant with mitigation to less than significant	**B-2** through **B-4** (above) and **B-6a:** Prior to construction, comprehensive rare plant surveys shall be conducted (or compiled from previous surveys) for all plants that have been identified within the study area and those plants with the potential to occur in the study area (as defined in Tables C.3-3 and C.3-4). Surveys shall be conducted within appropriate areas along the selected construction ROW and in areas susceptible to surface disturbance by construction vehicles or personnel. Surveys of the selected alignment (if not covered in 2001 spring survey) shall be appropriately timed to cover the blooming periods of the nine special status plant species known to occur in the area (April, May, and July). Maps depicting the results of these surveys will be prepared and will include other recently mapped special status plant occurrences in the area to ensure that the full scope of rare plant habitat in the project corridor vicinity is delineated. Locations of these special status plant populations will be provided to construction personnel. Any special status plant occurrences located within 200 feet of the approved project construction corridor will be fenced prior to the start of any construction, and if feasible, towers or other project components shall not be placed in areas where these plant populations have been identified. Maps and reports, as well as proposed fence locations, shall be provided to the CPUC's approved biological monitor for review and approval prior to the start of construction. **B-6b:** PG&E shall present to the CPUC within 30 days of project approval a report evaluating use of Tubular Steel Poles (TSPs) rather than lattice towers for the transmission line. The report shall evaluate the technical feasibility of using TSPs for this project, and shall present diagrams illustrating the poles, their footing requirements, and the approximate ground disturbance required. The report shall also present visual photosimulations of the TSPs from three locations, approved by the CPUC. A comparison of all of these factors with the proposed lattice towers shall also be provided.	Potentially significant (see Impact 3-11)
3-3: Impacts to plant communities by disturbance	II - III	Ranges between less than significant	**B-2** (above) and	Less than significant

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Impact	Impact Class	Effect	Mitigation	Residual Impact
from vehicles or project personnel		with mitigation to less than significant	**B-7:** PG&E shall map and flag or fence overland travel routes and project access areas prior to construction or periodic maintenance during operation and shall ensure that vehicles or project personnel do not disturb identified areas. Areas flagged shall include wetland, alkaline areas, riparian, and reservoirs and ponds. The mapping/flagging shall be reviewed by a CPUC-approved biologist prior to use of these routes for construction to ensure adequate protection for sensitive plant communities. No project components shall be constructed within these sensitive areas.	
3-4: Disturbance of special status plant species and their habitats	II	Less than significant with mitigation	**B-6a & B-6b** (above)	Less than significant
3-5: Erosion and sedimentation	II	Less than significant with mitigation	**H-1** (see Section C.6, Hydrology and Water Quality)	Less than significant
3-6: Wildlife habitat removal	II - III	Ranges between less than significant with mitigation to less than significant	**B-2** (above) and **B-9** (below)	Less than significant
3-7: Direct wildlife mortality	II - III	Ranges between less than significant with mitigation to less than significant	**B-5** (above) **B-8:** In order to reduce direct mortality impacts during construction, PG&E shall impose the following conditions on all construction personnel, and these requirements shall be addressed in the WEAP (Mitigation Measure **B-5**): • Vehicles shall not exceed 10 mph on designated unpaved access roads or in the ROW. These roads shall be identified on project maps and speed limits shall be identified on maps. • Litter or other debris that may attract animals shall be removed from the project area; organic waste shall be stored in enclosed receptacles, removed from the project site daily, and disposed of at a suitable waste facility • No pets will be allowed in the construction area, including access roads and staging areas • Construction crews will be educated regarding sensitive wildlife that could be encountered on highways and how to safely avoid them. Crew behavior shall be monitored by a qualified biologist approved by CPUC.	Less than significant
3-8: Wildlife disturbance from human presence	II	Less than significant with mitigation	**B-9:** Pre-construction wildlife surveys (following appropriate survey protocol, as applicable) shall be performed by qualified biologists to locate raptor nests, owl/harrier burrows and other resources defined in Table C.3-11 in/or adjacent to the ROW and access road areas. Maps and reports, as well as proposed fence locations, shall be provided to the CPUC's approved biological monitor for review and approval prior to the start of construction. Based on survey results, construction and operation activities shall be scheduled to avoid critical seasons for sensitive wildlife species, as defined in Table C.3-11 below. Specific identified habitats (nests, riparian habitat, burrows, etc.) shall be avoided during specific seasons throughout the construction, operation and maintenance of the approved project. Travel routes for vehicles, equipment and personnel will be along	Less than significant

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Impact	Impact Class	Effect	Mitigation	Residual Impact
			existing roads. If such roads are not present, routes will be flagged or fenced and no activities would be permitted outside these areas. If nests, burrows or other habitat are observed, the avoidance period and buffer distances shown in Table C.3-11 will be implemented. Specific distances from resources (see Table C.3-11) shall be maintained during construction, operation and maintenance of the transmission line. Travel areas shall be flagged prior to construction (see Mitigation Measure B-2), and biological monitors as specified by CPUC will be present during construction to verify that no vehicular travel occurs outside flagged areas. Biological monitors will have the authority to terminate construction activities if any significant adverse effect on special status species is observed.	
3-9: Increased predation and competition	III	Less than significant	No mitigation measures	Less than significant
3-10: Bird electrocution and tower/line collision	II	Less than significant with mitigation	B-10: Prior to installation of conductors, PG&E shall either (a) perform a study to determine the potential for bird strikes in the areas identified below and then, depending on study results, (b) implement bird strike diverters as defined below. The study shall evaluate the actual bird strike incidents at existing transmission lines in the vicinity of the approved project corridor. If this study determines that bird strikes would not constitute a significant impact, compliance with the remainder of this measure would not be required; if PG&E does not complete this study or if study results confirm the potential benefits of bird flight diverters, the remainder of this measure shall be implemented. The protocol for this study (including the time period, survey intervals, and impact significance criteria) shall be approved by the CPUC, the U.S. Fish and Wildlife Service (USFWS), and the California Department of Fish and Game (CDFG). If PG&E does not perform the study defined above or if study results determine that flight diverters would likely be beneficial, PG&E shall install bird flight diverters in the areas defined below to reduce bird collision impacts along the proposed or alternative transmission line corridors: • At the Los Banos Substations on any new equipment and transmission lines • On static lines in the vicinity of the Los Banos Reservoir, from MP 4 to 8 in the Western Corridor or from MP 5 to 8 in the Eastern Corridor Alternative; and • On static lines in the vicinity of the Little Panoche Wildlife Area, between Segment 4 (MP 22 to 24) and Alternative Segment 4A (AMP 22 to 24) in the Western Corridor. Prior to installation of conductors, PG&E shall submit its recommendation for the type(s) and spacing of bird flight diverters in the identified areas to the CPUC, the USFWS, and the CDFG for review and approval. Conductors shall not be installed until the CPUC, in conjunction with USFWS and CDFG, has approved an agreement between PG&E, USFWS, and CDFG regarding the type and spacing of bird flight diverters required; diverters shall be installed within 30 days of installation of conductors. Following installation of all bird flight diverters (line markers), PG&E shall begin a three year monitoring program in the areas identified above to determine the extent of bird collisions in the project area. Existing unmarked transmission lines in similar high bird-use areas shall be monitored during the same period to allow comparisons for determining line marking effectiveness. The protocol for the study (including identification of unmarked lines to be monitored) shall be submitted to the resource agencies for review and approval prior to installation of conductors on new towers. As part of the design of this monitoring program, PG&E shall submit	Less than significant

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Impact	Impact Class	Effect	Mitigation	Residual Impact
			to the CPUC and the U.S. Fish and Wildlife Service information regarding types of bird collision detection systems, their potential for improving study results, and their cost and feasibility in this area. Based on this information, the CPUC will decide whether such a system will be required for the monitoring study. Annual reports providing bird strike data for the new marked lines and for the existing unmarked lines shall be provided to the CPUC, the USFWS, and the CDFG, and a summary report shall be submitted at the end of the three-year monitoring program. The annual reports shall include a discussion of the apparent effectiveness of the line marking techniques selected, and recommendations regarding modification of the type of line markers used if bird collisions are determined to be frequent. PG&E, after review and input by CPUC, USFWS, and CDFG, shall implement the findings of the annual reports by modifying line markers as needed to minimize collisions.	
3-11: Habitat removal or disturbance of special status plant and wildlife species	I	Significant	B-2, B-4, B-6, B-8, and B-9 (above) and **B-11:** If, after applying Mitigation Measures **B-2, B-4, B-6, B-8** and **B-9**, the CPUC-approved Project Biologist determines that all impacts on special status plant and wildlife species cannot be avoided, PG&E shall initiate FESA Section 7 Consultation with the U.S. Fish & Wildlife Service for Federally-listed species and/or CESA 2080 Consultation will be initiated with the California Department of Fish and Game for State-listed species. These consultations shall determine requirements for obtaining a (FWS) Biological Opinion and/or (CDFG) Incidental Take Permit. PG&E shall obtain any such required Biological Opinion or Incidental Take Permit and, in that process, shall work cooperatively with the appropriate agency or agencies to develop appropriate mitigation measures to offset impacts to the affected species. PG&E shall thereafter implement all mitigation recommendations of the FWS and/or CDFG that result from these consultations.	Significant
All Biological Resources Impacts	I - II	Less than significant with mitigation	**B-12:** PG&E shall submit to the CPUC for review and approval the resumes and qualifications of a Project Biologist, who will represent PG&E in the field and be responsible for field decisions on biological issues. In addition, resumes of all other environmental field personnel proposed by PG&E for field enforcement of mitigation measures shall be provided to the CPUC for review and approval. Types of qualifications that will be considered for selecting qualified field personnel include: • Emphasis of undergraduate/graduate degree(s) • Related experience • Special skills such as statistical analysis, experimental design, species identification, vegetation sampling, dependent upon the assignment. Depending on the monitoring objective, individuals will have suitable experience in soil science, botany, ecology, restoration, wildlife observation, and wetland delineation. The objective will be to utilize monitors who can collect and analyze the data required to document mitigation success, problems, and, if necessary, suggest remedial action.	Less than significant
CULTURAL RESOURCES				
4-1: Construction operations could inadvertently affect known cultural resources	II	Less than significant with mitigation	**C-2:** PG&E shall conduct pre-construction field surveys to locate and record cultural resources within the project right-of-way and related construction facilities and roadways. PG&E shall submit the results from the pre-construction survey to the CPUC at least 30 days prior to construction. If resources are found, they shall	Less than significant

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Impact	Impact Class	Effect	Mitigation	Residual Impact
within or adjacent to the proposed or alternative corridors			be formally recorded and/or updates shall be filed for previously recorded sites according to the procedures defined in the Cultural Resources Management Plan (see Mitigation Measure **C-1**). All resources shall be evaluated in accordance with California Register of Historical Resources criteria. **C-3:** PG&E shall avoid known significant or potentially significant cultural resources in/adjacent to the project corridor. They shall consult with cultural resource professionals (approved by the CPUC) during the siting of the transmission line to avoid cultural resources where possible. If avoidance is not possible, specific procedures shall be followed to minimize resource impact or to record resources that cannot be avoided; these procedures shall be identified and reported in the Cultural Resources Management Plan (see Mitigation Measure **C-1**).	
4-2: Previously unrecorded cultural resources could be discovered during ground disturbing construction operations. Construction operations in areas of native soil, especially in the near vicinity of flowing and intermittent water sources and former lagoons/marshy areas, could result in the inadvertent exposure of significant buried prehistoric or historic cultural materials.	II	Less than significant with mitigation	**C-4:** PG&E shall consult with interested Native Americans to identify areas or features of significant or potentially significant Native American concern, and shall develop procedures (to be documented in the CRMP, Mitigation Measure **C-1**) for documentation of or preservation of resources that cannot be avoided. Documentation of consultation and issues discussed shall be provided to the CPUC, at least 30 days prior to construction.	Less than significant
4-3: Project construction could affect parks, Wilderness Study Areas (WSA), and recreational areas that may contain cultural resources	II	Less than significant with mitigation	**C-5:** PG&E shall consult with and implement any site-specific cultural resources requirements mandated by the CPUC, State Office of Historic Preservation, and within the jurisdiction of other agencies (e.g., Bureau of Reclamation, Bureau of Land Management (BLM), the California Department of Parks and Recreation (CA/DPR). Documentation of consultation and issues discussed shall be provided to the CPUC, at least 30 days prior to construction. Areas and parks that may be affected are the following: • California Aqueduct (owned by the Bureau of Reclamation and managed by the California Department of Water Resources (DWR) • Little Panoche Reservoir (jointly managed by the DWR and California Department of Fish and Game) • Panoche Hills Wilderness Study Area (WSA) (BLM) • San Luis Reservoir State Recreation Area (CA/DPR) • Los Banos Creek Recreation Area (CA/DPR)	Less than significant
All Cultural Resources Impacts	II	Less than significant with mitigation	**C-1:** PG&E shall develop and implement a *Cultural Resources Management Plan* (CRMP) for the project covering pre-construction, construction and post-construction activities. PG&E shall submit the CRMP to the	Less than significant

Impact	Impact Class	Effect	Mitigation	Residual Impact
			CPUC at least 30 days prior to construction for review and approval. The CRMP shall include procedures for pre-construction field survey, designation and avoidance of cultural resources areas, significance evaluation including potential testing and possible data recovery prior to construction, archaeological monitoring during construction, treatment of the unexpected discovery of cultural resources (including Native American burials), and treatment of significant sites that may be exposed during all phases of the project. The CRMP shall detail the qualifications of the Project Archaeologist, reporting requirements by the Project Archaeologist; designate a location for the curation of cultural materials collected during the project; and, specify that archaeologists and other discipline specialists meet any Professional Qualifications Standards mandated by the California Office of Historic Preservation (OHP). The CRMP shall include requirements detailing that prior to construction or ground-disturbing activities, PG&E shall (1) complete cultural resources training for all construction personnel; and, (2) insure that any excavation contract (or contracts for other activities that may have subsurface soil impacts) shall include clauses that require construction personnel to attend training so they are aware of the potential for inadvertently exposing buried archaeological deposits. The CRMP shall include the requirement for and definition of a background briefing for supervisory construction personnel describing the potential for exposing cultural resources, the location of any potential Environmentally Sensitive Areas (ESA) and anticipated procedures to treat unexpected discoveries. Construction personnel shall be trained regarding the recognition of possible buried prehistoric and historic resources during construction. PG&E shall inform all construction personnel of the procedures to be followed upon the discovery of archaeological materials including Native American burials. Wherever a tower, access road, equipment, etc. must be placed or accessed within 100 feet of a recorded, reported or known archaeological site eligible or potentially eligible for the CRHR, the site will be flagged on the ground as an Environmentally Sensitive Area (ESA). Construction equipment would then be directed away from the ESA, and construction personnel would be directed to avoid entering the ESA. Upon discovery of potential buried cultural materials, work in the immediate area of the find shall be halted and PG&E's archaeologist notified. Once the find has been identified, PG&E's archaeologist will make the necessary plans for treatment of the find(s) and for the evaluation and mitigation of impacts if the finds are found to be important according to CEQA.	
GEOLOGY, SOILS, AND MINERALS				
5-1: Unique geologic and paleontologic features	II	Less than significant with mitigation	**G-1**: Prior to construction, PG&E shall develop a Paleontological Resources Monitoring Plan (PRMP) for review and approval by the CPUC, which shall address the treatment of paleontological resources discovered during transmission line construction. The PRMP shall be prepared by a qualified paleontologist; it shall include procedures for significance testing and data recovery. The PRMP shall defer to the Cultural Resources Monitoring Plan (see Mitigation Measure **C-1**) if paleontological resources are found with archaeological resources. The PRMP shall include a requirement for training of construction workers on why vertebrate fossils are important and what they look like. The training shall explain prohibitions against collecting fossils found during construction. The PRMP shall identify areas of high paleontological sensitivity along the approved route, and shall define	Less than significant

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Impact	Impact Class	Effect	Mitigation	Residual Impact
			procedures for evaluation of resources found during construction. It shall define procedures for actions to be taken if paleontological resources are found during construction, procedures for fossil recovery, a data recovery program, and a qualified curation facility.	
5-2: Known mineral and energy resources	II	Less than significant with mitigation	H-9 (see Section C.6, Hydrology and Water Quality)	Less than significant
5-3: Loss of agricultural soils	I - II	Ranges between significant to less than significant with mitigation	H-1 (see Section C.6, Hydrology and Water Quality)	Significant
5-4: Erosion	II	Less than significant with mitigation	H-1 (see Section C.6, Hydrology and Water Quality)	Less than significant
5-5: Substantial alteration of topography	II	Less than significant with mitigation	H-1 (see Section C.6, Hydrology and Water Quality)	Less than significant
5-6: Fault rupture	II	Less than significant with mitigation	G-2: In areas where the potential for surface fault rupture exists, PG&E shall perform detailed geotechnical surveys at each tower or substation site to accurately determine the fault locations and the seismic potential of each fault, so that facility locations may be adjusted to avoid this hazard. PG&E shall submit these geotechnical reports to the CPUC for review and site approval prior to the start of construction. Incorporation of standard engineering practices as part of the project shall ensure that persons or structures are not exposed to this geological hazard.	Less than significant
5-7: Earthquake induced ground shaking	III	Less than significant	No mitigation measures	Less than significant
5-8: Expansive, soft, or loose soils	II	Less than significant with mitigation	G-3: PG&E shall perform design-level geotechnical investigations including soil sampling, free-swell tests, density tests, and soil borings or cone penetrometer tests (CPT) to determine the extent of and potential for expansive, soft or loose soils. PG&E shall develop appropriate design features for locations where potential problems are found to exist. Appropriate design features may include excavation of problematic soils and replacement with engineered backfill, ground treatment such as ground densification, and the use of deep foundations such as piers or piles. PG&E shall submit these geotechnical reports to the CPUC for review and site approval prior to the start of construction. Incorporation of standard engineering practices as part of the project shall ensure that persons or structures are not exposed to geological hazards.	Less than significant
5-9: Ground subsidence and settlement	II - III	Ranges between less than significant with mitigation to less than significant	G-4: PG&E shall evaluate the potential for subsidence or settlement of approved project facilities due to the presence of compressible or hydrocompactive soils during design-level geotechnical investigations. PG&E shall submit these geotechnical reports to the CPUC for review and site approval prior to the start of construction. The results of the investigations will be used to develop appropriate pre-construction ground treatments, and incorporate foundation and structural designs to accommodate expected settlements. PG&E shall remove or rework near surface deposits found to be potentially susceptible to hydrocompaction prior to placing new engineered fill. Incorporation of standard engineering practices as part of the project shall ensure that persons or structures are not exposed to geological hazards.	Less than significant

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Impact	Impact Class	Effect	Mitigation	Residual Impact
5-10: Slope instability and unstable soil conditions	II	Less than significant with mitigation	G-5: PG&E shall perform design-level geotechnical surveys to evaluate the potential for unstable slopes, landslides, mudflows, and debris flows along the approved corridors. PG&E shall submit these geotechnical reports to the CPUC for review and site approval prior to the start of construction. Facilities should be located away from steep hillsides, debris flow source areas, the mouths of steep sidehill drainages, and the mouths of canyons that drain steep terrain. Specially designed deep foundations may be used in areas of shallow sliding where unstable slopes cannot be avoided. Incorporation of standard engineering practices as part of the project shall ensure that persons or structures are not exposed to geological hazards.	Less than significant
HYDROLOGY AND WATER RESOURCES				
6-1: Potential for tower construction and road building activities to accelerate hillslope erosion, increase sediment loading to local channels, and reduce surface water quality	II	Less than significant with mitigation	H-1: An erosion control and sediment transport control plan shall be submitted first to the CVRWQCB and CPUC for review and approval, and then to Merced and Fresno Counties along with grading permit applications. This plan shall be prepared in accordance with the standards provided in the Manual of Erosion and Sedimentation Control Measures (ABAG, 1981) and in compliance with practices recommended by the Natural Resources Conservation Service. Implementation of the plan will help stabilize graded areas and waterways, and reduce erosion and sedimentation. The plan shall be designed specifically for the hydrologic setting of the approved project, which includes upland slopes, tributary creeks, and larger streams. The plan shall define the specific Best Management Practices (BMPs) that will be adhered to during construction activities. Erosion minimizing efforts such as hay bales, water bars, covers, sediment fences, sensitive area access restrictions (for example flagging), vehicle mats in wet areas, and retention/ settlement ponds shall be installed before extensive clearing and grading begins. Mulching, seeding, or other suitable stabilization measures shall be used to protect exposed areas during construction activities. Revegetation plans, the design and location of retention ponds, and grading plans shall be submitted to the CDFG for review in the event of construction near waterways. In addition, PG&E shall: • Replant temporarily disturbed areas with a mixture of perennial grasses, forbs, brush, shrubs, and tree species that will provide effective erosion control. Prepare a firm, rough seedbed on fill or cut slopes and apply appropriate types and amounts of fertilizers and seed mixtures. Consider reseeding with native plants only in sensitive areas not subject to grazing. • Restore disturbed surfaces to original conditions, including reseeding or otherwise restoring vegetation on all disturbed slopes exceeding 2 percent, as soon as possible after such grading work is completed. Recontour, prepare the surface, and seed all roads, construction sites, and other disturbed areas not required for project operation and maintenance. • Use standard erosion practices and dust control measures, as defined in mitigation measures for air quality, during construction to protect biological and hydrological resources. • Temporarily collect excavated or disturbed soil and place it in a controlled area surrounded by siltation fencing, hay bales, or a similarly effective erosion control technique that prevents the transport of sediment. • Restrict the staging of construction materials, equipment, and excavation spoils to areas at least 100 feet outside of drainage channels or tributaries. • Where tower or substation construction activities occur near a creek or channel, sediment containment	Less than significant

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Impact	Impact Class	Effect	Mitigation	Residual Impact
			methods shall be performed at least 100 feet from the channel. • Upon completion of construction activities, excavated soil shall be replaced and graded to match the surroundings, and surplus soil shall be transported from the site and disposed of appropriately. • Use existing roads for access wherever possible. Roads required for construction but not maintenance shall be removed after construction and surfaces restored to original conditions. • Minimize steepness and unobstructed length of fill slopes. Protect newly constructed fill with appropriate materials to prevent erosion. • Avoid road construction on very steep slopes and avoid work on unstable slopes and rock outcrops. • In agricultural areas where grading occurs, stockpile topsoil and replace after construction. Re-grade to original contours and re-seed in accordance with landowner objectives. • Add soil amendments during revegetation to counteract potential chemical imbalances. • Minimize use of heavy equipment on agricultural land.	
6-2: Increased runoff from tower construction and road building activities	III	Less than significant	No mitigation measures	Less than significant
6-3: Increased stream channel erosion, sediment transport, and alteration of the existing drainage pattern due to road building and construction activities	II	Less than significant with mitigation	H-1 (above) and **H-2:** Access roads shall be designed to account for anticipated surface runoff and channel flow. Culverts designed to convey flow beneath access roads shall be designed for the specific hydrologic and hydraulic conditions occurring at the site. Culvert design should follow standard practices (Caltrans Highway Design Manual, 1999) and should also include energy dissipation practices (Federal Highway Administration, 1983). It is important that flow velocities are maintained below levels that are capable of causing channel erosion downstream or headward channel incision upstream. Construction plans for new roads shall be submitted to the CPUC for review and approval prior to the start of construction.	Less than significant
6-4: Surface water and groundwater contamination during construction	II	Less than significant with mitigation	**H-3:** An environmental training program shall be established by PG&E to communicate environmental concerns and appropriate work practices, including spill prevention and response measures, to all field personnel. This training program shall not only describe general environmental concerns and procedures but shall emphasize site-specific physical conditions to improve hazard prevention. For example, all flow paths to the nearest water bodies should be identified to workers and where hazardous materials may specifically impact the site shall be identified. An outline of the training program and monitoring plan shall be submitted to the CPUC for review and approval prior to the start of construction. **H-4:** A Hazardous Substance Control and Emergency Response Plan (HSCERP) shall be prepared by PG&E and submitted to the CPUC for review and approval. The plan shall include preparations for quick and safe cleanup of accidental spills occurring during construction. This plan will be submitted with the grading permit application. It will prescribe hazardous materials handling procedures for reducing the potential for a spill during construction, and will include an emergency response program to ensure quick and safe cleanup of	Less than significant

Impact	Impact Class	Effect	Mitigation	Residual Impact
			accidental spills. More specifically, the plan will identify areas where refueling and vehicle maintenance activities and storage of hazardous materials, if any, will be permitted. The plan shall include the following: • All refueling, lubrication, and other machinery or vehicular maintenance activities shall be performed at least 150 feet from any tributary, stream channel, aqueduct or canal. This distance is increased to 500 feet when in the vicinity of identified vernal pool wetlands, or the Los Banos and Little Panoche Reservoirs. • Oil-absorbent material, tarps, and storage drums to contain and control any minor releases of transformer oil shall be used. • Describe the clean-up process if excess water and liquid concrete escapes from tower foundations during pouring. This excess will be directed to bermed areas adjacent to the borings where the water will infiltrate or evaporate and the concrete will remain and begin to set. Once the excess concrete has been allowed to set up (but before it is dry), it will be removed and transported to an approved landfill for disposal.	
6-5: Tower foundation impacts to groundwater hydrology	III	Less than significant	No mitigation measures	Less than significant
6-6: Tower foundation impacts to groundwater quality	II	Less than significant with mitigation	**H-1, H-3,** and **H-4** (above) and **H-5:** Prior to final tower siting, PG&E shall research existing information about the project corridor to identify and avoid areas with potential existing soil and groundwater contamination (where groundwater is shallower than 20 feet). Findings regarding soil and groundwater contamination conditions shall be supplied to the CPUC in coordination with the agency review of the specific alignment and tower locations for the selected transmission line corridor. Before construction begins along the approved alignment, soil sampling and potholing shall be conducted at representative intervals, and soil information shall be provident to construction crews to inform them about soil conditions and potential hazards that were not identified in the records searches performed prior to tower siting. If hazardous materials are encountered in either soils or groundwater, work shall be stopped until the material is properly characterized and appropriate measures are taken to protect human health and the environment. If excavation of hazardous materials is required, they shall be handled, transported, and disposed of in accordance with federal, state, and local regulations.	Less than significant
6-7: Erosion and sediment transport at Los Banos and Gates Substations	III	Less than significant.	**H-1, H-3,** and **H-4** (above)	Less than significant
6-8: Surface and groundwater quality impacts at Los Banos and Gates Substations	II	Less than significant with mitigation	**H-1, H-3, H-4,** and **H-5** (above)	Less than significant
6-9: Operational impacts to	III	Less than significant	No mitigation measures	Less than

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Impact	Impact Class	Effect	Mitigation	Residual Impact
surface and groundwater hydrology at tower and substation locations				significant
6-10: Risk of transmission tower damage through flooding or erosion	II	Less than significant with mitigation	H-6: Transmission towers shall not be sited within a designated 100-year floodplain. Prior to final alignment of transmission towers, the Applicant shall evaluate the position of all towers in light of the most recent (July 2001 or later) floodplain delineations in the project area. To demonstrate compliance, PG&E shall provide the CPUC with a map of towers within 100 feet of identified floodplains 30 days prior to the start of construction.	Less than significant
6-11: Operational impacts to surface and groundwater quality at substations	II	Less than significant with mitigation	H-7: If PG&E currently has a spill prevention containment and countermeasure (SPCC) pond that collects runoff from the Los Banos, Gates, and Midway Substations, the pond shall be upgraded to accommodate additional flow resulting from the substation modifications. If there is currently no SPCC pond at these substation sites, PG&E shall update its SPCC plan to explain how the additional runoff or potential releases would be accommodated within the substations. PG&E shall submit the updated SPCC to the CPUC for review and approval 30 days prior to energizing the new lines or the new portion of the substations.	Less than significant
6-12: Conflict with operation of water and oil wells within the transmission corridor	II	Less than significant with mitigation	H-8: The final tower siting for the approved project shall avoid existing oil and water wells. Wells that cannot be avoided shall be removed or relocated, and the owner shall be compensated by the Applicant. To demonstrate compliance, at least 30 days prior to construction, PG&E shall provide a map showing all oil and water wells within 200 feet of the edge of the ROW.	Less than significant
LAND USE AND RECREATION				
7-1: Temporary construction disturbances	II - III	Ranges between less than significant with mitigation to less than significant	L-1: PG&E shall, to the extent feasible, use access roads that were constructed for the existing 500 kV transmission lines. (These roads, many of which are still used for maintenance, with necessary repair, could be used for access with only construction of spur roads that would be necessary to reach individual tower locations.) PG&E shall document compliance with this measure by submitting an access road plan (demonstrating use of existing roads or reasons why existing roads cannot be used) to the CPUC for review and approval at least 30 days before construction. L-2: Construction staging areas and pulling sites shall be located adjacent to roads where practical. PG&E shall coordinate with landowners to establish construction areas (such as conductor pulling and splicing areas and construction yards) on non-agricultural land or in areas with less sensitive crops, where feasible. PG&E shall document compliance with this measure by submitting to the CPUC for review and approval, at least 30 days before construction begins, a plan showing construction staging and pulling areas, demonstrating use of non-agricultural land or reasons why agricultural land cannot be avoided. L-3: All access roads not required for maintenance by PG&E after construction should be either permanently closed using the most effective and least environmentally damaging methods appropriate to the landowners, or be regraded (recontoured), restored, and revegetated with the concurrence of the relevant landowners. Any damaged recreation, farm, or residential access roads shall be repaired. PG&E shall document compliance with this measure by submitting to the CPUC for review and approval a plan showing methods to restore and revegetate unnecessary access roads. L-4: PG&E shall locate new access roads parallel to landform contours where feasible, in order to minimize ground disturbance and/or reduce scarring. PG&E shall document compliance with this measure by submitting	Less than significant

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Impact	Impact Class	Effect	Mitigation	Residual Impact
			an access road plan (demonstrating conformance to landform contours) to the CPUC for review and approval. **L-5:** In agricultural areas where sites would be graded, PG&E shall stockpile topsoil. After construction, topsoil shall be replaced and the site graded to the original contours. If appropriate, the site shall be recorded in accordance with agency or landowner objectives. PG&E shall document compliance with this measure by submitting to CPUC for review and approval a plan showing methods to stockpile topsoil and restore construction sites. **L-6:** PG&E shall time construction whenever practical, to minimize disruption of normal seasonal activities for crop and rangeland and to avoid peak use periods at recreational areas. PG&E shall work with the appropriate County agent and farmers to agree to a construction schedule that would avoid the prime crop planting, growing, and harvesting seasons, to the extent possible. PG&E shall submit a construction schedule to the CPUC for review and approval. The schedule shall document how disruptions to agricultural operations will be avoided. **L-7:** At least one month prior to constructing the project, PG&E shall give advance notice of such construction, construction activity schedules, access restrictions, and anticipated disturbances to property owners, residents, and tenants potentially affected by construction activities (within 1,000 feet of project ROW or access roads). The Applicant shall provide adequate access to existing land uses during all periods of construction and shall notify landowners of alternative access. PG&E shall avoid nighttime construction near noise-sensitive land uses (e.g., residences and campers at recreation areas). PG&E shall document compliance with this measure by submitting to CPUC a copy of the notice for review and approval prior to mailing said notice. PG&E shall provide evidence to CPUC that the notice was delivered to landowners and residents within 1,000 feet of the project ROW and access roads. PG&E shall submit to CPUC for review and approval a plan showing how adequate access to existing land uses will be provided during construction. **L-8:** Immediately after removing sections of grazing fencing, PG&E shall construct a temporary barrier across the section of removed fencing so that grazing animals cannot move through the fencing. Immediately after completing construction in the area, PG&E shall repair the section of removed fencing. PG&E shall close all gates immediately after they are opened to allow construction vehicles and equipment access to a construction area. PG&E shall incorporate these requirements into the construction plan and demonstrate to the CPUC that all construction workers are informed of these provisions. **L-9:** PG&E shall include a stipulation in its easement agreements with landowners along the ROW that landowners shall be reimbursed for the value of the crops lost and the cost of any delay or interruption in necessary farming or grazing practices as a result of any interrupted use of cropland or grazing land. Evidence of this stipulation shall be submitted to the CPUC. **L-10:** PG&E shall avoid construction operations that disturb soil during the wet season (moist soil is generally more susceptible to compaction than dry soil). PG&E shall minimize the use of heavy equipment on agricultural land to avoid soil compaction. Where compaction occurs on agricultural land as a result of construction, the soil shall be ripped to restore adequate percolation of irrigation water through the soil strata. PG&E shall incorporate these requirements into the project construction plan and submit the plan to CPUC for review and approval.	

Impact	Impact Class	Effect	Mitigation	Residual Impact
7-2: Conflicts with existing and planned land uses	II	Less than significant with mitigation	L-11: PG&E shall coordinate with property owners during final transmission line design and shall align the transmission line, with the review and approval of the CPUC, so as to avoid existing residences and maximize the distance between the line and agricultural operations, planned developments, canals, oil fields, dams, recreation areas, and airstrips located within, adjacent to, and near the ROW.	Less than significant
7-3: Long-term conversion/loss of productive agricultural land	I and III	Potentially significant and less than significant	L-12: Tower placement shall be adjusted, with review and approval of the CPUC during final project design, to avoid orchards and vineyards, row crops, and furrow-irrigated crops (with tower-to-furrow angles greater than 61 percent), wherever possible. Also when possible, the corridor should avoid more heavily cultivated crops in preference for non-agricultural land or crops such as alfalfa, corn, and small grains. PG&E shall coordinate work with local landowners to place towers in areas that would cause the least impact (e.g., along the edges of fields or adjacent to mid-section farming roads).	Significant in some segments
7-4: Impacts on agricultural equipment and operation	III	Less than significant	L-12 (above) and L-13: When locating towers in row crops is unavoidable, PG&E shall attempt to locate towers in fields with rows that would be parallel, rather than perpendicular, to the transmission line. Transmission lines shall not be placed in diagonal orientations across cultivated fields, to the extent feasible. At least 30 days prior to construction, PG&E shall submit to the CPUC, for review and approval, a tower location plan that indicates agricultural row orientation.	Less than significant
7-5: Interference with irrigation practices	II	Less than significant with mitigation	L-13 (above) and L-14: Where towers must be placed in agricultural fields, transmission lines and towers shall be placed toward the center of fields where feasible. PG&E shall avoid placing towers at the edge of fields where canals or irrigation ditches are located. PG&E shall document compliance with this measure by submitting to the CPUC, for review and approval, a tower location plan that indicates tower location relative to agricultural fields and irrigation systems. L-15: PG&E shall avoid siting of towers in fields using mechanical move irrigation systems, and shall attempt to locate them in fields using flood or border check irrigation over those using furrow irrigation. PG&E shall document compliance with this measure by consulting with landowners to identify irrigation systems and by submitting to the CPUC, for review and approval, a tower location plan that indicates avoidance of areas of mechanical move and furrow irrigation systems.	Less than significant
7-6: Effects on aerial applications	II	Less than significant with mitigation	L-13 and L-14 (above) and L-16: When transmission towers are to be installed in or adjacent to agricultural fields, PG&E shall avoid installing them adjacent to existing transmission lines and shall avoid angular jogging of corridor segments. PG&E shall document compliance with this measure by submitting to the CPUC, for review and approval, construction plans that show locations of all angle towers in agricultural areas.	Less than significant
7-7: Permanent preclusion of existing, permitted, and planned land uses	II	Less than significant with mitigation	L-17: During the right-of-way acquisition process, PG&E shall coordinate with each affected property owner, in order to develop an alignment and specific tower locations, to provide clear information about the right-of-way acquisition process compensation, and construction and maintenance activities, and to understand landowner plans for use of the transmission corridor area in order to minimize the impact of tower and ROW location. PG&E shall document compliance with this measure by submitting to the CPUC written evidence of	Less than significant

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Impact	Impact Class	Effect	Mitigation	Residual Impact
			landowner consultation and a copy of the written information distributed to landowners.	
Effects on property values	NA	No CEQA Impact	No mitigation measures	None
Noncompliance with local County General Plan, Policies	II	Less than significant with mitigation	L-17 (above) **L-18:** Within the area proposed for the Specific Urban Development Plan (SUDP), *The Villages of Laguna San Luis Community Specific Plan*, PG&E shall landscape the transmission line ROW and buffer area or otherwise design the area for integration and compatibility with the planned development. Compliance will be determined by CPUC, in consultation with Merced County planning officials. **L-19:** PG&E shall consult with County officials during the transmission line siting process to evaluate the potential effects on air travel safety. County personnel will review the Proposed Project and PG&E shall submit County recommendations to the CPUC.	Less than significant
SOCIOECONOMICS AND PUBLIC SERVICES				
S-1: Temporary employment	NA	No impact	No mitigation measures	None
S-2 and **S-3:** Temporary and permanent housing	IV	Beneficial	No mitigation measures	Beneficial
S-4: Business in the project area	II, III, and IV	Less than significant with mitigation, less than significant, and Beneficial	No mitigation measures	Less than significant or beneficial
S-5: Institutional activity	NA	No impact	No mitigation measures	None
S-6: Public protection	II and III	Less than significant with mitigation and less than significant	**S-1:** PG&E shall submit a Fire Prevention and Suppression Plan (FPSP). The FPSP shall incorporate measures for prevention and suppression of fire on the ROW and on lands used or traversed by PG&E in connection with the project. The FPSP shall include a list of equipment required by all crews for extinguishing small fires that may be started during construction. PG&E shall provide training to project personnel regarding proper procedures on how to minimize the risk of fire and how to eliminate an existing fire. The FPSP shall be prepared in consultation with all appropriate counties, BOR, and BLM. PG&E shall consult with the California Department of Forestry and Fire for all land in the project area designated as State Responsibility Areas (SRAs). The FPSP will be submitted to the CPUC for review and approval prior to construction. Adherence to the Plan during construction will be monitored by a CPUC-approved construction monitor.	Less than significant
S-7: Schools	NA	No impact	No mitigation measures	None
S-8 through **S-11:** Water, wastewater, solid waste, pipelines	III	Less than significant	No mitigation measures	Less than significant

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Impact	Impact Class	Effect	Mitigation	Residual Impact
PUBLIC SAFETY, HEALTH, AND NUISANCE				
9-1: Electric and magnetic fields (EMF)	III	Less than significant	No mitigation measures	Less than significant
9-2: Corona and audible noise	III	Less than significant	No mitigation measures	Less than significant
9-3: Radio/television/electronic equipment interference	II	Less than significant with mitigation	**PS-1:** As part of the design and construction process, PG&E shall limit the conductor surface electric gradient in accordance with the IEEE Radio Noise Design Guide. PG&E shall provide the CPUC with documentation of compliance prior to energizing the line. **PS-2:** After energizing the transmission lines, PG&E shall respond to and document all radio/television/ equipment interference complaints received and the responsive action taken. These records shall be made available to the CPUC for review upon request. All unresolved disputes shall be referred by PG&E, within 90 days, to the CPUC's Energy Division for Resolution.	Less than significant
9-4: Induced currents and shock hazards in joint use corridors	II	Less than significant with mitigation	**PS-3:** As part of the siting and construction process, PG&E shall identify objects (such as fences, conductors, and pipelines) that have the potential for induced voltages and work with the affected parties to determine proper grounding procedures (CPUC G.0.95 and the NESC do not have specific requirements for grounding). PG&E shall install all necessary grounding measures prior to energizing the line. Thirty days prior to energizing the line, PG&E shall notify in writing, subject to the review and approval of the CPUC Energy Division, all property owners within and adjacent to the Proposed Project ROW of the date the line is to be energized. The written notice shall provide a contact person and telephone number for answering questions regarding the line and guidelines on what activities should be limited or restricted within the ROW. PG&E shall respond to and document all complaints received and the responsive action taken. These records shall be made available to the CPUC for review upon request. All unresolved disputes shall be deferred by PG&E to the Lead Agencies for resolution. The written notice shall describe the nature and operation of the line, and PG&E's responsibilities with respect to grounding all conducting objects. In addition, the notice shall describe the property owner's responsibilities with respect to notification for any new objects, which may require grounding, and guidelines for maintaining the safety of the ROW.	Less than significant
9-5: Effects on cardiac pacemakers	III	Less than significant	No mitigation measures	Less than significant
9-6: Transmission lines in agricultural areas present a safety hazard to aerial applicators	I	Potentially significant	**L-13, L-14,** and **L-16** (above) **PS-4:** PG&E shall consult with landowners to determine which aerial applicators cover agricultural parcels within 1 mile of the approved transmission line corridor. PG&E shall provide written notification to all aerial applicators and to the CPUC stating when the new transmission lines and towers will be erected. PG&E shall also provide all aerial applicators and the CPUC with recent aerial photos or topographic maps clearly showing the new lines and towers, as well as all existing PG&E lines and towers within 10 miles of the approved corridor	Significant in some segments
9-7: Intermittent and continuous noise levels	III	Less than significant	**L-7** (above)	Less than significant

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Impact	Impact Class	Effect	Mitigation	Residual Impact
during project construction				
9-8: Operational noise	IV	Less than significant	No mitigation measures	Less than significant
TRANSPORTATION AND TRAFFIC				
10-1: Increased traffic levels	IV	Less than significant	No mitigation measures	Less than significant
10-2: Lane closures along 500 kV transmission corridor	II	Less than significant with mitigation	**T-1:** PG&E shall place temporary poles and netting across all portions of I-5 and State Routes that would be crossed by the transmission line to ensure that conductors will not fall onto the roadway during the conductor stringing operations. Because the California Highway Patrol (CHP) would be responsible for closing lanes on all state-controlled roadways, the CHP must concur with date and time of PG&E's proposed encroachment prior to the issuance of a Caltrans Encroachment Permit. In addition, PG&E would be required to provide 7 to 10 days notice of the planned encroachment to the applicable Transportation Management Center (a joint Caltrans and CHP agency). **T-2:** Prior to the start of construction, PG&E shall submit traffic control plans to Caltrans District 6 and the Counties of Merced and Fresno as part of the required traffic encroachment permits. Documentation of the approval of these plans and issuance of encroachment permits shall be provided to the CPUC prior to the start of construction.	Less than significant
10-3: Disruption of bus transit services	II	Less than significant with mitigation	**T-3:** PG&E shall consult with Coalinga Transit at least one month prior to construction to develop methods to reduce potential interruptions to bus transit service in the project area. Documentation of this consultation shall be provided to the CPUC prior to the start of construction.	Less than significant
10-4: Adverse effects of aviation activities	NA	No impact	No mitigation measures	None
10-5: Physical damage to roads	II	Less than significant with mitigation	**T-4:** If damage to roads occurs, PG&E will coordinate repairs with the affected public agencies to ensure that any impacts to area roads are adequately repaired. Roads disturbed by construction vehicles shall be properly restored to ensure long-term protection of road surfaces.	Less than significant
VISUAL RESOURCES				
Visual Impacts in Scenic Corridors	III	Less than significant	**V-1:** Visual disturbance that can result from construction of the transmission line shall be minimized by implementation of the conditions listed below. Prior to the start of construction, PG&E shall submit a plan to CPUC for review and approval that details its procedures for ensuring that these conditions are met. • Temporary facilities, such as construction yards and conductor tensioning and splicing sites should be sited to minimize disruption of the landscape by landform alteration and vegetation removal • Existing roads will be used for access wherever possible. Minimize number and length of new construction access roads particularly in intensively farmed areas. Use temporary spur roads to towers and remove those roads not required for maintenance. Access roads should be designed to the minimum standards necessary for the construction and maintenance vehicle access. • Locate new access roads parallel to contours of landform wherever feasible.	Less than significant

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Impact	Impact Class	Effect	Mitigation	Residual Impact
			• The limits of construction activities should normally be predetermined with activity confined within those limits. All construction vehicle movement outside the right-of-way should normally be restricted predesignated access or public roads. • No paint or permanent discoloring agents should be applied to rocks or vegetation to indicate survey or construction activity limits. Surveyors, flagging, or other suitable materials should be used to delineate limits. • Where blasting is required for access roads or tower footings, debris should be recovered and removed where practical. • Excavated material or other construction materials should be removed following construction. • In construction areas where excavation is not required, vegetation should be left in place wherever possible and the original contours should be maintained in an undisturbed condition. • Where vegetation is of high density or low diversity is encountered in the right-of-way, clearing to a harsh right-of-way edge should be avoided. Instead, it should be done to emulate natural clearings with irregular edges. **V-2:** In final siting of transmission tower, PG&E shall avoid siting towers on ridgelines and hilltops wherever possible, and shall minimize the number of towers visible from sensitive viewpoints within recreation areas. In areas identified as visually sensitive, the finish on the transmission towers should be dull and non-reflective. Prior to the start of construction, PG&E shall submit to the CPUC for review and approval a siting plan that identifies (a) the tower and conductor finish and its visual properties, (b) all towers that are proposed for ridgelines, and all those visible from State Routes and I-5, and from Los Banos Creek Recreation Area and Little Panoche Reservoir. A visual resources specialist (approved by the CPUC) shall review these locations and determine whether modified locations could reduce the visual impact of the identified towers.	

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C.4 CULTURAL RESOURCES

This chapter provides an update on cultural resources from that presented in the Final Environmental Impact Statement/Environmental Impact Report (FEIS/EIR) for the California-Oregon Transmission Project and the Los Banos-Gates Transmission Project (TANC/WAPA, 1988). The environmental setting of the Proposed Project area has not significantly changed since the publication of the FEIS/EIR with respect to the cultural resources of the region, although additional cultural sites have been identified. This chapter includes a general description of the cultural resources in the project area including the prehistoric, ethnographic, and historical setting of the project area; laws and regulations relevant to cultural resources; and a description of identified cultural resources in the Proposed Project Corridor. An updated discussion of potential impacts is presented, as well as five comprehensive mitigation measures. In addition, Appendix 5 presents a detailed description of the prehistoric, ethnographic, and historical setting of the project area, which was originally published in the 1988 FEIS/EIR.

The methodology used for this analysis is similar to that used in the 1988 FEIS/EIR. Three impacts are identified in this SEIR: inadvertent impact to known cultural resources; discovery of previously unrecorded cultural resources; and impact to parks, Wilderness Study Areas (WSA), and recreational areas that may contain cultural resources. The mitigation measures from the 1988 FEIS/EIR have been incorporated into new mitigation measures because those from the previous document did not provide sufficient detail by today's standards, and they lacked enforcement procedures.

The Eastern Corridor Alternative would result in fewer impacts to cultural resources because it has a comparatively lower occurrence of and potential for resources. The Proposed Western Corridor and its Alternative Segments are more sensitive than the Eastern Corridor Alternative with regard to cultural resources because they include a greater number of recorded sites and favorable terrain for encountering additional unrecorded sites.

C.4.1 ENVIRONMENTAL BASELINE

This following is a summary of the regional overview originally published in the 1986 Draft EIS/EIR. A more detailed regional overview can be found in Appendix 5.

C.4.1.1 Prehistoric Setting

The prehistory of the San Joaquin Valley may have its origins in late Pleistocene and early Holocene sites dating from perhaps as early as 12,000 years ago. The Farmington Complex sites in San Joaquin and Stanislaus Counties (Riddell, 1949; Treganza, 1952) and the Tranquillity Site[1] in Fresno County (Hewes, 1946) are believed to be some of the earliest examples of human activity within the Central Valley area. The Fluted Point Cultural Tradition (or Big Game Hunting Tradition) in the San Joaquin Valley is represented by the Witt Site and other Tulare Lake shoreline finds which date from approximately 11,000 years ago (Riddell and Olson, 1969). Sizeable prehistoric populations first

[1] Assigned CA-Fre-48/P-10-85.

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appeared in the San Joaquin Valley with the Western Pluvial Lake Tradition (WPLT), which extended from approximately 11,000 to 7,000 years ago. This period saw the emergence of a cultural tradition, which was adapted to the wetlands environments of Tulare and Buena Vista Lakes. Following the WPLT in Central California, various regionalized cultural traditions and sequences emerged throughout the San Joaquin Valley, Sierra Foothills, and Coast Range areas.

The prehistory of the western edge of the San Joaquin Valley and the lower eastern slopes of the Diablo Range was first explored by archaeological investigations associated with the San Luis, Los Banos, and Little Panoche Projects. During the early 1960s and 1970s, archaeological surveys and excavations were conducted at these three reservoir locations (Treganza, 1960; Olsen and Payen, 1968, 1969, 1983; Pritchard, 1966, 1983), and those studies have established the cultural and temporal prehistory for the study area. Those studies are discussed in further detail in Appendix 5.

Potential for Prehistoric Resources

Prehistoric archaeological resources tend to be located on benches and terraced areas adjacent to major drainages and springs. Some isolated rock shelter and bedrock mortar sites have been located relatively far from water; however, the majority of known sites tend to cluster around potable water sources. Archaeological resources include occupation sites, rock shelters, surface lithic scatters, bedrock milling stations, and stone quarries.

The Proposed Project Corridor has a comparatively higher occurrence of and potential for archaeological (as well as ethnographic and historic) resources. A higher degree of sensitivity of an area implies a greater potential for the presence of resources that may qualify as National Register of Historic Places sites. Environmental factors conducive to the presence of these resources are:

- Terraced areas adjacent to drainages
- Spring locations
- Potential rock shelter locations
- Potential lithic source

The Eastern Corridor Alternative has a comparatively lower occurrence of and potential for cultural resources. Environmental factors that diminish the potential presence of resources are:

- Few terraced areas adjacent to drainages
- Lack of spring locations
- Lack of potential rock shelter locations
- Lack of potential lithic sources
- Heavy agricultural use, which implies the destruction of previously favorable settings, as well as resources that might have qualified as National Register of Historic Places sites.

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A comparative analysis of these factors led to the conclusion that the Western Corridor is more likely than the Eastern Corridor Alternative to have prehistoric resources because it has a greater number of recorded sites and favorable terrain.

C.4.1.2 Ethnographic/Native American Setting

Prior to the coming of Euro-Americans, the entire San Joaquin Valley was the homeland of many different Yokuts tribes. Their territory extended from the summit of the Diablo Range in the west to the upper reaches of the Sierra Foothills in the east, from the Tehachapi Mountains in the south to a point midway between the Calaveras and Mokelumne Rivers in the north (Wallace, 1978; Latta 1977).

The Los Banos-Gates Project study area passes through the ethnographically identified territories of the Northern Valley Yokuts and the Southern Valley Yokuts. The northern part of the project area was within the Kahwatchwah tribal area (Kroeber, 1925; Latta, 1977), which extended south to at least Little Panoche Creek and possibly to Cantua Creek. The southern part of the project area was within the Tachi tribal area (Kroeber, 1925; Latta, 1977; Wallace, 1978). Anthropological sources suggest that Yokuts settlement and subsistence practices were oriented to major watercourses. Little ethnographic information on Yokuts technology is available; however, archaeological evidence of Yokuts technology and way of life, beginning with their first encounter with the Spanish in the late 1700s, is explained in Appendix 5.

Potential for Ethnographic/Native American Resources

Anthropological sources indicate that four known ethnographic resources are located in the vicinity of the Western Corridor. The Kahwatchwah village of "Hahnomah" (Latta, 1977) is located at the San Luis Reservoir and is included in the San Luis Gonzaga Archaeological District which is on the National Register of Historic Places. The Tachi village of "Udjiull" (Kroeber, 1925) or "Udgeu" (Latta, 1977) is located on Los Gatos Creek and "Golon" (Kroeber, 1925) or "Holon" (Latta, 1977) is located at the town of Huron. An unidentified Yokuts village[2] is referenced (Latta, 1977) for the Cantua Creek-Salt Creek area, with no additional details available. None of these resources are within the Eastern Corridor Alternative boundaries.

Along with the archival research, Native American consultation was conducted for the 1986 Draft EIS/EIR to assess the potential for resources in the project area. The Native American Heritage Commission in Sacramento provided a contact list for Merced and Fresno Counties. Organizations and individuals were consulted with the following objectives:

- Identify Native American cultural resources within the project area
- Identify Native American concerns and objectives in dealing with project-related culturally sensitive sites and locations, including archaeological sites.

[2] Assigned CA Fre-85/P-10-85.

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Other than the four previously discussed village sites, no additional resources were identified as a result of these consultations. There was, however, a general consensus that cemeteries, as well as sacred and religious sites, are the most sensitive resources that could be encountered within the project area. Some recorded archaeological sites will also be culturally sensitive for Native Americans. Resource management considerations for such sites will require addressing issues from both a research and Native American culture perspective.

Additional site types that are likely to occur within the project area include late period prehistoric/protohistoric village locations and ethnobotanical gathering areas. The anthropological literature (Kroeber, 1925; Latta, 1977; Wallace, 1978) suggests that similar site distribution patterns and resource potentials exist for ethnographic resources as do for prehistoric archaeological sites. That is, these types of resources will most likely occur on terraced areas adjacent to drainages and springs. The potential for encountering resources of this nature is greater for the Proposed Western Corridor than for the Eastern Corridor Alternative.

C.4.1.3 Historical Setting

The project area has historically been a region physically isolated from the population and transportation centers of California. Before the arrival of the railroad in the late 19th century, and adequate roads in the early 20th century, this isolation was a key factor in the project area's historical evolution. Equally important natural factors were the rough and dry character of the region. Much of it is hilly or steep and almost all of it is characterized by a harsh hot and dry climate for most of the year. Finally, the exploitable economic resources of this region were lacking during most of the nineteenth century, although oil production began to be important in the southern section of the Western Corridor in the early 1900s. The history of this region is discussed in further detail in Appendix 5.

Potential for Historic Resources

Today the project area is characterized by diversified agriculture, ranching, oil and gas extraction, and recreation at locations such as Los Banos Creek Recreation Area. The Cantua Creek site of the Joaquin Murrieta headquarters is the only California State Historical Landmark (Number 344) within the study area. Early wooden oil rigs and features were located in the Coalinga and Guijarral Oil Fields, and 19th century ranch features, structures, and historic archaeological deposits could be located in the vicinity of any of the drainages that the project corridor will cross. In this regard, the Domengine Ranch in the Big Blue Hills area and the Pleasant Valley Ranch in the Los Gatos Creek area are examples of potential historic resource locations. These historic resources sensitivities are greater for the Western Corridor than for the Eastern Corridor Alternative.

C.4.1.4 Cultural Resources Identified in the Proposed and Alternative Corridors

This section describes cultural resources identified in the proposed and alternative corridors. Additional information about these cultural resources is available in the Cultural Resources Technical Report and Appendix 5.

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C.4.1.4.1 *Proposed Project*

No recorded cultural resources have been identified in the Proposed Segments 1, 3, or 7. The recorded resources in Segments 2, 4, and 5 are described below.

Segment 2

Two prehistoric and two historic sites are recorded in Segment 2:

- **CA-Mer-278/P-24-368** is very near Western Corridor (Proposed) Segment 2 and is also within the Western Corridor Alternative Segment 2A. The site, a prehistoric milling station, is on a terrace west of Ortigalita Creek and northeast of the confluence of Ortigalita and Piedra Azul Creeks and west of a local ranch road. This site, recorded during the previous inventory conducted for the Los Banos-Gates Transmission Project, has six sandstone outcrops with a total of 12 mortars. No artifacts, features, or midden were in association (Smith and Slater, 1986a; Chavez et al., 1986). CA-Mer-278/P-24-368 was later relocated and "cupule petroglyphs" adjacent to two additional outcrops were observed along with 30+ widely dispersed chert flakes, a small fragment of burnt bone, and a fractured stream cobble. At the time, impacts to the site included a dirt road through the site and extensive cattle grazing (Steidl et al., 1992; Hines et al., 1992). The site was evaluated as not "likely to yield any information that will address important research questions about the regional archaeology. This site is therefore not considered significant, and is not eligible for the National Register of Historic Places" (Hines et al., 1992).
- **CA-Mer-279/P-24-369** is in Proposed Segment 2 and adjacent to Western Corridor Alternative Segment 2A. It is east of the confluence of Ortigalita and Piedra Azul creeks on a west-facing slope at the east edge of a ranch road along Ortigalita Creek and northwest of CA-Mer-278/P-24-368. This milling station was recorded as two slightly eroded sandstone outcroppings within a 5 x 5 meter (16 x 16 feet) area with a single mortar cup on each during the previous survey conducted for the Los Banos-Gates Transmission Project. No artifacts, features, or midden were observed in association at the time. Based on the information available for the site, it appears that it could be eligible for the California Register under criterion 4, which is that this resource has the potential to yield information about the history of California. The criterion for the California Register is discussed in Section C.4.2.2.
- **CA-Mer-331H/P-24-420** is located at about the centerline of Proposed Segment 2. This historic site is composed of three depressions, a house depression, an outhouse depression 6.7 meters (22 feet) northwest of the house, and a possible stable depression located 128 meters (420 feet) north of the house. Two brick fragments with mortar adhering, but no trash, etc. were observed. To date, site disturbance appears to have been minimal, limited to some wash erosion. Research indicates that site and related features are within the project's corridor and include Lugea's house, garden, corral, and stables. CA-Mer-331H, the Jose Lugea Site, was evaluated by Hines et al. (1992) as eligible for the National Register of Historic Places. Specific National Register of Historic Places criteria were not stated.
- **P-24-621,** Los Banos Creek, as mapped by the CHRIS/CCIC crosses Eastern Corridor Alternative Segment 2 and by extension crosses Proposed Segment 2 and Western Corridor Alternative Segment 2A. Los Banos Creek has been a State Point of Historical Interest since 1967 and is on the *California Inventory of Historic Resources* under the theme of Exploration/Settlement (CAL/OHP, 1976). Los Banos Creek was named for the pools or baths near its source, called *Los Banos del Padre Arroyo,* named for Padre Felipe Arroyo de la Cuesta who was at Mission San Juan Bautista from 1808 to 1833.

Segment 4

One prehistoric site is recorded in Segment 4:

- **CA-Fre-129/P-10-129**, a prehistoric site, is situated in Proposed Segment 4 between Panoche Road on the left bank of a branch of Little Panoche Creek near a spring. At the time of recordation, the site was described as a temporary campsite where one possible house-pit and a pestle fragment were observed within

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an area of 24 x 21 meters (80 x 70 feet; Elsasser, 1957; Olsen and Payen, 1968). CA-Fre-129 appears to have been a later prehistoric temporary camp or village site with an associated cemetery (Moratto, 1984). A radiocarbon date of 185 B.P. or less than A.D. 1765 and the artifacts and burial complex suggest that the site was occupied between about A.D. 1500-1600 to about A.D. 1820. The site includes the cultural complex known as the Gonzaga Complex, ca. A.D. 300 to 1000 (Late Period Phase I) and Panoche Complex, ca. A.D. 1500 to 1850 (Late Period Phase II)[2] (Olsen and Payen, 1968; Olsen and Payen, 1969; Moratto, 1984).

In addition, two prehistoric roads crossing portions of the Proposed Segment 4 consist of:

- **Road** - (USBLM, 1858-1880; USGS Laguna Seca Ranch, Calif.)
- **Road to San Joaquin** - appears to correspond to present-day Little Panoche Road [also crossed by Alternative Segment 4A] (USBLM, 1858-1880; USGS Laguna Seca Ranch, Calif.).

Segment 5

Four recorded resources occur in Segment 5:

- **CA-Fre-46/P-10-46**, a lithic scatter, is near the periphery of Proposed Segment 5 on a terrace on the south and west bank of Panoche Creek. Several dirt roads cross the site and the areas surrounding the site have been bulldozed (Hewes and Massey, 1939a; Smith, 1986a; Chavez et al., 1986). No additional information is available. The site has not been evaluated.
- **CA-Fre-85/P-10-85**, an "Indian Village site," is located in Proposed Segment 5 at "the old ranch house in Turney Gulch." F.F. Latta, at the time the site was recorded in 1950, was unsure of the exact location of the site. No additional information is available. Note this site does not correspond to the locations of villages reviewed by Latta (1977) in his *Handbook of Yokuts Indians*.
- **CA-Fre-1997/P-10-1997** is a prehistoric lithic scatter located north of Panoche Creek within 1,420 feet of the centerline of Proposed Segment 5. Although the Proposed Project Corridor is only 2,000 feet wide, suggesting that this site is adjacent to and not within the Proposed Project Corridor, additional resources were observed northwest of the other cultural materials suggesting the site "may extend a good deal further to the west." The site has been subject to erosion and cattle grazing (Smith, 1986b; Chavez et al., 1986). No additional information is available. The site has not been evaluated.
- A portion of the **East Coalinga Extension Oil Field** is situated in Proposed Segments 5 and 6. This economic/industrial feature is part of the intensive oil resource development of the study area that occurred in the early 1900s.

The 19th century roads crossing portions of Proposed Segment 5 consist of:

- "Road to Little Panoche" - about 0.35 miles to B. Durand's Cabin (USBLM, 1854-1881; USGS, Chounet Ranch, Calif.)
- "Main Panoche Road" (USBLM, 1854-1881; USGS, Chounet Ranch, Calif.)
- Unamed road - between "Main Panoche Road" and "Little Panoche Road from Big Panoche to Cantua" (USBLM, 1854-1881; USGS, Chounet Ranch, Calif.)
- "Road to Pedro's Place" - Pedro's Place was situated west of the Western Corridor (USBLM, 1879-1880; USGS, Domengine Ranch, Calif.)
- "Road to Pozachenia" (USBLM, 1879-1880; USGS, Domengine Ranch, Calif.)

[2] After the Sacramento-San Joaquin Delta region Central California Taxonomic System (CCTS).

- Road – leads to "Old Stone Cabin" located about 0.20 miles southwest of the road (USBLM, 1879 1880; USGS, Domenginc Ranch, Calif.)
- "Main Road from Panoche to Cantua" (USBLM, 1853-1881; USGS, Lillis Ranch, Calif.).
- "Road to Barago's Sheep Camp" - also shown as "Road to Berry's Sheep Camp" (USBLM 1855-1881; USGS Lillis Ranch, Calif.)

Segment 6

Two historic resources are recorded in Proposed Segment 6, the historic oil fields (as described above) and the following:

- The former **Southern Pacific Railroad** track alignment is crossed by Proposed Segment 6 and Western Corridor Alternative Segments 6A and 6B, as well as Eastern Corridor Alternative Segment 6. A portion of this alignment has been formally recorded west of the Los Banos-Gates Project as site CA-Fre-3093H/ P-10-3199 (USGS, Coalinga and Guijarral Hills, Calif.). This site consists of approximately three miles of the former Southern Pacific Railroad track alignment west of the project. The rails and ties have been removed from the recorded portion of the railroad grade. Railroad beds and their associated components consist of the roadway and its ballast, cross ties, tieplates, rails, rail joints, and rail anchors (Hatoff et al., 1995). The integrity of the railbed is low due to the periodic replacement and upgrading of the roadbed and tracks (Hatoff et al., 1995). However, the alignment would likely be eligible for the National Register and California Register under criterion 3a in the National Register or criteria 1 under the California Register. The criteria for both the National Register and the California Register are discussed in Section C.4.2.

C.4.1.4.2 *Western Corridor Alternative Segments*

The following cultural resources have been identified in the Western Corridor Alternative Segments.

Segment 2A

Three prehistoric sites and two historic sites are recorded in Segment 2A:

- **CA-Mer-278/P-24-368** is a prehistoric milling station (see description under Segment 2 above).
- **CA-Mer-279/P-24-369** is a milling station (see description under Segment 2 above).
- **CA-Mer-335/P-24-424** is in Western Corridor Alternative Segment 2A along the west stream terrace of Ortigalita Creek and south of Piedra Azul Creek. This site, a limited prehistoric multiple activity site estimated as 162 meters long (230 feet) northeast-southwest and 40 meters wide (59 feet) east-west, is situated about 400 meters (1312 feet) southwest of CA-Mer-278/P-24-368 and CA-Mer-279/P-24-36. The absence of definable midden and formal tools was interpreted as evidence that the site was not a habitation site. The site has been impacted by a dirt road through the site as well as erosion and cattle grazing. CA-Mer-335 has been evaluated as "...unlikely to yield any significant information concerning the prehistory of the region" and was evaluated as "does not meet criterion d and is not considered eligible for the National Register" (Haisten et al., 1992a-b; Hines et al., 1992).
- **P-24-621, Los Banos Creek**, is a State Point of Historical Interest (see description under Segment 2 above).
- **Ortigalita School** was formerly present within Western Corridor Alternative Segment 2A on the north side of Ortigalita Creek and a north-south trending road in 1908-1911. The school is in the former *Rancho Panoche de San Juan y Las Carrisalitos*. By the early 1940s, the school was no longer in existence (USGS, Panoche, Calif., 1908-1911; USGS, Ortigalita Peak, Calif., 1943).

Segment 6A

This segment includes one historic resource, the **Southern Pacific Railroad**, the track alignment for the former railroad (see description under Segment 6 above).

Segment 6B

Alternative Segment 6B includes two historic resources:

- **Southern Pacific Railroad**, the track alignment for the former railroad (see description under Segment 6 above). Part of this alignment has been formally recorded west of the Los Banos-Gates Project as site CA-Fre-3093H/P-10-3199 (see description under Segment 6 above)
- The **Road to San Joaquin** appears to correspond to present-day Little Panoche Road (see description under Segment 4 above).

C.4.1.4.3 *Eastern Corridor Alternative*

No recorded cultural resources have been identified in the Eastern Corridor Alternative Segment 1. The recorded resources in Segments 2, 3, 4, 5, and 6 are described below.

Segment 2

Three prehistoric sites and one historic site are recorded in Segment 2:

- **CA-Mer-25/P-24-126**, a prehistoric site, has been recorded within Eastern Corridor Alternative (ECA) Segment 2 west of the existing transmission lines on or on the side of a detention dam at the far eastern end of the Los Banos Creek Reservoir. The site has been inundated by the reservoir. Prior to recordation the site had been impacted by a corral and partly by a road. A reported 1964 site report by W. Olsen is not on file at the CCIC. No additional information is available (Olsen, 1964; Pope and Pope, 1973). This site would have been within the "Los Banos Archaeological District" (see CA-Mer-68 below for additional information).
- **CA-Mer-68/P-24-2** is partly within the eastern side of ECA Segment 2 in the Los Banos State Recreation Area. This prehistoric site consists of a large habitation site on a terrace on the south side of Los Banos Creek as it flows into the San Joaquin River. The site was one of 107 visited and mapped during a reconnaissance of the Central San Joaquin Valley and placed within the Los Banos region (Hewes, 1941). Thirteen (13) auger test units were completed at CA-Mer-68 in 1990. Past and continuing impacts to the site include stream erosion, cattle grazing, gravel mining, picnic area construction and use, horse corrals and equestrian use, fencing and power service, and road and firebreak construction. These impacts appear to have been responsible for the absence of isolates within the APE (USGS, Ortigalita Peak NW, Calif. 1984 [note Borrow Pit]; Hewes and Massey, 1939b; Pritchard, 1966 in Mikkelsen and Hildebrant, 1990; CAL/DPR 1992; Mikkelsen et al., 1990; Scott et al., 1993; Scott, 1994). Site CA-Mer-68 has not been formally determined eligible for either the California or National Registers. However, it was evaluated in 1990 as eligible for the National Register and within a potential "Los Banos Archaeological District" composed of 33 prehistoric sites of which 27 were evaluated as eligible.
- The majority of prehistoric site **CA-Mer-302/P-24-392** is situated in ECA Segment 2 north of the existing transmission lines on a tributary of Billie Wright Creek. The site was relocated by Peak & Associates, Inc.

With the exception of CA-Mer-68, these sites are not located in the Area of Potential Effects (APE). Six were evaluated as not eligible and 15 require additional information for evaluation. CA-Mer-3, the Menjoulet site, appears to have been a tribelet center with a 23 meter diameter housepit, the largest known housepit in California (Pritchard 1970; Moratto 1984:190-191).

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in 1992. No additional information is available (Napton 1990/CCIC-645; Napton et al. 1990; Peak & Associates, Inc. 1992/CCIC-1976). The site has not been evaluated.

- **P-24-621,** Los Banos Creek, is a State Point of Historical Interest (see description under Proposed Segment 2 above).

Segment 3

Segment 3 of the Eastern Corridor Alternative includes two recorded historic resources:

- **CA-Mer-303H/P-24-393**, a historic era trash dump, is located on the periphery of ECA Segment 3 on the southwest side of I-5 on the northern edge of a wash of the Ortigalita Creek drainage. CA-Mer-303H was evaluated as "does not appear to meet NRHP eligibility criteria" by both Hines et al. (1992) and by Romano et al. (1993). The latter noted that the integrity of the site was deemed poor due to cattle grazing, cultivation, and bioturbation, and that the site was not associated with a known historic event, context, or person and lacked structural features. Due to the lack of integrity, the site cannot address research questions of ethnicity, economic status, or gender; nor can they illustrate consumer choice, trade patterns, or lifestyle. Furthermore, the site may not meet the 50-year age criterion.
- **CA-Mer-328H/P-24-417**, a surface scatter of historical debris, is located within ECA Segment 3 southwest of I-5 and adjacent to an intermittent drainage. Grazing appears to have impacted the site and the construction of a reservoir appears to have removed or displaced part of the artifact scatter (Bowyer et al. 1992). CA-Mer-328H was not initially reviewed by Moratto et al. (1990) as part of the PGT-PG&E Pipeline Expansion Project. However, the site was later reviewed by Canaday et al. (1992) who noted that the integrity of CA-Mer-328H may have been slightly impaired from agricultural activities but that the sparse artifact scatter did not appear to be sufficient to establish associations with historical themes or persons important to the region (e.g., National Register criteria a and b, California Register criteria 1 and 2). He additionally noted that the lack of features or buried component indicate that the site cannot contribute data useful to address important archaeological research questions (National Register criteria d, California Register criteria 4) and therefore, no further management was recommended. The criteria for both the National Register and the California Register are discussed in Section C.4.2.

Segment 4

Two potentially historic resources occur along Segment 4 of the Eastern Corridor Alternative:

- The California Aqueduct enters the Eastern Corridor Alternative (USGS, Charleston School, Calif. in Merced County) and crosses under the existing transmission lines (from east to west) (USGS, Laguna Seca Ranch, Calif.). The canal crosses again under the existing transmission lines (west to east) and leaves the corridor in Fresno County. This engineering feature provides water for municipal, industrial, and agricultural users, but has not been formally recorded in the project corridor although two points on the canal in San Joaquin County have been formally recorded as P-39-90 (USGS, Tracy, Calif., 1981).

  The California Aqueduct is less than 50 years of age and is currently evaluated as not eligible for the National Register of Historic Places. The portion of the California Aqueduct between the O'Neill Forebay, which is west of Los Banos, and Kettleman City, which is southeast of the Gates Substation, was constructed between 1963 and 1968. The Aqueduct is important to the economy and society of California for "these irrigation canals have allowed the West Side region to develop into a highly diversified agricultural region mainly characterized by large farms" (Chavez et al., 1986). The Aqueduct has been evaluated as not of "exceptional historical significance" which is required of any historic property under 50 years to be evaluated as eligible for the National Register. It appears likely that the system will become eligible for the National Register upon reaching or near reaching 50 years of age (Author Unknown, 1996; Hatoff et al., 1995). Criteria for the California Register, which are discussed in Section C.4.2.2 below, are similar to the National Register, but lack a stated minimum age requirement. It is possible that the California Aqueduct is eligible for the

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California Register under criterion 1, which is that the California Aqueduct is a part of the local and regional history.

- Another resource along ECA Segment 4 is a "**Wagon Road**" (USBLM, 1854-1880; USGS, Hammonds Ranch, Calif.).

Segment 5

Four 19th century road segments that cross Segment 5 of the Eastern Corridor Alternative consist of:

- "Road from Panoche to Cantua" (USBLM, 1853-1880; USGS Levis, Calif.; USGS, Lillis Ranch, Calif.),
- Road - along the north side of Cantua Creek (USBLM, 1853-1855; USGS, Tres Picos Farms, Calif.)
- Road - appears to start/stop at south bank of Cantua Creek (USBLM, 1853-1855; USGS, Tres Picos Farms, Calif.)
- Road (USBLM, 1854-1855; USGS, Domengine Ranch, Calif.).

Segment 6

Two historic resources are recorded in Segment 6:

- The former **Southern Pacific Railroad** track alignment is crossed by ECA Segment 6, as well as the Proposed Segment 6 and Western Corridor Alternative Segments 6A and 6B. Part of this alignment has been formally recorded west of the Los Banos-Gates Project as site CA-Fre-3093H/P-10-3199 [see Proposed Segment 6 above for additional information].
- Two historic roads, "**Wagon Road**" and "**Trail**," formerly present along the north side of the Southern Pacific railroad tracks meet/bifurcate ECA Segment 6. (USBLM, 1853-1855; USGS, Guijarral Hills, Calif.)

C.4.2 APPLICABLE REGULATIONS, PLANS, AND STANDARDS

C.4.2.1 Federal

This document has been undertaken to meet compliance requirements for cultural resources in accordance with the California Environmental Quality Act (CEQA). However, this effort also requires evaluations of historic properties within the Area of Potential Effects for inclusion on both the National Register of Historic Places and the California Register of Historical Resources.

Federal projects including those requiring a federal license or using federal funding require compliance with Section 106 of the National Historic Preservation Act of 1966 (as amended) (16 U.S.C., Section 470f) and the implementing regulations 36 CFR 800. Section 106 (16 USC 470f) of the NHPA requires federal agencies, prior to implementing an undertaking to identify cultural resources eligible for inclusion or listed on the National Register of Historic Places (NRHP) within the proposed Permit Area, to consider the effects of the undertaking on historic properties and to afford the Advisory Council on Historic Preservation (ACHP) and the State Historic Preservation Office (SHPO) a reasonable opportunity to comment on any undertaking that would adversely affect properties eligible for listing on the NRHP.

Eligibility criteria for the National Register of Historic Places (NRHP) require that a resource:

1) Is at least 50 years old unless of exceptional historical significance;

2) Retains integrity of location, design, setting, materials, workmanship, feeling, and association;

3) Has one or all of the following characteristics associated:

   a. with events that have made a significant contribution to the broad patterns of our history;

   b. with the lives of persons significant in our past;

   c. embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction;

   d. have yielded, or may be likely to yield, information important in prehistory or history.

C.4.2.2 State

Historical Resources

The California Environmental Quality Act (CEQA) equates a substantial adverse change in the significance of a historical resource with a significant effect on the environment (Section 21084.1 of the Public Resources Code) and defines substantial adverse change as demolition, destruction, relocation, or alteration that would impair historical significance (Section 5020.1). Section 21084.1 stipulates that any resource listed in, or eligible for listing in, the California Register of Historical Resources (CRHR) is presumed to be historically or culturally significant.

Resources listed in a local historic register or deemed significant in a historical resource survey (as provided under Section 5024.1g) are presumed historically or culturally significant unless the preponderance of evidence demonstrates they are not. A resource that is not listed in, or determined to be eligible for listing in, the CRHR, is not included in a local register of historic resources, or not deemed significant in a historical resource survey may nonetheless be historically significant (Section 21084.1; see Section 21098.1).

A historical resource may be listed in the CRHR if it meets one or more of the following criteria:

1) It is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States;

2) It is associated with the lives of persons important to local, California or national history;

3) It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master or possesses high artistic values;

4) It has yielded or has the potential to yield information important in the prehistory or history of the local area, California or the nation.

Automatic listings include properties listed in the National Register of Historic Places, determined eligible for the National Register either by the Keeper of the National Register or through a consensus determination on a project review, or State Historical Landmarks from number 770 onward. In addition, Points of Interest nominated from January 1998 onward will be jointly listed as Points and in the California Register

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Archaeological Resources

CEQA requires a Lead Agency to identify and examine environmental effects that may result in significant adverse impacts. Where a project may adversely affect a unique archaeological resource, Section 21083.2 requires the Lead Agency to treat that effect as a significant environmental impact and prepare an EIR. When an archaeological resource is listed in or is eligible to be listed in the CRHR, Section 21084.1 requires that any substantial adverse effect to that resource be considered a significant environmental impact. Sections 21083.2 and 21084.1 operate independently to ensure that potential effects on archaeological resources are considered as part of a project's environmental analysis. Either of these benchmarks may indicate that a project may have a potential adverse effect on archaeological resources.

Public Resources Code 21083.2 (g) defines a unique archaeological resource as "an archaeological artifact, object, or site, about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria: (1) contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information; (2) has a special and particular quality such as being the oldest of its type or the best available example of its type; or, (3) is directly associated with a scientifically recognized important prehistoric or historic event or person."

Section 21084.1 requires treatment of any substantial adverse change in the significance of a historical resource listed in, or eligible to be listed in, the CRHR as a significant effect on the environment. The definition of "historical resource" includes archaeological resources listed in or formally determined eligible for listing in the CRHR and by reference, the NRHP, California Historical Landmarks, Points of Historical Interest, and local registers.

Public Resources Code Sections 5020.1 and 5024.1 provide the following definitions:

- *Historic district* means a definable unified geographic entity that possesses a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development.
- *Historical landmark* means any historical resource that is registered as a state historical landmark pursuant to Section 5021.
- *Historical resource* includes, but is not limited to, any object, building, structure, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic agricultural, educational, social, political, military, or cultural annals of California.
- *Local register of historic resources* means a list of properties officially designated or recognized as historically significant by a local government pursuant to a local ordinance or resolution.
- *Substantial adverse change* means demolition, destruction, relocation, or alteration such that the significance of an historical resource would be impaired.

A resource identified as significant in a historical resource survey may be listed in the CRHR if the survey meets all of the following criteria:

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- The survey has been or will be included in the State Historic Resources Inventory.
- The survey and the survey documentation were prepared in accordance with Office of Historic Preservation procedures and requirements.
- The resource is evaluated and determined by the Office of Historic Preservation to have a significance rating of Category 1 to 5 on Department of Parks and Recreation Form 523.
- If the survey is five or more years old at the time of its nomination for inclusion in the CRHR, the survey is updated to identify historical resources that have become eligible or ineligible due to changed circumstances or further documentation and those that have been demolished or altered in a manner that substantially diminishes the significance of the resource.

C.4.2.3 Other Laws and Regulations

Other requirements for cultural resources management appear in the California Public Resources Code Chapter 1.7, Section 5097.5 (Archaeological, Paleontological, and Historical Sites), and Chapter 1.75, beginning at Section 5097.9 (Native American Historical, Cultural, and Sacred Sites) for lands owned by the state or a state agency.

The disposition of Native American burials is governed by Section 7050.5 of the California Health and Safety Code and Sections 5097.94 and 5097.98 of the Public Resources Code, and falls within the jurisdiction of the Native American Heritage Commission (NAHC). If human remains are discovered, the County Coroner must be notified within 48 hours and there should be no further disturbance to the site where the remains were found. If the remains are determined by the coroner to be Native American, the coroner is responsible for contacting the NAHC within 24 hours. The NAHC, pursuant to Section 5097.98, will immediately notify those persons it believes to be most likely descended from the deceased Native American so they can inspect the burial site and make recommendations for treatment or disposal.

C.4.3 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED PROJECT

C.4.3.1 Introduction

The general *Area of Potential Effects* (APE) for Archaeology consists of the transmission line corridor and areas required to construct the line. These include:

- Installation of new tower bases of 100 x 100 feet (0.23 acre) with placement at average intervals of 1,200 feet.
- Conductor tensioning sites of 200 x 200 feet (0.9 acre) within the ROW at intervals of 3-miles in hilly terrain and 5-miles in flat terrain.
- Conductor splicing areas of 20 x 50 feet (0.02 acre) within the ROW at 2-mile intervals.
- Construction yards of 500 x 500 feet (5.7 acre) at Los Banos, Panoche (MP 45), and Gates Substations.
- Location of Work Camps of 300 x 300 feet (2.0 acres) at Mercy Springs (MP 25) and Highway 198 (MP W72) consisting of one or two 8-man sleeping trailers, kitchen and dining facilities, and restrooms.
- Roads to access to each tower location will be required during construction (generally 10 to 14 feet wide with 20 feet turns). Existing roads, with necessary repair, will be used where possible. Only spur roads to tower locations would need to be constructed.

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A maintenance program would also be established to ensure continued reliable service of the transmission system including inspection of the transmission line structures, access roads, and ROWs either by air or, if necessary, by foot or vehicle, one to three times per year. Emergency repairs would be made if the transmission line were damaged and required immediate attention. Maintenance crews of fewer than 10 persons would use tools, trucks, assist trucks, aerial lift trucks, cranes, and other equipment necessary for repairing and maintaining insulators, conductors, structures, and access roads.

The APE for the Proposed Western Corridor will be developed based on several requirements including the separation required to minimize interference between 500 kV and 230 kV transmission lines (i.e., a minimum of 130 feet) and other factors including conductor type, span length, tower staggering, and so on. For purposes of this report, a 0.25-mile (1,320 feet) corridor centered on the probable alignment as mapped by PG&E was used for the cultural resources review.

C.4.3.2 Definition And Use Of Significance Criteria

The thresholds of significance for cultural resource impacts for the project are defined as situations where construction or operation of the project could:

- Result in damage to, the disruption of, or adversely affect a property that is listed in the California Register of Historical Resources (CRHR) or a local register of historic resources as per Section 5020.1 of the Public Resources Code
- Cause damage to, disrupt, or adversely affect an important prehistoric or historic archaeological resource such that its integrity could be compromised or eligibility for future listing on the CRHR diminished
- Cause damage to or diminish the significance of an important historic resource such that its integrity could be compromised or eligibility for future listing on the CRHR diminish.

Significant prehistoric cultural resources are defined as human burials, features, or other clusterings of finds made, modified, or used by Native American peoples in the past. The prehistoric and protohistoric indicators of prior cultural occupation by Native Americans include artifacts and human bone, as well as soil discoloration, shell, animal bone, sandstone cobbles, ashy areas, and baked or vitrified clays. Prehistoric materials may include:

- Human bone - either isolated or intact burials.
- Habitation (occupation or ceremonial structures as interpreted from rock rings/features, distinct ground depressions, differences in compaction (e.g., house floors).
- 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.
- Various features and samples including hearths (fire-cracked rock; baked and vitrified clay), caches, faunal and shellfish remains (which permit dietary reconstruction), distinctive changes in soil stratigraphy indicative of prehistoric activities.
- Isolated artifacts.

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Historic cultural materials may include finds from the late 19th through early 20th centuries. Objects and features associated with the Historic Period can include:

- Structural remains or portions of foundations (bricks, cobbles/boulders, stacked field stone, postholes, etc.).
- Trash pits, privies, wells and associated artifacts.
- Isolated artifacts or isolated clusters of manufactured artifacts (e.g., glass bottles, metal cans, manufactured wood items, etc.).
- 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.

C.4.3.3 Mitigation Measures From 1988 FEIR/EIS

Table C.4-1 presents the cultural resource impacts identified in the 1988 FEIS/EIR, and then compares the impacts to those identified in this SEIR. Impacts and mitigation measures are described in detail in Section C.4.3.4.

Table C.4-1 Summary of Impacts: 1988 FEIS/EIR* and SEIR

Final EIS/EIR Impact	Significance	SEIR Impact	Significance
Disturbance or destruction of cultural resources	Less than significant after mitigation	**Impact 4-1:** Inadvertently impact previously identified cultural resources during construction **Impact 4-2:** Discover previously unrecorded cultural resources during construction. **Impact 4-3:** Project construction could affect parks, Wilderness Study Area (WSA), and recreational areas that may contain cultural resources.	Less than significant after mitigation

* Impacts from 1988 FEIS/EIR are from Table 2-B, Summary of Significant Environmental Impacts, Applicable Mitigation Measures, and Mitigation Effectiveness for Los Banos-Gates.

Table C.4-2 lists the mitigation measures that were proposed in the FEIS/EIR (TANC/WAPA, 1988) for protection of cultural resources for the minimization of impacts from the Proposed Project, and shows how those measures are addressed in this document. These mitigation measures have been modified to add specificity and appropriate enforcement provisions.

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The following mitigation measures are recommended for protection of cultural resources. These measures are general because at the time of printing this Draft SEIR, PG&E has not identified a specific route (and tower locations) for its Proposed Project. However, implementation of these measures should ensure that impacts to cultural resources are less than significant (Class II).

Mitigation Measure for all Cultural Resources Impacts

C-1 PG&E shall develop and implement a *Cultural Resources Management Plan* (CRMP) for the project covering pre-construction, construction and post-construction activities. PG&E shall submit the CRMP to the CPUC at least 30 days prior to construction for review and approval. The CRMP shall include procedures for pre-construction field survey, designation and avoidance of cultural resources areas, significance evaluation including potential testing and possible data recovery prior to construction, archaeological monitoring during construction, treatment of the unexpected discovery of cultural resources (including Native American burials), and treatment of significant sites that may be exposed during all phases of the project. The CRMP shall detail the qualifications of the Project Archaeologist, reporting requirements by the Project Archaeologist; designate a location for the curation of cultural materials collected during the project; and, specify that archaeologists and other discipline specialists meet any Professional Qualifications Standards mandated by the California Office of Historic Preservation (OHP).

The CRMP shall include requirements detailing that prior to construction or ground-disturbing activities, PG&E shall (1) complete cultural resources training for all construction personnel; and, (2) insure that any excavation contract (or contracts for other activities that may have subsurface soil impacts) shall include clauses that require construction personnel to attend training so they are aware of the potential for inadvertently exposing buried archaeological deposits.

The CRMP shall include the requirement for and definition of a background briefing for supervisory construction personnel describing the potential for exposing cultural resources, the location of any potential Environmentally Sensitive Areas (ESA) and anticipated procedures to treat unexpected discoveries. Construction personnel shall be trained regarding the recognition of possible buried prehistoric and historic resources during construction. PG&E shall inform all construction personnel of the procedures to be followed upon the discovery of archaeological materials including Native American burials.

Wherever a tower, access road, equipment, etc. must be placed or accessed within 100 feet of a recorded, reported or known archaeological site eligible or potentially eligible for the CRHR, the site will be flagged on the ground as an Environmentally Sensitive Area (ESA). Construction equipment would then be directed away from the ESA, and construction personnel would be directed to avoid entering the ESA.

Upon discovery of potential buried cultural materials, work in the immediate area of the find shall be halted and PG&E's archaeologist notified. Once the find has been identified, PG&E's archaeologist will make the necessary plans for treatment of the find(s) and for the evaluation and mitigation of impacts if the finds are found to be important according to CEQA.

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Mitigation Measures for Impact 4-1, Impacts to Known Cultural Resources

C-2 PG&E shall conduct pre-construction field surveys to locate and record cultural resources within the project right-of-way and related construction facilities and roadways. PG&E shall submit the results from the pre-construction survey to the CPUC at least 30 days prior to construction. If resources are found, they shall be formally recorded and/or updates shall be filed for previously recorded sites according to the procedures defined in the Cultural Resources Management Plan (see Mitigation Measure C-1). All resources shall be evaluated in accordance with California Register of Historical Resources criteria.

C-3 PG&E shall avoid known significant or potentially significant cultural resources in/adjacent to the project corridor. They shall consult with cultural resource professionals (approved by the CPUC) during the siting of the transmission line to avoid cultural resources where possible. If avoidance is not possible, specific procedures shall be followed to minimize resource impact or to record resources that cannot be avoided; these procedures shall be identified and reported in the Cultural Resources Management Plan (see Mitigation Measure C-1).

Mitigation Measure for Impact 4-2, Discovery of Previously Unknown Resources

C-4 PG&E shall consult with interested Native Americans to identify areas or features of significant or potentially significant Native American concern, and shall develop procedures (to be documented in the CRMP, Mitigation Measure C-1) for documentation of or preservation of resources that cannot be avoided. Documentation of consultation and issues discussed shall be provided to the CPUC, at least 30 days prior to construction.

Mitigation Measure for Impact 4-3, Impacts on Cultural Resources in Parks and Recreation Areas

C-5 PG&E shall consult with and implement any site-specific cultural resources requirements mandated by the CPUC, State Office of Historic Preservation, and within the jurisdiction of other agencies (e.g., Bureau of Reclamation, Bureau of Land Management (BLM), the California Department of Parks and Recreation (CAL/DPR). Documentation of consultation and issues discussed shall be provided to the CPUC, at least 30 days prior to construction. Areas and parks that may be affected are the following:

- California Aqueduct (owned by the Bureau of Reclamation and managed by the California Department of Water Resources (DWR)
- Little Panoche Reservoir (jointly managed by the DWR and California Department of Fish and Game)
- Panoche Hills Wilderness Study Area (WSA) (BLM)
- San Luis Reservoir State Recreation Area (CAL/DPR)
- Los Banos Creek Recreation Area (CAL/DPR)

C.4.3.5 Cultural Resources in the Proposed 500 kV Transmission Line Corridor

This section defines the impacts and mitigation measures for the Proposed Project Corridor; the resources listed here are described in Section C.4.1.4.

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Segment 1

No formally recorded sites or other known cultural resources were identified within this segment. Mitigation Measures **C-1**, **C-2**, **C-4**, and **C-5** should be implemented to ensure that any resources discovered during construction are appropriately protected. These measures would ensure that the impacts to cultural resources would be less than significant **(Class II)**.

Segment 2

Four formally recorded sites were identified in this segment:

- CA-Mer-278/P-24-368
- CA-Mer-279/P-24-369
- CA-Mer-331H/P-24-420
- P-24-621 (no trinomial, a State Point of Historical Interest).

However, with the implementation of Mitigation Measure **C-3**, the impact on these sites will be less than significant **(Class II)**. Mitigation Measures **C-1**, **C-2**, **C-4**, and **C-5** should also be implemented to protect resources discovered during construction **(Class II)**.

Segment 3

No formally recorded sites or other known cultural resources were identified within this segment. Mitigation Measures **C-1**, **C-2**, **C-4**, and **C-5** should be implemented to ensure that any resources discovered during construction are appropriately protected. These measures would ensure that the impacts to cultural resources would be less than significant **(Class II)**.

Segment 4

One formally recorded site, **CA-Fre-129/P-10-129**, and two mapped 19th century roads were identified at this segment. With the implementation of Mitigation Measure **C-3**, the potential impact on these resources will be less than significant **(Class II)**. Mitigation Measures **C-1**, **C-2**, **C-4**, and **C-5** should also be implemented to protect resources discovered during construction **(Class II)**.

Segment 5

Three formally recorded sites and a historic area were identified in or near this segment:

- CA-Fre-46/P-10-46
- CA-Fre-85/P-10-85
- CA-Fre-1997/P-10-1997
- A portion of the East Coalinga Extension Oil Field (part in Segment 6) is present along with nine 19th century roads.

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With the implementation of Mitigation Measure **C-3**, the potential impact on these resources will be less than significant **(Class II)**. Mitigation Measures **C-1**, **C-2**, **C-4**, and **C-5** should also be implemented to protect resources discovered during construction **(Class II)**.

Segment 6

This segment has the Southern Pacific Railroad formally recorded west of the project (CA-Fre-3093H/P-10-3199). Part of the East Coalinga Extension Oil Field (see Segment 5 above), and two 19th Century roads/trails are also present. However, with the implementation of Mitigation Measure **C-3**, the potential impact on these resources will be less than significant **(Class II)**. Mitigation Measures **C-1**, **C-2**, **C-4**, and **C-5** should also be implemented to protect resources discovered during construction **(Class II)**.

Segment 7

No formally recorded sites or other known cultural resources were identified within this segment. Mitigation Measures **C-1**, **C-2**, **C-4**, and **C-5** should be implemented to ensure that any resources discovered during construction are appropriately protected. These measures would ensure that the impacts to cultural resources would be less than significant **(Class II)**.

C.4.3.6 Proposed Substation Modifications

No formally recorded sites or other known cultural resources were identified within the Los Banos Substation and Gates Substation facility footprints. Mitigation Measures **C-1**, **C-2**, **C-4**, and **C-5** should be implemented to ensure that any resources discovered during construction are appropriately protected. These measures would ensure that the impacts to cultural resources would be less than significant **(Class II)**.

C.4.3.7 Proposed Changes South of Gates Substation

No details on this segment are available, as this area was not mapped, searched, or reviewed for this report. However, based on PG&E's statement that existing towers are expected to be used if reconductoring is required, there should be no impacts to cultural resources. However, if ground disturbance is required, implementation of Mitigation Measures **C-1 through C-5** would ensure that impacts would be less than significant **(Class II)**.

C.4.4 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES FOR WESTERN CORRIDOR ALTERNATIVE SEGMENTS

Four Alternative Segments were evaluated along the Western Corridor: Segment 2A (which could replace Proposed Segment 2), Segment 4A (which could replace Proposed Segment 4), and Segments 6A and 6B (which could replace Proposed Segment 6). The potential impacts of each segment are discussed below.

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C.4.4.1 Segment 2A

Four recorded sites were identified in or near this segment:

- CA-Mer-278/P-24-368
- CA-Mer-279/P-24-369
- CA-Mer-335/P-24-424
- P-24-621 (no trinomial, a State Point of Historical Interest).

In addition, former Ortigalita School is situated in the segment. The implementation of Mitigation Measure **C-3** would reduce potential project impacts on these resources to less than significant levels **(Class II)**. Mitigation Measures **C-1**, **C-2**, **C-4**, and **C-5** should also be implemented to protect resources discovered during construction **(Class II)**.

C.4.4.2 Segment 4A

No formally recorded sites or other known cultural resources were identified within this segment. Mitigation Measures **C-1**, **C-2**, **C-4**, and **C-5** should be implemented to ensure that any resources discovered during construction are appropriately protected. These measures would ensure that the impacts to cultural resources would be less than significant **(Class II)**.

C.4.4.3 Segment 6A

Segment includes a portion of the Southern Pacific Railroad formally recorded west of the project (CA-Fre-3093H/P-10-3199). However, with the implementation of Mitigation Measure **C-3**, the potential impact on these resources will be less than significant **(Class II)**. Mitigation Measures **C-1**, **C-2**, **C-4**, and **C-5** should also be implemented to protect resources discovered during construction **(Class II)**.

C.4.4.4 Segment 6B

Segment includes a portion of the Southern Pacific Railroad formally recorded west of the project (CA-Fre-3093H/P-10-3199) and one 19th century road. Also, the **Road to San Joaquin** appears to correspond to present-day Little Panoche Road (also crossed by Segment 4). However, with the implementation of Mitigation Measure **C-3**, the potential impact on these resources will be less than significant **(Class II)**. Mitigation Measures **C-1**, **C-2**, **C-4**, and **C-5** should also be implemented to protect resources discovered during construction **(Class II)**.

C.4.5 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES FOR THE EASTERN CORRIDOR ALTERNATIVE

C.4.5.1 Segment 1

No formally recorded sites or other known cultural resources were identified within this segment. Mitigation Measures **C-1**, **C-2**, **C-4**, and **C-5** should be implemented to ensure that any resources

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discovered during construction are appropriately protected. These measures would ensure that the impacts to cultural resources would be less than significant **(Class II)**.

C.4.5.2 Segment 2

Four formally recorded sites were identified in this segment:

- CA-Mer-25/P-24-126
- CA-Mer-68/P-24-2
- CA-Mer-302/P-24-392
- P-24-621 (no trinomial, a State Point of Historical Interest)

However, with the implementation of Mitigation Measure **C-3**, the potential impact on these resources will be less than significant **(Class II)**. Mitigation Measures **C-1**, **C-2**, **C-4**, and **C-5** should also be implemented to protect resources discovered during construction **(Class II)**. No other reported or cultural resources have been identified in this segment.

C.4.5.3 Segment 3

Two formally recorded sites were identified in this segment:

- CA-Mer-303H/P-24-393
- CA-Mer-328H/P-24-417.

However, with the implementation of Mitigation Measure **C-3**, the potential impact on these resources will be less than significant **(Class II)**. Mitigation Measures **C-1**, **C-2**, **C-4**, and **C-5** should also be implemented to protect resources discovered during construction **(Class II)**.

C.4.5.4 Segment 4

This segment has a portion of the California Aqueduct formally recorded at two points as P-39-90 in San Joaquin County and a 19th century road. A portion of **the California Aqueduct**, part of the State Water Project (SWP) system, is situated in the Eastern Corridor Alternative in both Merced and Fresno Counties. However, with the implementation of Mitigation Measure **C-3**, the potential impact on these resources will be less than significant **(Class II)**. Mitigation Measures **C-1**, **C-2**, **C-4**, and **C-5** should also be implemented to protect resources discovered during construction **(Class II)**.

C.4.5.5 Segment 5

This segment has no formally recorded sites. Four 19th century roads are present. Mitigation Measures **C-1**, **C-2**, **C-4**, and **C-5** should be implemented to ensure that any resources discovered during construction are appropriately protected. These measures would ensure that the impacts to cultural resources would be less than significant **(Class II)**.

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C.4.5.6 Segment 6

This segment contains the Southern Pacific Railroad, recorded as CA-Fre-3093H/P-10-3199, west of the project, and a 19th century Wagon Road and Trail. However, with the implementation of Mitigation Measure C-3, the potential impact on these resources will be less than significant (**Class II**). Mitigation Measures C-1, C-2, C-4, and C-5 should also be implemented to protect resources discovered during construction (Class II).

C.4.6 MITIGATION MONITORING, COMPLIANCE, AND REPORTING TABLE

Mitigation Measures **C-1 through C-5**, presented in Table C.4-3, Mitigation Monitoring Program, are recommended to reduce the potential impacts of the project or an alternative to less than significant levels (**Class II**). These mitigation measures incorporate the measures from the 1988 FEIS/EIR (TANC/WAPA) for protection of cultural resources prior to and during construction.

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Table C.4-3 Mitigation Monitoring Program

Impact	Mitigation Measure	Location	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
Proposed Project, Alternatives, and Project Variants						
4-2: Previously unrecorded cultural resources could be discovered during ground disturbing construction operations. **(Class II)**	**C-1:** PG&E shall develop and implement a *Cultural Resources Management Plan* (CRMP) for the project covering pre-construction, construction and post-construction activities. PG&E shall submit the CRMP to the CPUC at least 30 days prior to construction for review and approval. The CRMP shall include procedures for pre-construction field survey, designation and avoidance of cultural resources areas, significance evaluation including potential testing and possible data recovery prior to construction, archaeological monitoring during construction, treatment of the unexpected discovery of cultural resources (including Native American burials), and treatment of significant sites that may be exposed during all phases of the project. The CRMP shall detail the qualifications of the Project Archaeologist, reporting requirements by the Project Archaeologist; designate a location for the curation of cultural materials collected during the project; and, specify that archaeologists and other discipline specialists meet any Professional Qualifications Standards mandated by the California Office of Historic Preservation (OHP). The CRMP shall include requirements detailing that prior to construction or ground-disturbing activities PG&E shall (1) complete cultural resources training for all construction personnel; and, (2) insure that any excavation contract (or contracts for other activities that may have subsurface soil impacts) shall include clauses that require construction personnel to attend training so they are aware of the potential for inadvertently exposing buried archaeological deposits. The CRMP shall include the requirement for and definition of a background briefing for supervisory construction personnel describing the potential for exposing cultural resources, the location of any potential Environmentally Sensitive Areas (ESA) and anticipated procedures to treat unexpected discoveries. Construction personnel shall be trained regarding the recognition of possible buried prehistoric and historic resources during construction. PG&E shall inform all construction personnel of the procedures to be followed upon the discovery of archaeological materials including Native American burials. Wherever a tower, access road, equipment, etc. must be placed or accessed within 100 feet of a recorded, reported or known archaeological site eligible or potentially eligible for the CRHR, the site will be flagged on the ground as an Environmentally Sensitive Area (ESA). Construction equipment would then be directed away from the ESA, and construction personnel would be directed to avoid entering the ESA. Upon discovery of potential buried cultural materials, work in the immediate area of the find shall be halted and PG&E's archaeologist notified. Once the find has been identified, PG&E's archaeologist will make the necessary plans for treatment of the find(s) and for the evaluation and mitigation of impacts if the finds are found to be important according to CEQA.	At all locations along approved corridor	CPUC to verify that site has been avoided CPUC to verify that ESA has been established CPUC to review and approve *Treatment Plan*. CPUC to verify that PG&E's archaeologist is implementing procedures and requirements mandated in Treatment Plan in accordance with parameters and schedules.	Recorded, reported and known cultural resources within, near and adjacent to construction are not damaged or destroyed during construction.	CPUC, relevant jurisdictional agencies	Develop plan before construction; implement during construction

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Impact	Mitigation Measure	Location	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
4-1: Inadvertent impacts to recorded, reported, and known cultural resources. (Class II)	C-2: PG&E shall conduct pre-construction field surveys to locate and record cultural resources within the project right-of-way and related construction facilities and roadways. PG&E shall submit the results from the pre-construction survey to the CPUC at least 30 days prior to construction. If resources are found, they shall be formally recorded and/or updates shall be filed for previously recorded sites according to the procedures defined in the Cultural Resources Management Plan (see Mitigation Measure C-1). All resources shall be evaluated in accordance with California Register of Historical Resources criteria.	At all locations along approved corridor	Consult with cultural resource professionals during the siting of the transmission line to facilitate mitigation through avoidance.	Cultural resources within, near and adjacent to construction are not damaged or destroyed during construction. Cultural resources are not destroyed during construction; inadvertent discoveries are evaluated and treated in accordance with CRMP parameters (See C-1)	CPUC, relevant jurisdictional agencies	Prior to construction
	C-3: PG&E shall avoid known significant or potentially significant cultural resources in/adjacent to the project corridor. They shall consult with cultural resource professionals (approved by the CPUC) during the siting of the transmission line to avoid cultural resources where possible. If avoidance is not possible, specific procedures shall be followed to minimize resource impact or to record resources that cannot be avoided; these procedures shall be identified and reported in the Cultural Resources Management Plan (see Mitigation Measure C-1).	At all locations along approved corridor	Consult with cultural resource professionals during the siting of the transmission line to facilitate mitigation through avoidance.	Cultural resources within, near and adjacent to construction are not damaged or destroyed during construction. Cultural resources are not destroyed during construction; inadvertent discoveries are evaluated and treated in accordance with CRMP parameters (See C-1)	CPUC, relevant jurisdictional agencies	During construction and operations, if applicable
4-2: Previously unrecorded cultural resources could be discovered during ground disturbing construction operations. (Class II)	C-4: PG&E shall consult with interested Native Americans to identify areas or features of significant or potentially significant Native American concern, and shall develop procedures (to be documented in the CRMP, Mitigation Measure C-1) for documentation of or preservation of resources that cannot be avoided. Documentation of consultation and issues discussed shall be provided to the CPUC, at least 30 days prior to construction.	At all locations along approved corridor	CPUC to verify that Native Americans have been consulted regarding cultural resources requirements.	Cultural resources are not destroyed during subsurface construction and are treated in accordance with Native American cultural resource requirements	CPUC, relevant jurisdictional agencies	Before construction and during construction

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Impact	Mitigation Measure	Location	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
4-3: Portions of the project will pass through, cross or are adjacent to recognized parks, Wilderness Study Area (WSA), and recreational areas that may contain cultural resources. (Class II)	C-5: PG&E shall consult with and implement any site-specific cultural resources requirements mandated by the CPUC, State Office of Historic Preservation and within the jurisdiction of other agencies (e.g., Bureau of Reclamation, Bureau of Land Management (BLM), the California Department of Parks and Recreation (CAL/DPR). Documentation of consultation and issues discussed shall be provided to the CPUC, at least 30 days prior to construction. Areas and parks that may be affected are the following: • California Aqueduct (owned by the Bureau of Reclamation and managed by the California Department of Water Resources (DWR) • Little Panoche Reservoir (jointly managed by the DWR and California Department of Fish and Game) • Panoche Hills Wilderness Study Area (WSA) (BLM) • San Luis Reservoir State Recreation Area (CAL/DPR) • Los Banos Creek Recreation Area (CAL/DPR)	California Aqueduct Little Panoche Reservoir Panoche Hills Wilderness Study Area San Luis Reservoir State Recreation Area Los Banos Creek Recreation Area	CPUC to verify that DWR, CDFG, BLM, and CAL/DPR have been consulted regarding cultural resources requirements within parks, preserves, and recreational areas.	Cultural resources are not destroyed during subsurface construction and are treated in accordance with DWR, CDFG, BLM, and CAL/DPR cultural resource requirements	CPUC, DWR, CDFG, BLM, and CAL/DPR	Before construction and during construction

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Township No. 16 South, Range No. 12 East, Mount Diablo Meridian.

1858-1880 Survey Plat.

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Abbreviations

ca. about

illeg. illegible date

[7] Arranged in alphabetical order. Including United States Department of Interior, Geological Survey (USGS), U.S. Army Corps of Engineers (USCOE) War Department (War Dept), and United States Department of Interior, Geological Survey (USGS), U.S. Army Corps of Engineers (USCOE), War Department.

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n.d. no date

v.d. various dates

N.P. no publisher noted

n.p. no place of publisher noted

Abbreviated Phrases

CHRIS/CCIC, CSU Stanislaus is used for material on file at the California Historical Resources Information System, Central California Information Center, California State University, Stanislaus located in Turlock. This CHRIS is responsible for Merced County.

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 located in Bakersfield. This CHRIS is responsible for Fresno County.

Western Corridor Alternative Segments

There fewer cumulative projects in the vicinity of these segments, because of their remove locations. But the cumulative impacts on vegetation communities and wildlife habitats, and on sensitive plant and animal species would still be cumulatively considerable due to the Project's contribution to overall loss of habitat, as discussed above.

Eastern Corridor Alternative

Cumulative impacts on biological resources would generally be lower for the Eastern Corridor Alternative as compared to the Proposed Western Corridor because this corridor is already heavily disturbed and in agricultural use. There are more proposed cumulative projects in the vicinity of the Eastern Corridor Alternative, so there could be cumulative effects on biological resources. However, due to the high percentage of agricultural land crossed by the project's Eastern Corridor Alternative, the cumulative effect of this project would be there are few remaining natural plant communities and wildlife habitats in that area so cumulative impacts on biological resources would be unlikely.

D.2.3 Cultural Resources

The areas affected by the Proposed Project are generally linear corridors in relation to the general San Joaquin Valley. However, cultural resources exposed during the project area as a result of construction could provide significant information important to interpreting the regional prehistory and/or history.

Future and proposed projects in close proximity to construction of the Proposed Project could have cumulative impact to cultural resources in the study area. Together with the impacts of the Proposed Project, a significant cumulative effect on cultural resources could result. However, the incremental effect of the Proposed Project itself would be mitigated to less than significant levels, resulting in an overall contribution of the project of a less than considerable cumulative impact.

D.2.4 Geology, Soils, and Minerals

Geologic impacts are generally the impact of the geologic environment on the project, and not the effects of the project on the geologic environment. The development of the Villages of Laguna San Luis and the Highway Interchange Center (HIC) adjacent to the existing Los Banos Substation will have the potential for raising the level of groundwater due to irrigation of landscaped areas around proposed residential and commercial buildings, which increases the potential for liquefaction. This potential for increased groundwater level is qualitative; however, analysis for the presence of liquefiable deposits should be included in the design-level geotechnical investigations in the vicinity of the substation. Where found, the presence of liquefiable materials should be considered in the foundation design of affected structures due to the potential for increased groundwater levels with construction of these two projects. This is a potentially significant cumulative impact that can be reduced to a less than significant level with implementation of Mitigation Measure G-3.

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APPENDIX 2

LIST OF PREPARERS

A consultant team of 19 key technical and administrative personnel headed by Aspen Environmental Group prepared this document under the direction of the CPUC. Table 1 presents the preparers and technical reviewers of this document and their qualifications.

Table 1 Preparers of this Document and their Qualifications

Name/Role	Agency/ Firm	Education	Yrs. Exper.
CPUC			
Paul Clanon, Director, Energy Division	California Public Utilities Commission	B.A. Economics	16
Billie Blanchard, Project Manager	California Public Utilities Commission	B.A. Political Science M.S. Urban Planning	25
Pamela Nataloni, Staff Attorney	California Public Utilities Commission	J.D B.A. Psychology; B.A. Social Services	11
Project Management and Document Production			
Susan Lee, EIR Project Manager	Aspen Environmental Group	M.S. Applied Earth Science B.A. Geology	21
Valerie L. Starr, Project Description; Public Involvement; Graphics	Aspen Environmental Group	B.A. Environmental Biology	2
Rebecca Morgenstern, Production Assistance	Aspen Environmental Group	B.A. Philosophy and Human and Natural Ecology	5
Kari Simpson, Graphics	Aspen Environmental Group	B.A. Geography	10
Michelle Yang, Document Production	Aspen Environmental Group	B.A. English	2
Issue Area Specialists			
Matt Fagundes, Air Quality and Traffic	Aspen Environmental Group	B.S. Environmental Studies	8
Bruce Barnett, Biological Resources	Aspen Environmental Group	Ph.D. Zoology, M.A. Zoology M.S. Zoology, B.A. Sociology	20
Brad Norling, Biological Resources and GIS	Aspen Environmental Group	M.S. Zoology and Physiology B.S. Wildlife Biology	13
Valerie L. Starr, Socioeconomics and Public Services and Safety	Aspen Environmental Group	B.A. Environmental Biology	2
Colin I. Busby Cultural Resources	Basin Research	Ph.D. Anthropology, M.A. Anthropology B.A. Anthropology	26
Anne Shimko, CEQA Legal	Cassidy, Shimko & Dawson	J.D. B.A. Urban Studies	17
Neal Maca, Geology, Soils, and Minerals	Geotechnical Consultants, Inc.	M.S. Geology B.A. Geology	23
Douglas Herold, Geology, Soils, and Minerals	Geotechnical Consultants, Inc.	B.S. Geology	7
Michael Clayton, Visual Resources	Michael Clayton and Associates	M.S. Environmental Management B.A. Biology	25
Kenneth Schwarz, Hydrology and Water Resources	Phillip Williams and Associates	Ph.D. Geography and Geomorphology M.A. Geography and Geomorphology	6
Charles Williams, EMF	R.W. Beck, Inc	B.S. Civil Engineering	23
Paul Schoenman, Transmission Systems Engineering	Schoenman Consulting	B.S. Electrical Engineering	37
Vicki Hill, Land Use and Recreation	Vicki Hill	M.P.A. Energy and Environmental Policy B.A. Environmental Studies	24
Terry Garbarino, Land Use and Recreation	Vicki Hill	B.A. Resource Planning and Interpretation	17

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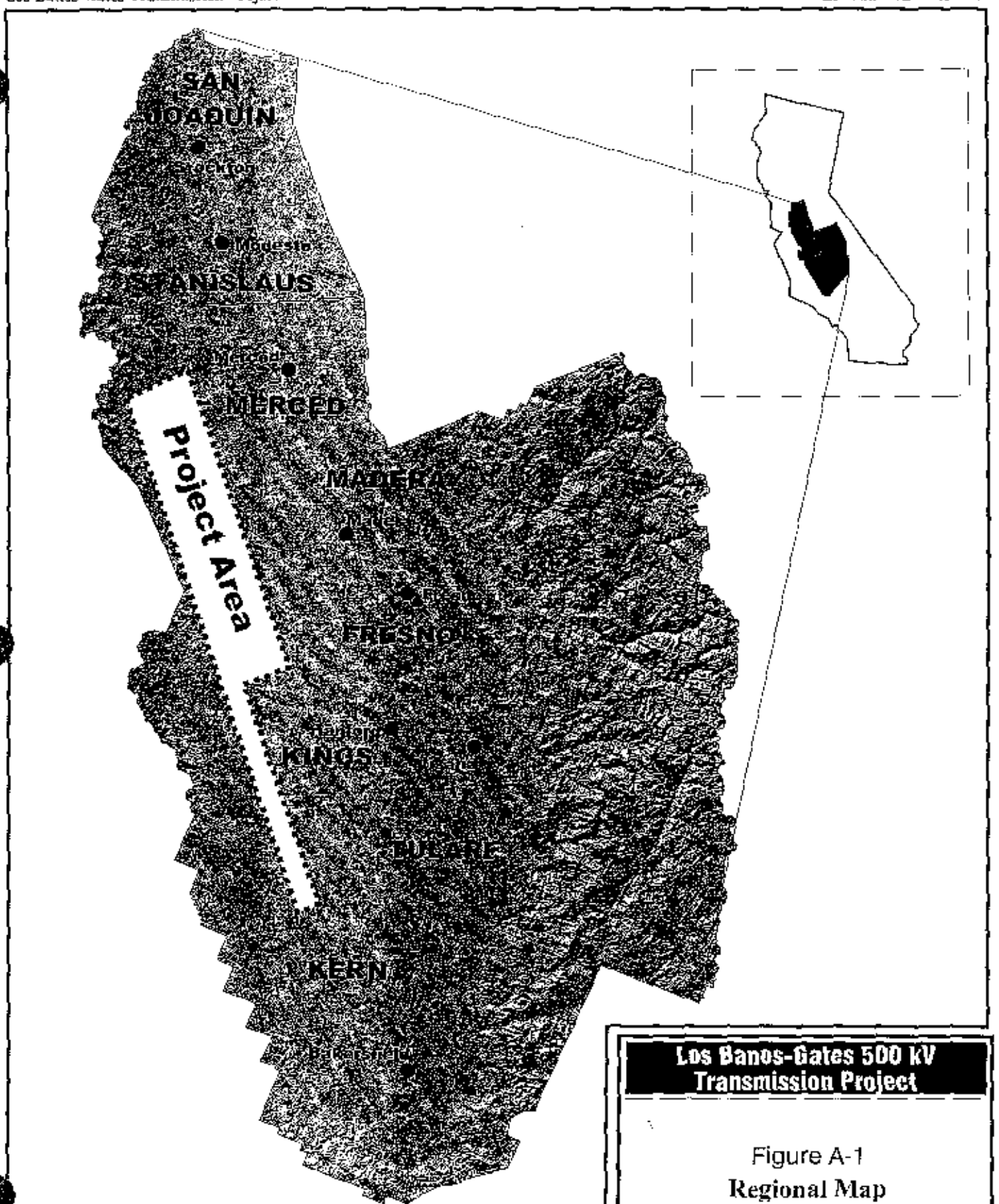


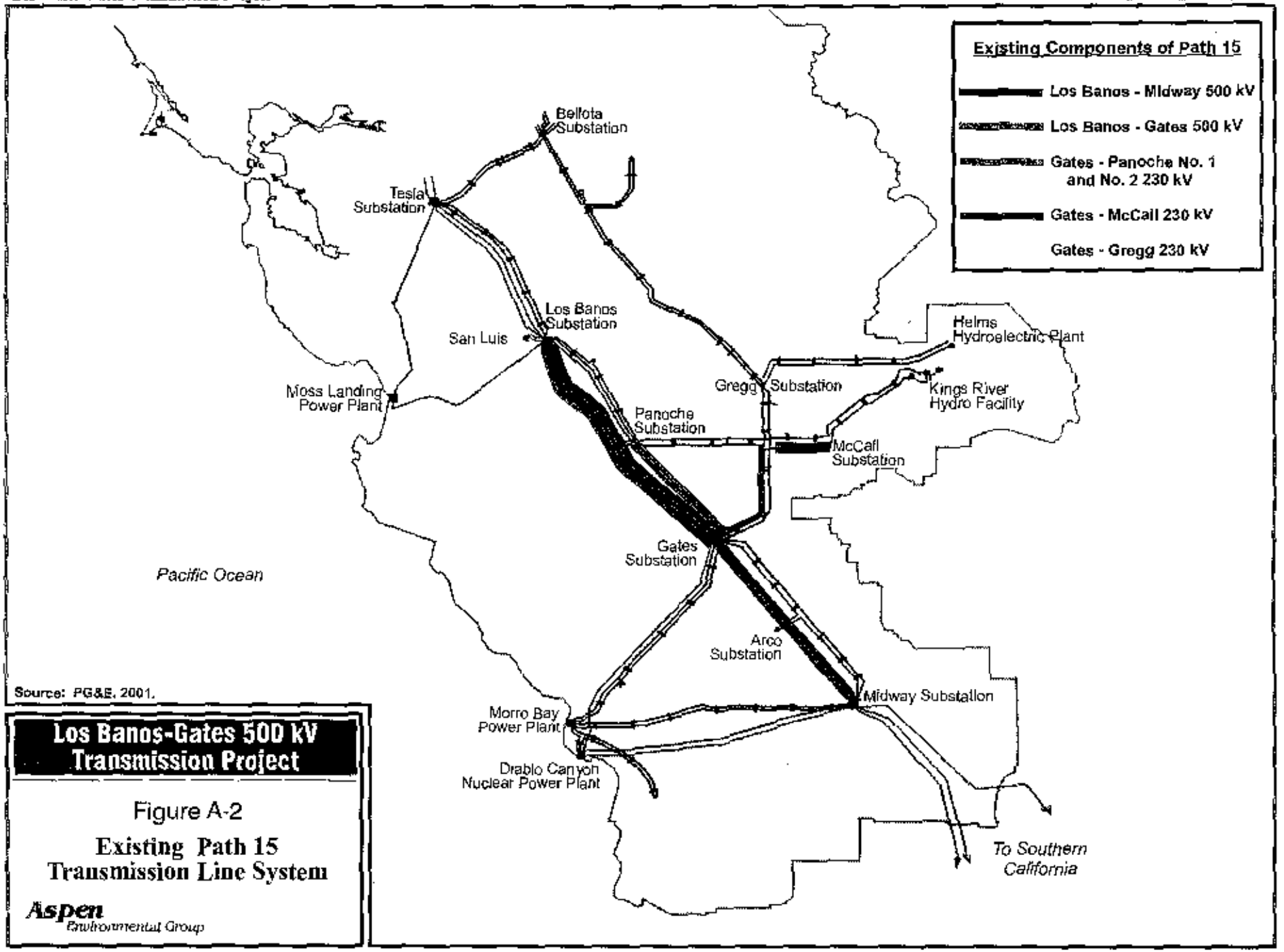
Source: Modified from SJVUAPCD, 1998

Los Banos-Gates 500 kV Transmission Project

Figure A-1
Regional Map

Aspen
Environmental Group

FR 02015



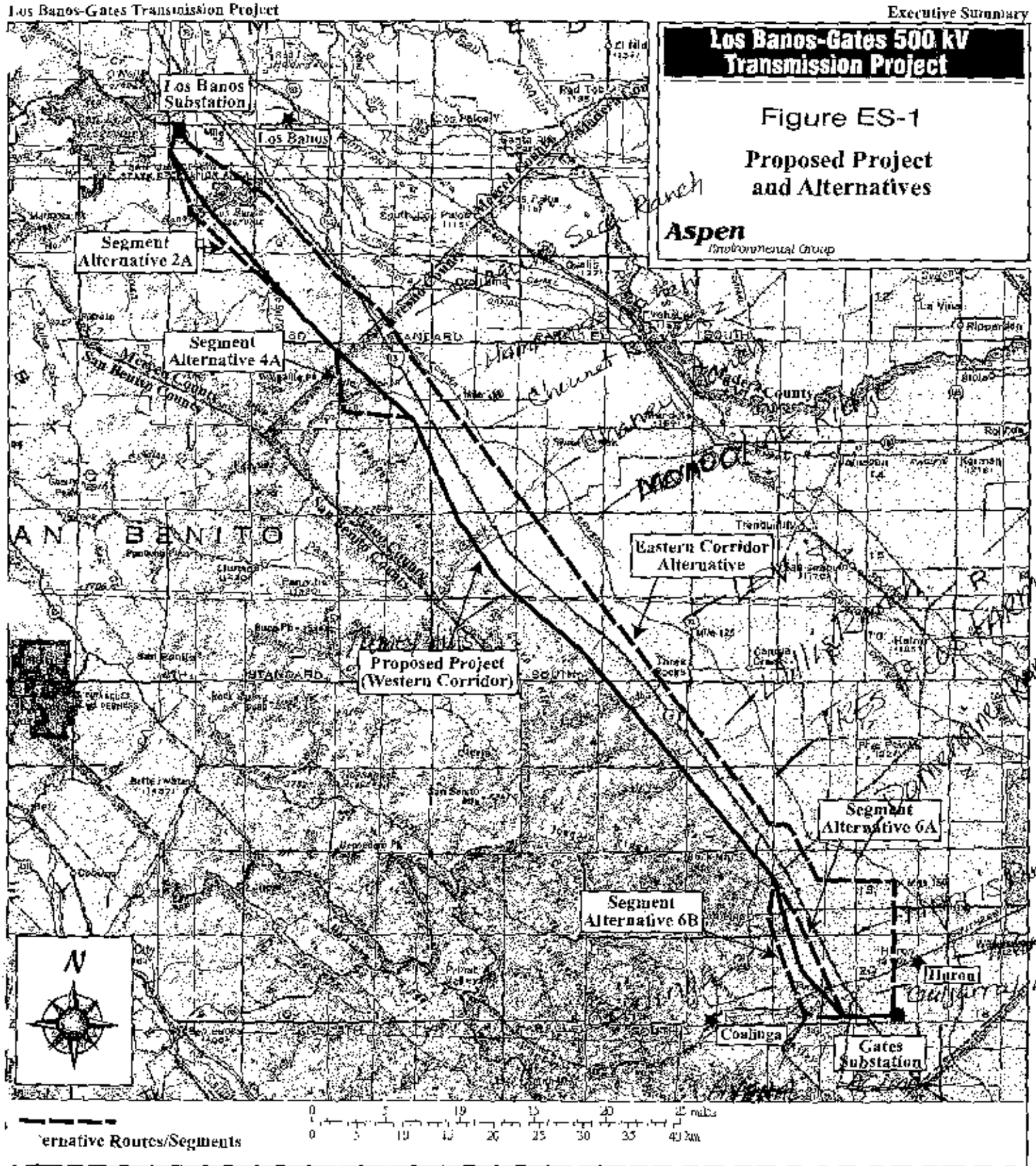
Source: PG&E, 2001.

Los Banos-Gates 500 kV Transmission Project

Figure A-2

Existing Path 15 Transmission Line System

Aspen Environmental Group


Los Banos-Gates 500 kV Transmission Project
Figure ES-1
Proposed Project and Alternatives
Aspen
Environmental Group
Los Banos Substation
Los Banos
Segment Alternative 2A
Segment Alternative 4A
Eastern Corridor Alternative
Proposed Project (Western Corridor)
Segment Alternative 6A
Segment Alternative 6B
Huron
Coalinga
Gates Substation
Merced County
San Benito County
Fresno County
N
0 5 10 15 20 25 miles
0 5 10 15 20 25 30 35 40 km
Alternative Routes/Segments

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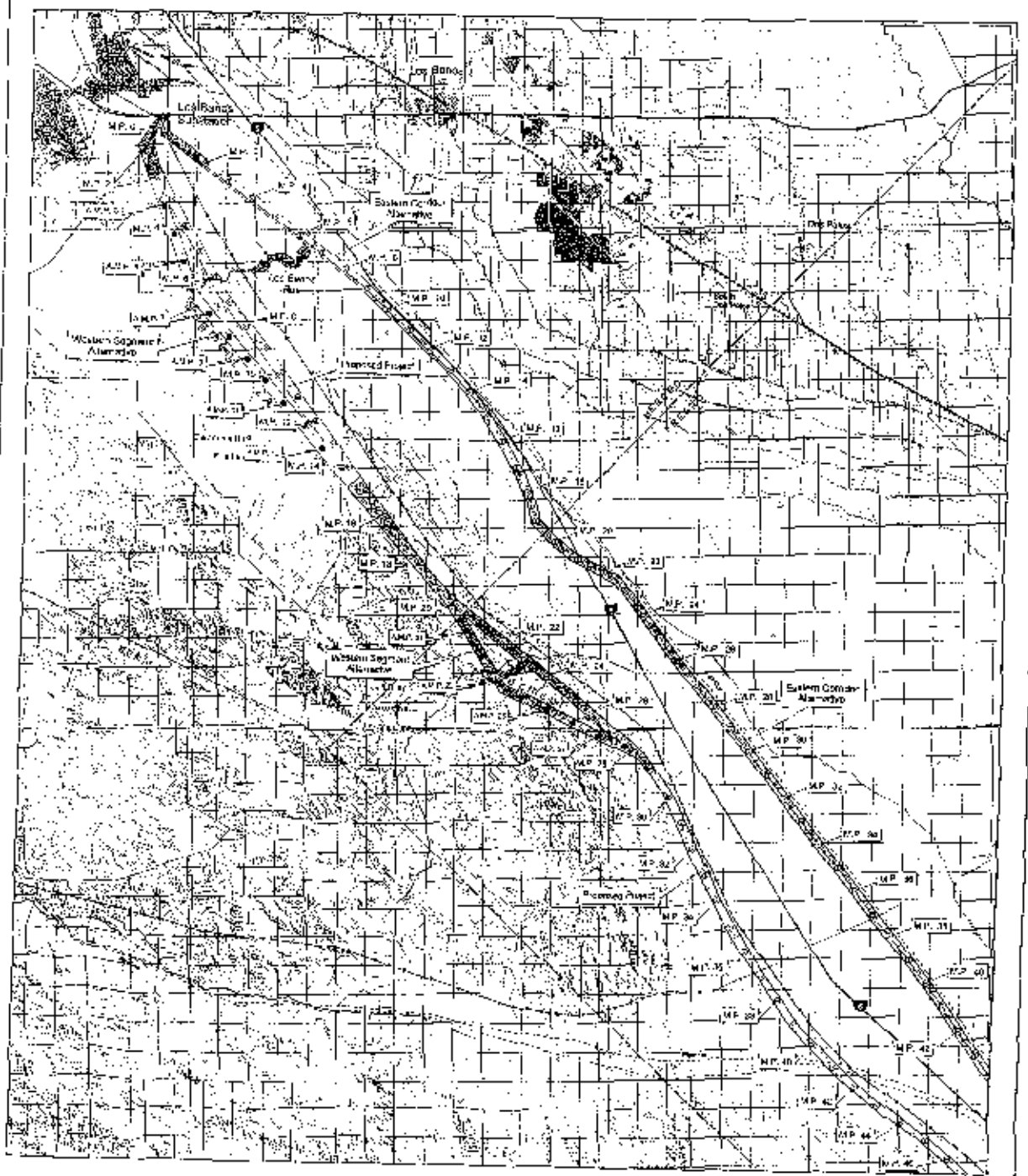

LEGEND

Local Road Segment Number
1
2
3
4
5
Mile Post
County Boundary
Interstate/State Highway
Primary Road
Secondary/Connector Road
Railroad
Existing Pipeline
Existing Transmission Line
Stream/Creek/Canal
Lake/Reservoir

N
W
E
S

SCALE: 1:250,000

Los Banos - Gates 500 kV Transmission Project

Figure B-1a

Proposed and Alternative Transmission Corridors - North

Aspen Environmental Group

Sheet 1 of 2

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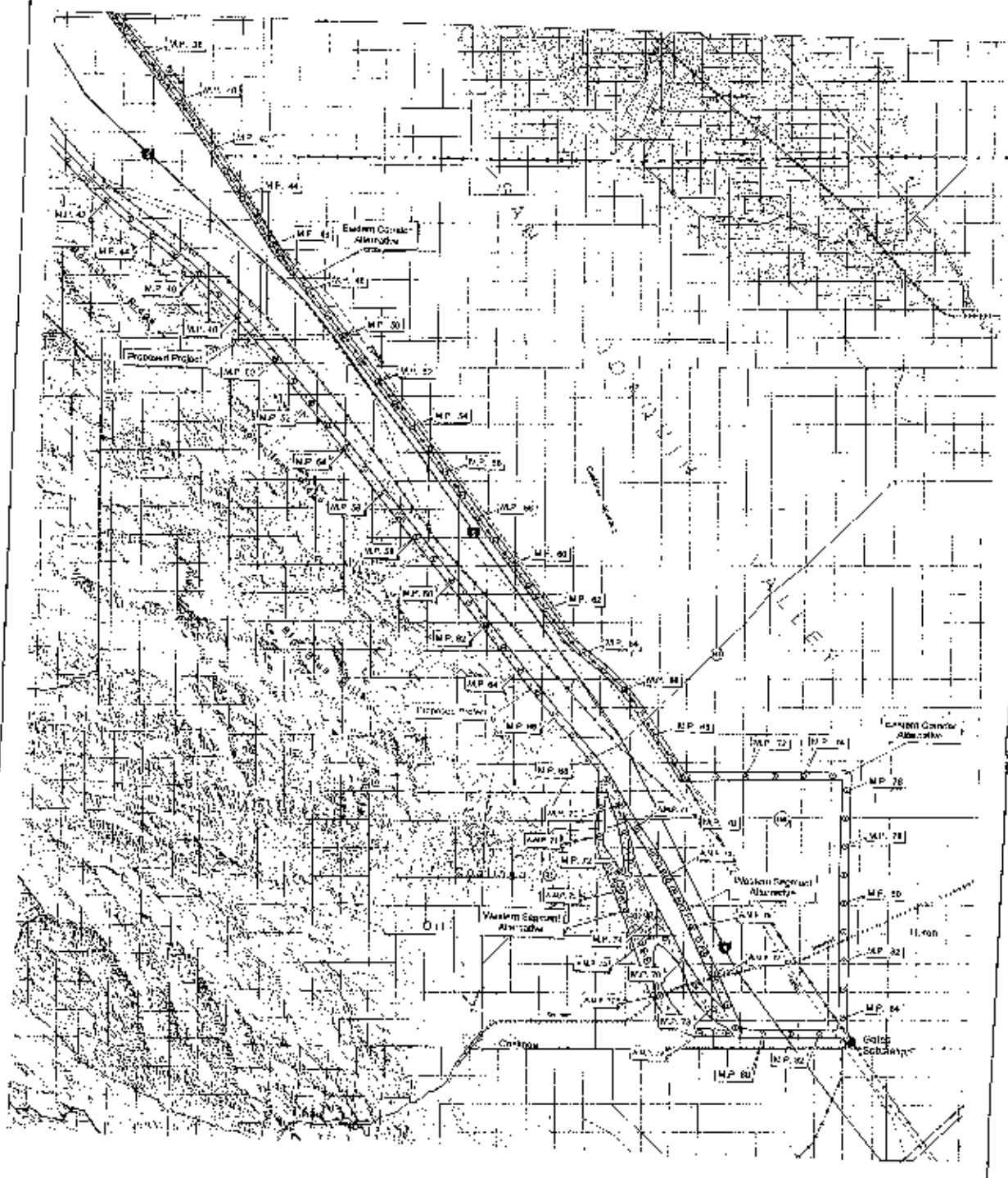
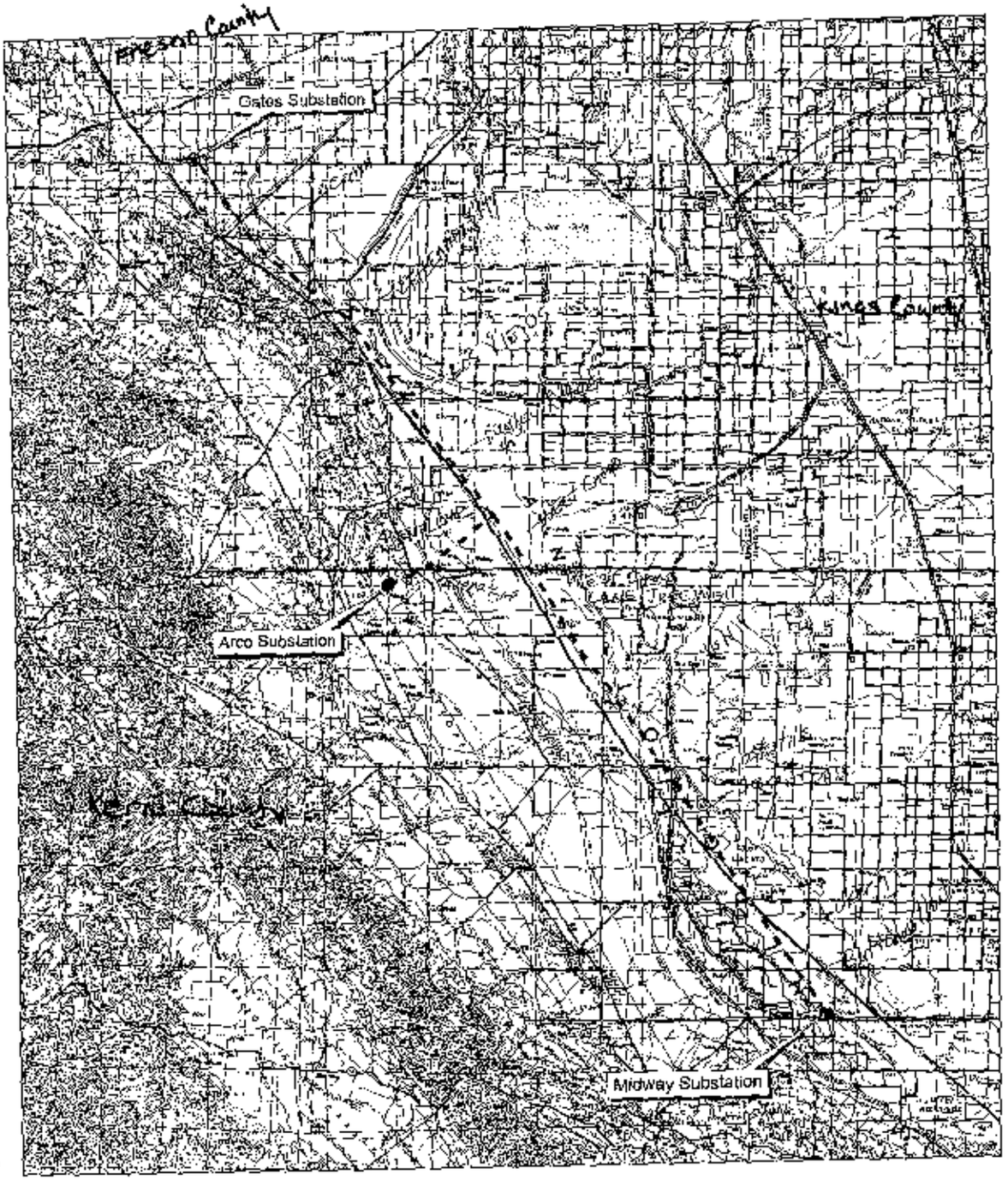

Eastern Corridor Alternative
Proposed Project
Western Segment Alternative
Western Segment Alternative
Gates Substation
LEGEND
East/West Segment Number
4
5
6
7
Mile Post
County Boundary
Interstate/State Highway
Primary Road
Secondary/Collector Road
Railroad
Existing Pipeline
Existing Transmission Line
Stream/Creek/Canal
Lake/Reservoir
N
W
E
S
SCALE 1:225,000
Los Banos - Gates 500 kV Transmission Project
Figure B-1b
Proposed and Alternative Transmission Corridors - North
Aspen
Sheet 2 of 2



LEGEND

- Substation
- 230 kV Transmission Line

SCALE 1:125,000

Los Banos - Gates 500 kV Transmission Project

Figure B-6

Gates-Arco-Midway 230kV Transmission Line

Aspen

October 2001

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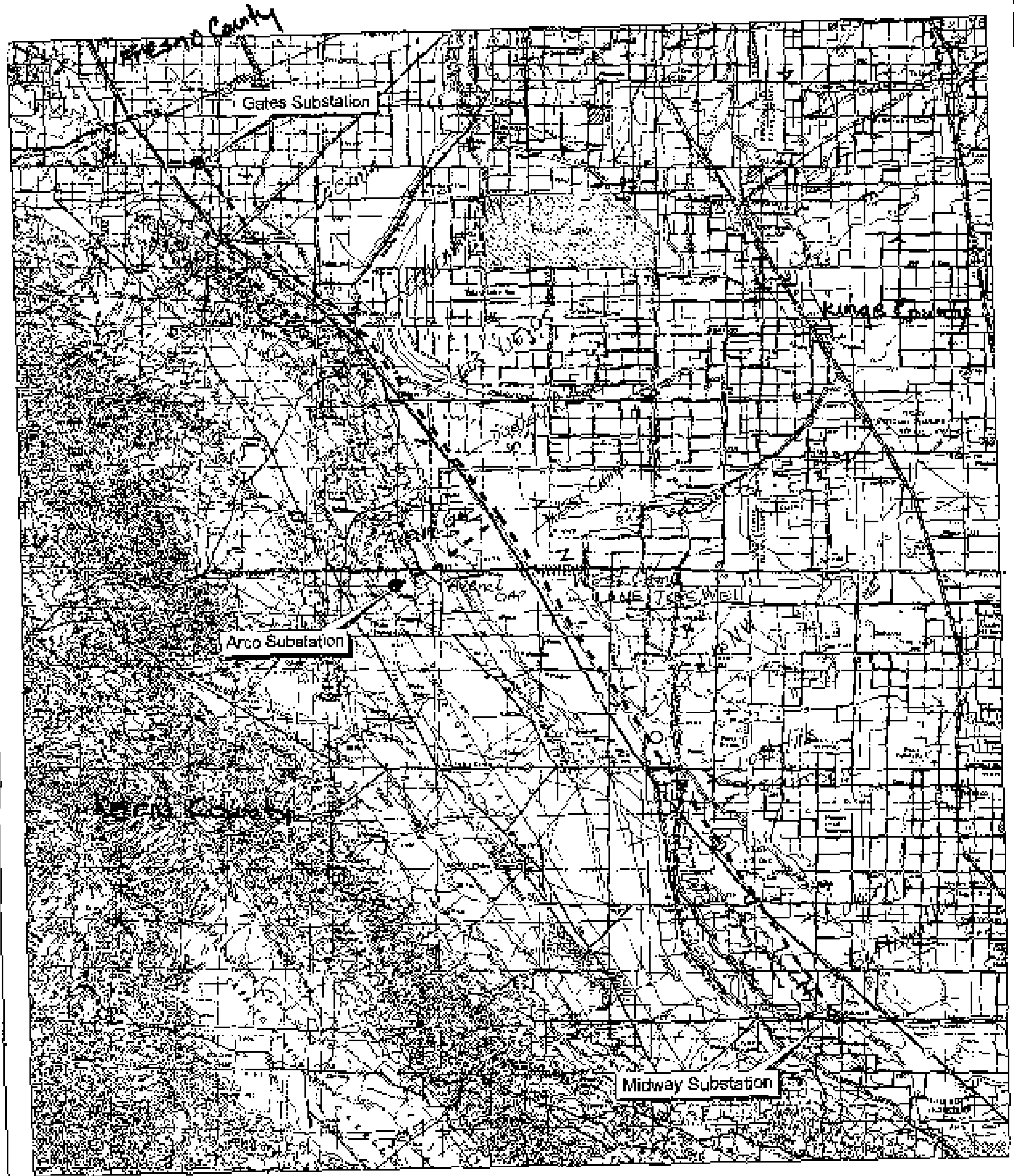

LEGEND

Substation

230 kV Transmission Line

Los Banos - Gates 500 kV Transmission Project

Figure B-6

Gates-Arco-Midway 230kV Transmission Line

Aspen

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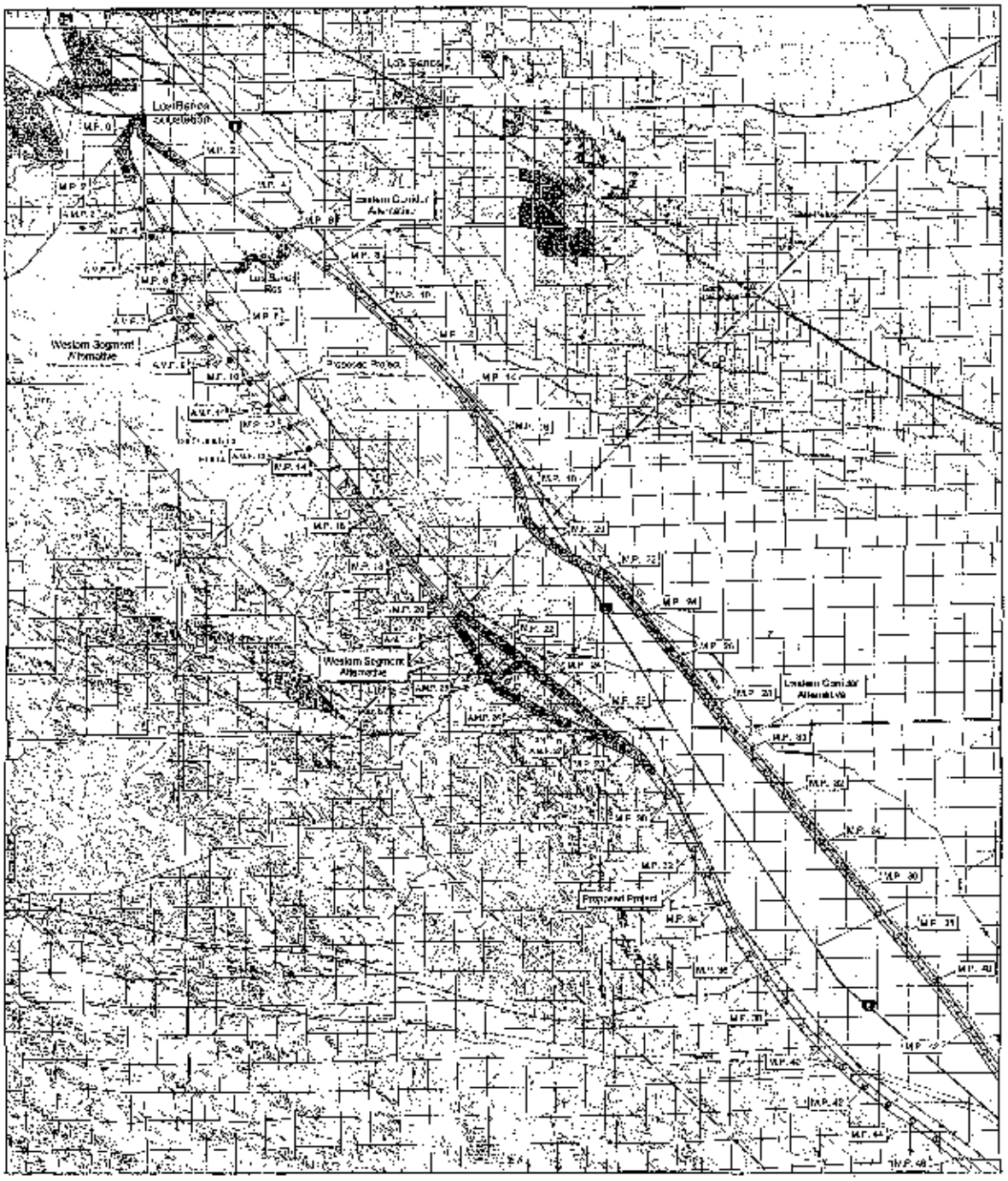


LEGEND

East/West Segment Number
1
2
3
4
5
Mile Post
County Boundary
Interstate/State Highway
Primary Road
Secondary/Collector Road
Railroad
Existing Pipeline
Existing Transmission Line
Stream/Creek/Canal
Lake/Reservoir

N
W E
S

SCALE 1:200,000

0 1 2 3 4 Miles
0 1 2 3 4 Kilometers

Los Banos - Gates 500 kV Transmission Project

Figure B-1a

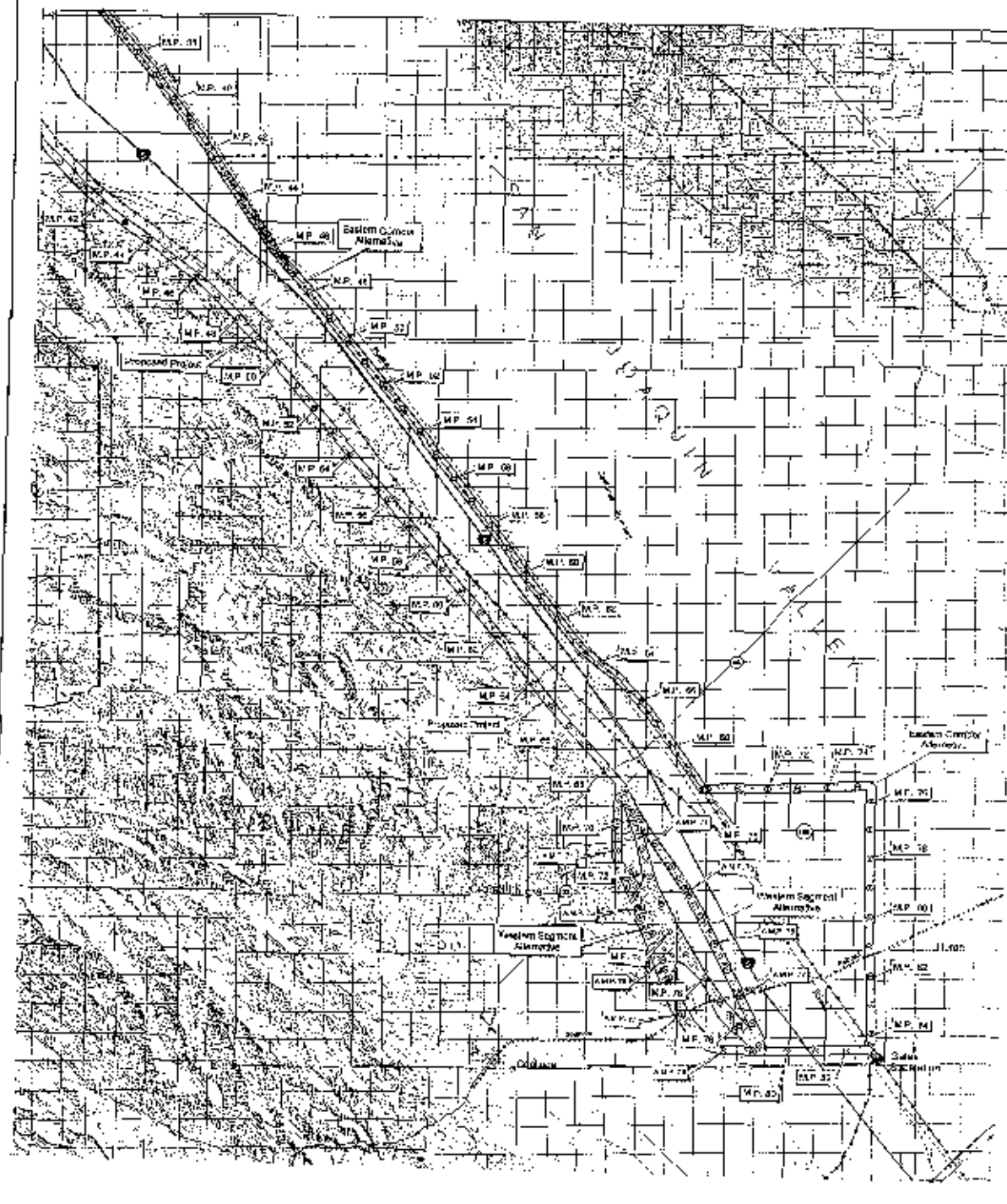
Proposed and Alternative Transmission Corridors - North

Sources:

Aspen

Sheet 1 of 2

FR-02015



Los Banos - Gates 500 kV
Transmission Project

Figure B-1b

Proposed and Alternative
Transmission Corridors - North

Sources:

Aspen Environmental Group

Sheet 2 of 2

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APPENDIX 5

CULTURAL RESOURCES ENVIRONMENTAL SETTING

5.1 CULTURAL RESOURCES OF THE SAN JOAQUIN VALLEY

The Proposed Project would pass through the San Joaquin Valley where unique cultural resources have been found. To support the discussion in Section C.4, Cultural Resources, this Appendix describes the prehistory, ethnography, and history of the San Joaquin Valley. This following regional overview was originally published in the 1988 FEIR/EIS.

5.2 PREHISTORIC SETTING

The prehistory of the San Joaquin Valley may have its origins in late Pleistocene and early Holocene sites dating from perhaps as early as 12,000 years ago. The Farmington Complex sites in San Joaquin and Stanislaus Counties (Riddell, 1949; Treganza, 1952) and the Tranquillity Site[1] in Fresno County (Hewes, 1946) are believed to be some of the earliest examples of human activity within the Central Valley area. The Fluted Point Cultural Tradition (or Big Game Hunting Tradition) in the San Joaquin Valley is represented by the Witt Site and other Tulare Lake shoreline finds which date from approximately 11,000 years ago (Riddell and Olson, 1969). Sizeable prehistoric populations first appeared in the San Joaquin Valley with the Western Pluvial Lake Tradition (WPLT) which extended from approximately 11,000 to 7,000 years ago. This period saw the emergence of a cultural tradition which was adapted to the wetlands environments of Tulare and Buena Vista Lakes. Classic site types from this period are best known from Buena Vista Lake in Kern County (Wedel, 1941; Fredrickson and Grossman, 1977). Following the WPLT in Central California, various regionalized cultural traditions and sequences emerged throughout the San Joaquin Valley, Sierra Foothills, and Coast Range areas. Early attempts to categorize the chronology and cultural attributes of the numerous prehistoric manifestations into a single scheme led to the development of the Central California Taxonomic System; subsequent schemes have developed with a tendency toward understanding Central Valley prehistory in terms of local cultural patterns'. Research emphasis has gravitated towards the understanding of cultural systems as they change through time, within a local and regional context.

The prehistory of the western edge of the San Joaquin Valley and the lower eastern slopes of the Diablo Range was first explored by archaeological investigations associated with the San Luis, Los Banos and Little Panoche Projects. During the early 1960s and 1970s, archaeological surveys and excavations were conducted at these three reservoir locations (Treganza, 1960; Olsen and Payen, 1968, 1969, 1973; Pritchard, 1966, 1970), and those studies have established the cultural and temporal prehistory for the study area.

Archaeological investigations began at the San Luis Reservoir where A. Treganza's (1960) survey was followed by excavations at CA-Mer-14, which revealed a single component habitation site dating from

[1] Assigned CA Fre-48/P-10-85.

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approximately A.D. 300 to 1000 (Olsen and Payen, 1969). As part of the Los Banos Dam Project, excavations were conducted in 1964-1965 at the Menjoulet Site (CA-Mer-3). W. Pritchard (1970) discovered the remains of 12 structures at the site; among them was a housepit more than 23 meters in diameter -- one of the largest known to California archaeology (Moratto, 1984). Pritchard (1970) determined that the Menjoulet site was a major year-round center, inhabited by an estimated fifty to one hundred people.

In 1966, archaeological sites at Little Panoche Reservoir were investigated by W. Olsen and L. Payen. Excavations at CA-Fre-128 revealed structures and artifacts that placed occupation between A.D. 1700 and 1800. At CA-Fre-129, Olsen and Payen discovered evidence of a later prehistoric temporary camp or village site with an associated cemetery (Moratto, 1984). Also discovered at Little Panoche Reservoir were "three distinct occupation zones" exposed in the walls of the Salt Canyon drainage. Archaeological testing and preliminary geological and soils studies suggested a probable age of 3,000 years for the lower cultural stratum and 500 to 1,000 years for the upper (Olsen and Payen, 1968; Moratto, 1984).

In 1966 and 1967, archaeological excavations were conducted by Olsen and Payen (1969) at the Grayson Site (CA-Mer-S94) in the San Luis Reservoir area. On the basis of distinctive artifact types and mortuary patterns at that and other western valley sites, Olsen and Payen defined a series of four cultural complexes. These complexes have been summarized by Breschini et al. (1983), Haversat and Breschini (1985) and Moratto (1984) and the following discussions are based on those excerpts.

Positas Complex, ca. 3300 to 2600 B.C.

At present, the Positas Complex is represented only by cultural material excavated from CA-Mer-S94, and is very tenuously linked to southern California on the basis of artifacts termed as "doughnut stones" (Olsen and Payen 1969). The Positas Complex does not appear to fit with materials from any of the other sites known for the study area, although Olsen and Payen do cite the rare occurrence of similar artifacts elsewhere within the San Joaquin Valley. Two radiocarbon dates of A.D. 1305 $\pm$ 90 and 450 $\pm$ 100 B.C. are mutually inconsistent and contribute little to the dating of the Positas Complex (Moratto, 1984). Additional data will be required to further define the age and cultural affiliation of this early cultural complex.

Items which may be diagnostic of this period are:

> ... perforated, flat cobbles; a few flake scrapers; rare examples of small shaped mortars; short cylindrical pestles; and at least several milling slabs and mullers. Two or three deep projectile point fragments may belong here, but it is doubtful. Several other chipped stone objects (such as small plane scrapers) also could be associated with this complex. One Spire-Lopped Olivella bead and several also occurred in the deep levels and could belong to the complex (Olsen and Payen, 1969)

While the "doughnut stones" appear to be the most characteristic artifact attributed to this period, some "doughnut stones" were also found in later cultural strata (Pacheco Complex) at CA-Mer-S94.

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Pacheco Complex, ca. 2600 B.C. to A.D. 300

This period is represented by the Pacheco A and B Phases, which were identified in archaeological components at CA-Mer- S94. The Pacheco A Phase also appears to have been present at CA-Mer-215. The earlier Pacheco B Phase is represented by only a few distinctive items that suggest a relationship to the Central California Early Period. Olsen and Payen state that the Pacheco A Period "marks an incursion of coastal people to the west edge of the valley" (1969). Their theory is partially based on the discovery of flexed burials for a cultural period in which extended burials were prevalent in the Central Valley.

The Pacheco B Phase remains poorly understood but is tentatively dated at approximately 2600 to 1600 B.C. (Moratto, 1984). Diagnostic elements are as follows:

> ...Thick, Rectangular Olivella beads, the rare occurrence of rectangular Haliotis or freshwater mussel shell beads, several large points and a few examples of heavy food-processing tools. Possibly, the graver like tools and the large leaf-shaped biface point fragments belong here, also (Olsen and Payen, 1969).

Potentially diagnostic elements for the Pacheco A Phase, which is tentatively dated from 1600 B.C. to A.D. 300 (Moratto, 1984), are as follows:

> ... Spire-ground; Modified Saddle (Type 3b2); Saucer (Type 3c); and Split-drilled (Type 3b1) (Olivella beads); and Macoma clam disc beads. One Haliotis disc bead and a few centrally perforated Haliotis cracherodii shell ornaments are known, as well as several rare stone bead types. These bead and ornament forms are clearly related to the Middle Period in central California.
>
> Distinctive bone artifacts include perforated canine teeth, bird bone whistles, a few crude bone awls, scapulae grass cutters with ground edges and a few other types of less diagnostic value. Large spatulate bone tools and various perforated "pin" forms do not occur, though they are distinctive in the Delta.
>
> Polished stone objects include rings of slate and jade slate, pins and flat pebble pendants. These lack variety and are often poorly made. Especially distinctive is the heavy stone tool complex. A variety of mortar and pestle forms occur. Milling slabs and mullers are frequent. Some of the latter are of well made rectangular forms. All forms of grinding tools are especially abundant.
>
> The projectile point complex includes large to medium silicate and obsidian points, frequently stemmed or side-notched. Almost all are percussion flaked and weigh from 3 to 10 gm. Some of the points, on the basis of form and material, certainly are derived from the coast, presumably the Monterey Bay area. A limited number of other elements indicate contact to the west. These include fragments of Mytilus and clamshell in the midden, a Mytilus shell fish- hook and possibly a fragmentary jade ring (Olsen and Payen, 1969).

Excavations at CA-Mer-27 resulted in the discovery of a lower component, which contained further evidence of the Pacheco A Phase, as well as a Protohistoric Period upper component (Nissley, 1975). The presence at this site of milling stones (manos and metates) is somewhat surprising and suggests lines for future investigation within the study area (Haversat and Breschini 1985). It is possible that the Pacheco A Phase is older than the 2600 B.C. to A.D. 300 date suggested by Olsen and Payen (1969).

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Gonzaga Complex, ca. A.D. 300 to 1000

This late Prehistoric Period has been identified from materials at CA-Mer-3, -14, -S94, -215, CA-Fre-128, -129, and other sites. Olsen and Payen (1969) state that this occupation complex relates closely to the Late Period Phase I of the Delta region (as defined by the Central California Taxonomic System), but conclude that "this period in the Los Banos region is aberrant and must be considered as a distinct cultural entity even though it forms a basic portion of the sequence."

The only excavated components of this period are cemeteries, and as such the diagnostic elements are confined to grave goods. The diagnostic elements cited by Olsen and Payen are as follows:

> The frequent *Olivella* bead forms include: Whole Spire-ground (Types 1a, 1b); Thin Centrally-perforated Rectangular (Type 2a1); Split-punched (Type 3a2); Oval; and several variant forms of the Thin Rectangular bead. Freshwater mussel shell disc beads and whole limpet shells (*Megathura crenulata*) also occurred. Haliotis shell ornaments (all *Haliotis rufescens*) of frequent occurrence include simple circular, oval and tear-drop shapes. Less frequent are forms with a flat and round top or split "fishtail" end and round top. All types are frequently decorated with the distinctive X- or V-shaped incising on the edges. Specimens with bead applique set in asphaltum are known, some of the discs have the convex surface smeared with asphaltum and may have served as ear-spool facings.
>
> Projectile points are, rare. One large squared stem and a large tapered stem point are definite occurrences along with fragments of large incipient serrated obsidian points from one component.
>
> Bone items include a few awls, pins, incised mammal bone tubes, bird bone whistles and several scapulae grass cutters. Most of the latter have notched rather than ground edges. Polished stone objects include large spool-shaped ear ornaments and small cylindrical "plugs".
>
> The heavy stone tools include large bowl mortars; shaped pestles; rare slab mortars; and the slab milling stone and muller. The latter are rarely shaped. The relative frequency of the mortar versus the milling stone is not known from excavated samples. It is clear, however, that the use of the milling stone and muller is more important here than in the latter period, but less frequently than the preceding Pacheco complex (Olsen and Payen, 1969).

According to Pritchard (1970), the Gonzaga component is generally associated with the Late Horizon Phase I of the Central California Taxonomic System. According to Haversat and Breschini (1985), Merced County radiocarbon dates do not support that association; however, a single obsidian hydration date from CA-Mer-S94 has rendered a date of approximately 1,475 years ago for the Gonzaga Complex (Olsen and Payen, 1969). Without knowledge of the source of the obsidian, the accuracy of this date is uncertain.

Panoche Complex, ca. A.D. 1500 to 1850

Archaeological evidence for this Protohistoric Period is found at CA-Fre-128, Fre-129, CA-Mer-3, Mer-27, Mer-119, Mer-130 and Mer-215 (Olsen and Payen 1969, 1983; Pritchard 1983; Nissley 1975; Jensen 1976; Peak and Weber 1978), and other sites. This complex exhibits relationships to the south, as well as to the Sacramento-San Joaquin Delta region. It has been classified as Late Period Phase II in the Central California Taxonomic System. Two radiocarbon dates obtained from CA-Fre-129 and CA-Mer-3 provided dates less than 185 years old (Olsen and Payen, 1969). Two additional dates from CA-Mer-215 are less than 300 years old (Peak and Weber, 1978). Pritchard summarizes the Panoche

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Complex as "very probably representing the final occupation of the region by the Kahwatchwah Yokuts" (1983).

Diagnostic elements include the following:

> .. rare clamshell disc beads; Tivela tubular clam beads; steatite disc beads; *Haliotis* epidermis disc beads; side-ground *Olivella* beads; spire-ground *Olivella* beads; small, thin *Olivella* discs (Type 3d); small, thick *Olivella* discs (Type 3e) (some incised); small, rough *Olivella* disc beads; and lipped *Olivella* beads. *Haliotis* ornaments are rare, but include simple circular, rectangular or "tabbed" end forms. Projectile points are usually of the small side-notched, concave-based tradition, termed "Panoche side-notched", along with rare desert side-notched or serrated obsidian points, small triangular, concave-based and, rarely, large stemmed points. Especially distinctive is the abundance of well chipped flake scrapers. Bone objects include awls and scapulae grass cutters, incised bird bone tubes or whistles, short bone beads and long awl or dagger-like pieces. Ground or polished stone objects include actinolite or slate pins and a variety of mortar and pestle forms. Presumably, bedrock mortars are also in use during this period. Use of the milling slab and muller is weakly attested; usually, the latter are unifacial cobbles. Steatite vessels are known, but rare, and vessel sherd arrowshaft straighteners are also known. One site also produced a number of sherds of a crude brownware pottery.
>
> The structures include large (approximately 75 feet diameter) circular assembly or ceremonial houses, small circular dwellings, usually 30 to 50 feet in diameter, and one instance of a small semi-subterranean sweathouse (Olsen and Payen, 1961).

Based on the evidence from Panoche Complex sites, particularly the Menjoulet Site (CA-Mer-3), Pritchard (1983) has noted:

> In general, the evidence ... leaves little doubt that Kroeber lacked the necessary demographic data to clearly establish that the west side of the San Joaquin Valley, in ethnographic times, was "unimportant" and had "few residents" (1925). The Menjoulet site was undoubtedly a major village that was occupied on a year-round basis and, was inhabited by a substantial number of people .... The evidence of the large structure at the site suggests that not only were several large family groups living here, probably similar in kinship structure to the exogamous moieties of the Valley Yokuts, but that the site was probably a tribelet center.
>
> Olsen and Payen (1969) concluded that during prehistoric times the western edge of the San Joaquin Valley was occupied by groups basically oriented to an acorn gathering and hunting way of life. Throughout the Pacheco to Panoche sequence, trade relationships were maintained with peoples of the Delta and more southerly coastal and inland areas. While the Panoche Complex, and perhaps the Gonzaga, may represent a Yokutsan presence, the earlier complexes are not easily ascribed to any particular ethnic or linguistic groups. Additional fieldwork will be needed to address these research problems and to reconstruct paleoenvironmental conditions and examine prehistoric cultural adaptations to them on the western side of the San Joaquin Valley (Moratto 1984:193). Archaeological sites in the project area potentially contain significant cultural data which could contribute to the study of these important research issues. Such resources would be regarded as potentially eligible for nomination to the National Register of Historic Places.

Potential for Prehistoric Resources

The above referenced studies and other investigations in the general study region (Olsen and Payen, 1983; Pritchard, 1983; Russo and McBride, 1979; Dallas, 1985) suggest that prehistoric archaeological resources tend to be located on benches and terraced areas adjacent to major drainages and springs. Some isolated rockshelter and bedrock mortar sites have been located relatively far from water;

however, the majority of known sites tend to cluster around potable water sources. Archaeological resources include occupation sites, rock shelters, surface lithic scatters, bedrock milling stations and stone quarries.

A resource sensitivity model was developed for the 1986 DEIR for use in evaluating potential project corridor and route alignments. Archaeological sensitivity within the project area was determined by the presence of documented sites and of areas believed to be environmentally favorable for the occurrence of additional resources. The application of specific environmental criteria led to the following sensitivity statements regarding Proposed Western Corridor and Eastern Corridor Alternative.

The Proposed Project Corridor has a comparatively higher occurrence of and potential for archaeological (as well as ethnographic and historic) resources. Environmental factors conducive to the presence of these resources are:

- Terraced areas adjacent to drainages
- Spring locations
- Potential rock shelter locations
- Potential lithic source

A higher degree of sensitivity of an area implies a greater potential for the presence of resources that may qualify as National Register of Historic Places sites.

The Eastern Corridor Alternative has a comparatively lower occurrence of and potential for cultural resources. Environmental factors that diminish the potential presence of resources are:

- Few terraced areas adjacent to drainages
- Lack of spring locations
- Lack of potential rock shelter locations
- Lack of potential lithic sources
- Heavy agricultural use, which implies the destruction of previously favorable settings, as well as resources that might have qualified as National Register of Historic Places sites.

A comparative analysis of these factors led to the conclusion that the Western Corridor is more sensitive than the Eastern Corridor Alternative with regard to the occurrence and potential occurrence of cultural resources. A greater number of recorded sites and favorable terrain for encountering additional sites are within the Western Corridor.

5.3 ETHNOGRAPHIC/NATIVE AMERICAN SETTING

Prior to the coming of Euro-Americans, the entire San Joaquin Valley was the homeland of many different Yokuts tribes. Their territory extended from the summit of the Diablo Range in the west to the upper reaches of the Sierra foothills in the east, from the Tehachapi Mountains in the south to a point midway between the Calaveras and Mokelumne rivers in the north (Wallace, 1978; Latta 1977).

The Los Banos-Gates Project study area passes through the ethnographically identified territories of the Northern Valley Yokuts and the Southern Valley Yokuts. The northern part of the project area was within the Kahwatchwah tribal area (Kroeber, 1925; Latta, 1977), which extended south to at least Little Panoche Creek and possibly to Cantua Creek. The southern part of the project area was within the Tachi tribal area (Kroeber, 1925; Latta, 1977; Wallace, 1978).

Anthropological sources suggest that Yokuts settlement and subsistence practices were oriented to major watercourses. The harvesting of wild plant foods was of prime significance. Acorns were a principal food source for the Kahwatchwah in the north and a favored source in the south, although not as readily available to the Tachi. Various grass seeds and buckeyes were also important plant foods. The settlement system of the Yokuts was characterized by principal villages on terraced areas adjacent to watercourses. Seasonal dispersal took place for plant collection and preparation. Villages were composed of clusters of large, semi-subterranean, round to oval single or multi-family dwellings. Large, communal dance houses were erected at central villages. West Valley archaeological sites have yielded evidence of dwellings paralleling the ethnographic descriptions (Wallace, 1978; Mikkelsen, 1986).

Little ethnographic information on Yokuts technology is available; however, archaeological evidence indicates that the mortar and pestle were the dominant grinding tools, with millingslabs and handstones also being used. Other stone tools include hammerstones and choppers. Projectile points and knives were commonly made from locally available chert, jasper and chalcedony, obsidian was imported and is not often found archaeologically. Bone awls were important for basket manufacturing. Trade with neighboring groups and excursions into neighboring territories was a common practice. For detailed discussions regarding Yokuts culture, subsistence practices, social and political organization and religion, reference is given to Kroeber (1925), Gayton (1948), Latta (1977), Wallace (1978) and Breschini et al. (1983).

Ethnohistory

The Yokuts first encountered the Spanish in the late 1700s, soon after the latter began settling along the southern and central California coast. Pedro Fages, one of the original members of the first Spanish land expedition into California, led a small band of soldiers into the San Joaquin Valley via Tejon Pass in the fall of 1772, and crossed the Valley west-ward bound for the future site of Mission San Luis Obispo. While in the San Joaquin Valley he and his men visited several Yokuts villages, south of the study area. Over the following 30 years, Yokuts-Spanish contacts were minimal (see Gifford and Schenck 1926 for a history of early exploration of the southern San Joaquin Valley (Breschini et al., 1983).

The traditional way of life began to change for the Yokuts when they were drawn into the mission system. As coastal Native populations were exhausted, the Franciscan priests began gathering potential converts from farther inland. During the early decades of the nineteenth century, some Tachi Yokuts were brought under the control of the La Soledad, San Luis Obispo, San Miguel, and San Juan Bautista missions, however, during that period the majority or the Southern Valley Yokuts remained free of

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Spanish control, although not free from Spanish influence (Breschini et al., 1983). At the same time, sizeable numbers of Northern Valley Yokuts were taken to the San Jose, Santa Clara, La Soledad, San Juan Bautista, and San Antonio missions (Merriam, 1955; Wallace, 1978).

During this period, increasing numbers of Indians from the coastal missions and non-mission villages were fleeing into the Valley, seeking refuge among the Yokuts. These people brought with them different cultural practices, including their own and those acquired from the Spanish. They also introduced the horse to the valley dwellers, first as food and later as a means of transportation. As a result, the Yokuts began altering some of their cultural practices, including the adoption of a new subsistence strategy - one of raiding mission and rancho lands in order to acquire horses. They became so successful at this practice that many of them came to be called the "Horse-thief Indians" (Broadbent, 1974; Breschini et al., 1983).

Beginning in 1806, several military expeditions were organized by the Spanish and sent into the San Joaquin Valley to recapture the escaped mission Indians (Gayton, 1936; Cook, 1960). These expeditions just as often resulted in the burning of Yokuts villages and the indiscriminate killing, wounding or kidnapping of its occupants. As Cook (1960) noted, the Spanish authorities often made no attempt to distinguish between mission and non-mission Indians during this period.

In response to the growing conflict with the Valley Yokuts, proposals were put forward to extend the mission system inland. Several exploration parties were sent out to find likely locations for mission establishments. However, despite the efforts of the Franciscan padres and the support of civil authorities, the interior chain of mission institutions was never realized (Wallace, 1978).

Disruption of the traditional Yokuts' way of life did not end with the change from Spanish to Mexican rule in 1822. The hostility of the Valley tribes and their increased livestock stealing resulted in more frequent punitive expeditions by the military and Coast Range Valley ranchers. These excursions often turned into slave raiding parties, which brought back women and children to serve as laborers and domestics (Wallace, 1978).

The Mexican Period witnessed two events of enormous consequence in the fate of the Yokuts' way of life; these were a sudden and sharp drop in their numbers and the secularization of the mission system. During the 1830s, severe epidemics swept through the San Joaquin Valley devastating the Native population. One particularly disastrous pestilence occurred in 1833, which in one estimation "actually wiped out all Yokuts remaining in the central and northwest San Joaquin Valley" (Latta, 1977). Cook (1955) estimated the mortality rate in excess of 75 percent, while other researchers have noted that whole villages, even whole tribes, were completely eradicated by the disease. What few Yokuts survived were incapable of regaining their own way of life and were forced to seek new homes and new lives among Foothill Yokuts and Miwok peoples in the Sierra foothills (Breschini et al., 1983).

In 1834, Mexican rule forced the conversion of the Franciscan missions into ordinary parish churches. The mission Indians were freed and many returned to their former homelands, only to find that villages

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no longer existed and that familiar localities were changed. Some mission refugees settled into communities that consisted of members of different tribes.

Considerable tribal and territorial readjustments were set into motion and the traditional way-of-life was slipping away. Throughout the 1800s the west side of the Valley was increasingly populated with Mexicans and Californios. The competition for the more habitable locations along major drainages put added pressure on the Kahwatchwah and Tachi tribes and according to F. Latta (1977) few, if any, Yokuts were living in that area by the mid-1800s.

With the 1848 annexation of California by the United States came the near total disappearance of Native people from the San Joaquin Valley. Thousands of gold-seekers poured into the Sierra. American settlers began to invade the Valley, ruthlessly displacing the remaining Yokuts populations. In altering the face of the land to suit their needs, the settlers drained the tule-marshes, erected fences (thus inhibiting the Indian practice of antelope drives) and turned livestock loose to compete with the Native peoples for seeds and nuts (Breschini et al., 1983).

The Yokuts' open-valley habitat made them extremely vulnerable and there was no way for them to escape the full force of Euro-American settlement (Wallace, 1978). In 1851, the tribes agreed to relinquish their ancestral lands in exchange for reservations and payment in goods, but the treaty was never ratified by the United States Senate (Heizer, 1972).

Rejection of the treaty engendered widespread fear among settlers that the Indians would revolt. Thus, in 1853, Congress authorized and adopted a more modest plan recommended by Edward F. Beale, the new superintendent for Indian affairs in California. Beale proposed the immediate establishment of smaller reservations, which would also serve as military posts for the United States Army. Once on these reservations, the Indians would be taught agriculture and handicrafts. These reserves were intended to become self-sustaining and five were authorized in 1853, with the first established at Tejon in the Tehachapi foothills. Remnant populations of various Yokuts, Chumash, Monachi, Tubatulabal, Kawaiisu, and other tribal groups came freely to Tejon or were brought forcibly. The remnants of the Southern Valley Yokuts either went to the Tejon Reservation or to the Fresno Reserve, although some remained as laborers and domestics on American-owned ranches. When the Tejon Reserve failed in 1859, the Indians were removed to Tule River and in 1873 a reserve was established there for them (Breschini et al., 1983). Beale was soon removed from office, partly because of his lack of business acumen and partly through the efforts of his political opponents. Five years after the reserve program was instituted, a federal investigator reported that the system was a failure and that the reserves were "mere almshouses for a trifling number of Indians" (Bean, 1968).

By the beginning of the twentieth century, less than 200 Yokuts lived on the Tulare Reserve and most of them belonged to Yawalmani- and Tachi-speaking groups (Wallace, 1978). On February 28, 1921, by U.S. District Court Decree, a small settlement consisting of forty acres was set aside near the community of Lemore for Tachi Yokuts. Seventeen years later the Federal Government purchased and added 120 acres to this reservation, which had become the Santa Rosa Rancheria. For several decades prior to the establishment of this rancheria, the few remaining Southern Valley Yokuts lived widely

scattered throughout the Valley region. They lived on the fringes of American settlements and society, working when they could at odd jobs, most frequently as migratory farm laborers and domestic servants.

Potential for Ethnographic/Native American Resources

Anthropological sources indicate that four known ethnographic resources are located in the vicinity of the project area. The Kahwatchwah village of "Hahnomah" (Latta, 1977) is located at the San Luis Reservoir and is included in the San Luis Gonzaga Archaeological District, which is on the National Register of Historic Places. The Tachi village of "Udjiall" (Kroeber, 1925) or "Udgeu" (Latta, 1977) is located on Los Gatos Creek and "Golon" (Kroeber, 1925) or "Holon" (Latta, 1977) is located at the town of Huron. An unidentified Yokuts village[2] is referenced (Latta, 1977) for the Cantua Creek-Salt Creek area, with no additional details available. None of these resources are within the alternative route boundaries.

Along with the archival research, Native American consultation was conducted for the 1986 DEIR to assess the potential for resources in the project area. The Native American Heritage Commission in Sacramento provided a contact list for Merced and Fresno Counties. Organizations and individuals were consulted with the following objectives:

- Identify Native American cultural resources within the project area
- Identify Native American concerns and objectives in dealing with project-related culturally sensitive sites and locations, including archaeological sites.

To this end, consultants were shown maps which depicted the project area and were asked to identify any known but previously undocumented locations of villages; cemeteries; hunting, gathering and plant collecting areas; sacred or ceremonial sites; or any other important geographic places in the project area. Also, information was sought on contemporary values, concerns, and recommendations for archaeological sites.

Other than the four previously discussed village sites, no additional resources were identified as a result of these consultations. There was, however, a general consensus that cemeteries, as well as sacred and religious sites, are the most sensitive resources that could be encountered within the project area. Some recorded archaeological sites will also be culturally sensitive for Native Americans. Resource management considerations for such sites will require addressing issues from both a research and Native culture perspective.

Additional site types, which likely occur within the project area, include late period prehistoric/protohistoric village locations and ethnobotanical gathering areas. The anthropological literature (Kroeber, 1925; Latta, 1977; Wallace, 1978) suggests that similar site distribution patterns and resource potentials exist for ethnographic resources as do for prehistoric archaeological sites. That is, these types of resources will most likely occur on terraced areas adjacent to drainages and springs.

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The potential for encountering resources of this nature is greater for the Proposed Western Corridor than for the Eastern Corridor Alternative, which is a situation that can be attributed to the same factors as discussed for archaeological sites.

5.4 HISTORICAL SETTING

The project area has historically been a region physically isolated from the population and transportation centers of California. Before the arrival of the railroad in the late nineteenth century, and adequate roads in the early twentieth century, this isolation was a key factor in the project area's historical evolution. Equally important natural factors were the rough and dry character of the region. Much of it is hilly or steep and almost all of it is characterized by a harsh hot and dry climate for most of the year. Finally, the exploitable economic resources of this region were lacking during most of the nineteenth century, although oil began to be important in the southern section of the project are during the turn of the century.

The realities of distance, land, climate, and resources conspired to make the project area a kind of backwater, isolated and unpopulated. Yet ironically, these very negatives made the region popular with those who wanted to hide or escape from the world in sequestered places. The first phase of the area's history is characterized by this kind of use by a population once dominant in the Golden State - the Mexican Californios.

Mexican-Californio Homeland, ca. 1800s to 1880s

The earliest known information about the history of the project area concerns its use as a transportation route between Los Angeles and northern California. During Spanish and Mexican times (1770s-1848), California's main north-south land transportation route was "El Camino Real" (the Royal Road), running from mission to mission through the coastal valleys. "El Camino Viejo a Los Angeles" (The Old Road to Los Angeles) represented an alternative route. It was more isolated and dangerous to travel and was used mainly by fugitives and others who wished to travel north or south in secrecy, unobserved by the authorities and settlers on the coastal road. It is unclear exactly when El Camino Viejo first began to be used, but it was reportedly as early as 1800 (Latta, 1936). Ox carts were used to haul the possessions or freight of those who traveled the road.

The route of El Camino Viejo followed old animal and Indian trails, which skirted the eastern slope of the Coast Range foothills, allowing a stop at each water source along the way. Indian villages existed at some of these water sources, which often corresponded to the points where canyons or small creeks exited from the coast mountains. Indians at these locations were taken to the coastal missions by the Spanish early in the nineteenth century and several expeditions to explore the interior and capture Indians were led by members of the Cantua family of Monterey. This is the origin of the name Cantua Creek, which was reportedly named for Guadalupe Cantua (Latta, 1936). The map of El Camino Viejo, published by Latta in 1936, shows that several stopping places on this road were located within the project area. These included the following points near the base of the foothills: Los Banos Creek, Ortigalita Creek, Panoche Creek, Arroyo Hondo, Cantua Creek, "Pedro Etchegoin" (near the junction

of Highways 5 and 145), and Poso Chane (at the junction of Los Gatos and Jacalitos Creeks, about five miles due east of Coalinga) (Latta, 1936). Of these locations, Los Banos (the baths) was reportedly the most famous in early times and tradition has it that it was on this creek that the famous Padre Arroyo de la Cuesta bathed on his trips to convert the interior Indians. This padre was the key figure at Mission San Juan Bautista from 1808 to 1833 (Hoover et al., 1966).

Although El Camino Viejo and the project area had seen Spanish, Mexicans, Californio, and probably even a few United States-born travelers during the first half of the nineteenth century, there were still very few Euro-American settlements in the region at the close of the Mexican-American War of 1846-1848. However, one early settlement which did exist was Rancho Panoche de San Juan y de los Carrisalitos; a 22,175 acre grant given by the Mexican government to Julian Ursua in February of 1844. It is unclear exactly when the grant was settled, but it was reported that when the land survey to establish title was made in the mid-1860s, old adobes existed on the property (Hoover et al., 1966; Beck and Haase, 1974).

This rancho represented the exception to the rule; in general, conditions in the Central Valley were too unsettled in the 1830s and 1840s to allow the establishment of permanent outposts. This would soon change, however, for within a few days of the January 1848 signing of the Treaty of Guadalupe Hidalgo deeding California to the United States, John Marshall discovered gold on the American River. Among those best positioned to take immediate advantage of this gold discovery were Mexicans and Californios, many of whom were experienced miners willing to share their knowledge with Anglo-Americans. Soon, great numbers of Hispanics were active in the gold fields, especially the southern mines from Amador County south, where they made up the dominant ethnic group and gave Sonora, the largest town in the area, its name.

The Hispanic miners were skilled and therefore successful in the gold fields, a fact that engendered the hostility of the Anglo-American miners. Many of these latter miners were soon using every means possible, both legal and illegal, to force Mexicans, Chileans, and Californios out of the mines. A foreign miners tax of $20.00 a month was passed during the spring of 1850, forcing foreign-born miners to pay for the privilege of mining gold in California. While supposedly applying to all foreign-born miners, it was in practice mainly enforced on those obviously foreign, which meant the Hispanics and Chinese. In addition, terror was used against the Mexicans and other Hispanic miners to drive them out of the mines. The literature of the 1849 to 1851 period is full of reports of the persecution and terrorizing of the Latinos. Marauding bands attacked the Hispanic miners and many were forced to leave the gold fields (Jackson, 1980). Hundreds of such incidents took place during the early gold rush years, leaving a legacy of bitterness in the Mexican-Californio community.

As the Mexicans and Californios left the gold fields, at least some resettled in the San Joaquin Valley, at towns such as Pueblo de las Juntas, located at the junction of the San Joaquin River and Fresno Slough, just north of today's town of Mendota. In the 1850s, 1860s, and 1870s, a fairly large number of Mexican and Californio families lived at Los Juntas. Its population was reportedly about 250 in the 1870s, and the Butterfield Overland Stage often stopped at the place (Hoover et al., 1966). Upstream from this point, for dozens of miles along the San Joaquin River bottom almost to Millerton, the

Californios settled in force. One of these settled spots was called "El Rancho de los Californianos" or California Ranch for the great number of native Californios who lived in the area (Winchell, 1969; Hoover et al., 1966). Even closer to the project area, Los Banos was another early Hispanic settlement in the region, although its original site was about 1.5 miles west of the present-day town (CAL/OHP, 1976).

Other Hispanic ex-gold miners were able to find work at the New Idria Mines, located in a remote part of the Coast Range, west of the project area. This mine began operating in the early 1850s and at times had a work force which was heavily Hispanic (Hoover et al., 1966; Vando,r 1919; Fresno County, 1872). In the 1850s to 1880s period, the relatively remote area of California lying between New Idria, Los Banos, Los Juntas, and the California Ranch represented a kind of Mexican-Californio homeland, an area remote from the centers of Anglo-American control and where the population was largely Hispanic.

The Mexicans and Californios inhabiting this region supported themselves by a variety of means. Despite the hostility of the Anglo-Americans, some probably continued to make prospecting trips to the mining regions. Others were vaqueros either working for the Anglo-Americans or independently, by capturing the wild horses that roamed the surrounding San Joaquin plains. These wild horses, numbering in the tens of thousands, could be tamed and sold either in California or Mexico. Hispanics also manufactured hair ropes, fancy bridles and other riding paraphernalia and many worked as farmers growing corn, tobacco, and vegetables (Winchell, 1969). These people thus had a largely self-sufficient lifestyle.

The resentment and bitterness at the treatment accorded them by the Anglo-Americans in the gold fields and elsewhere in California led some of the more daring and resourceful Hispanics to become bandits and horse thieves. When pursued by the Anglo-American authorities, these bandits rode their horses toward their Mexican-Californio homeland, an area where they were relatively safe not only because of this area's remote and wild nature but, most importantly, because the Mexican-Californio population in this area often saw these bandits as rebels against an unjust social system and an oppressive and greedy invader. The socioeconomic situation which developed in the Mexican-Californio homeland during the entire 1850s to 1880s era was one of at least passive rebellion against the Anglo-Americans and a willingness on the part of much of the Hispanic population to support those who would actively oppose them. These individuals became what are known as "social bandits."

Two important episodes of social banditry figure prominently in the history of the project area and surrounding Mexican-Californio homeland--one in the early 1850s and another in the early 1870s. The first of these was also the largest and most famous episode, that of Joaquin Murrieta and associated bandit gangs. The story of Joaquin Murrieta is of statewide significance and at least one hundred State landmarks including springs, trails, towns, rock outcrops, ranchos, lakes, creeks, ridges, etc. have been named for him. Fact and fiction often commingle and, therefore, the historian faces the difficult task of separating the legends and half-truths from the whole truth. The immediate cause for Murrieta's life of crime lies mainly in the realm of folklore, at least the story which follows has never been verified. In these accounts Murrieta was a gambler in the southern mines about 1850, when his wife was raped and

murdered by Anglo-Americans. At about the same time his brother was reportedly accused of horse stealing and lynched by a mob, and Murrieta, for trying to help his brother, was horse-whipped (Jackson, 1976). Following these injustices, so the story goes, Murrieta became a bandit who attacked the Anglo-Americans who oppressed him and his people.

Whatever the actual immediate cause of the turn to social banditry by Murrieta and his associates, it is a fact that during the 1850-1853 period a number of related Mexicans (brothers, half brothers, cousins), several of whom used variations of the name Joaquin Murrieta, were leaders of what Frank Latta accurately calls a "horse gang" of about 80 men. None of these men are known to have been gamblers, but at least some of them were involved in occasional robbery as well as in the legal activity of capturing wild horses on the San Joaquin plains, mainly for shipment and sale in northern Mexico (Latta, 1980). The followers of the Murrietas included both Mexicans--especially from the village known as Pueblo de Murrieta in southern Sonora, Mexico--and Californios from the "... earliest pioneer families of Alta California" (Latta, 1980). This horse gang-- which had a number of internal divisions and rivalries--had a number of hangouts and hideouts within the boundaries of the Mexican-Californio homeland. These included Las Juntas, Rancho de los Californios and the Joaquin Rocks-Cantua Creek section of the project area where the gang's headquarters was located (Latta, 1980; Hoover et al., 1966). In these areas the Murrieta gang could feel relatively safe, as the Anglos were outsiders and did not know their hiding places. Parts of the Murrieta gang could carry out a robbery or murder in the gold country and then retreat into the Central Valley and Coast Range and never be located by their pursuers. At the same time, other members of the organization could be involved in the capture and branding of wild horses using the Joaquin Rocks-Cantua Creek area as headquarters and horse holding area. There was also a north-south trail through the Coast Range from Mount Diablo to Los Angeles called "La Verenda del Monte" (The Mountain Trail) used during the 1840s and 1850s to run captured wild horse and, perhaps, some stolen horses south toward Mexico. Gang members also operated along this trail (Latta, 1980).

For some unknown reason, the first few months of 1853 saw a sudden upsurge in robbery and murder in the southern mines, especially in Calaveras County. A hue and cry went up among the miners and shopkeepers there for the State to deal with a problem seen as both out of control and beyond the scope of any one county to deal with. In February 1853, Governor Bigler offered a $1,000.00 reward for the capture of Joaquin Murrieta, who was reportedly behind these crimes. A few months later, in May 1853, the California State legislature authorized the organization of a posse known as the California State Rangers to seek out and capture or destroy the Mexican-Californio outlaws, the "five Joaquins" as they were called. The legislature thus showed an understanding of the fact that there were several Joaquin Murrietas, Captain Harry Love was the leader of this special force and he set out upon his task with a thoroughness which eventually brought results. After an initial attempt to isolate the bandit gang in the Sierra foothills of Mariposa County failed, Love turned his attention to the Coast Range. He was soon able to find an Hispanic willing to divulge the location of the Cantua Creek headquarters which consisted of a large adobe house, barn and brush-post-and-pole corral located near the point where Cantua Creek enters the San Joaquin plain. A small spring rose from the creek bed near this point, offering a good water supply.

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In mid-July of 1853, Love came upon most of the gang--about eighty men and three women--while they were preparing a shipment of horses at the mouth of Cantua Creek. Love had only about 20 men, however, and fearing that he and his men would be wiped out in a shoot-out with the heavily armed band, reportedly registered by name the gang members before leaving. Most of the gang members then left, including the Murrietas, fearing that Love would soon return with a much larger force. Among the leading gang members, only Tres Dedos (Manual Duarte, known to Anglo-Americans as Three Fingered Jack) remained at the Cantua headquarters (Latta, 1980).

When Love and his rangers did return to the Cantua Creek headquarters on the morning of July 25, 1853, there were only a reported six Mexicans and Californios present. Love and his group were quickly able to kill four of them, among them Tres Dedos. None of the Murrietas were present, although Love and his rangers claimed to have killed Joaquin Murrieta. As grisly proof they cut off the head of an Indian named Choppo whom they had killed at the site and claimed it was Murrietas head. Tres Dedos' head and hand were also cut off. These two heads and one hand were then preserved in spirits and displayed around the State. The rangers could then claim the reward offered by Governor Bigler (Wood, 1970; Latta, 1980; Jackson, 1976).

As an ironic footnote to the shootings of July 25, 1853, one of those killed by Love and his rangers at the Cantua Creek site was none other than the California Domingo Cantua, a grandson of Guadalupe Cantua, the early explorer for whom this creek was named (Latta, 1980). Domingo and his brother Lupe were gang members, but may or may not have participated in robberies and murders. Probably the main task for most of the horse gang members was capturing, breaking, branding and driving wild horses to Mexico, and Domingo and the others at the Cantua Creek headquarters that morning in late July 1853 may just have been in the wrong place at the wrong time.

None of the 80 or so members of the Murrieta horse gang was ever accused in a court of law, and only this small group faced the blazing guns of Love and his rangers. The bodies of those killed were reportedly later buried by gang members, and attacks on Anglo-Americans by Hispanic Americans abruptly ceased after this point in time (Latta, 1980; Wood, 1970). Apparently, gang members involved in banditry moved out of the area or stopped their illegal activities.

While the Joaquin Murrieta horse gang was the most famous of the bandit groups that used the general study area as a hideout during the mid-nineteenth century, this was not the only gang in the region. In the early 1870s, another Hispanic bandit, the Californio Tiburcio Vasquez, also used the Cantua-Joaquin Rock region as a retreat and hiding place. Born in Monterey, Vasquez established a local reputation between the 1850s and 1860s, during which time he was involved in a stabbing and served at least two terms in San Quentin prison for horse stealing and robbery. At least one of his motivations was socio-political in nature, for he once argued that he believed that he and his people "... were being unjustly deprived of the social rights which belonged to us" (Dunlap, 1982). In 1870, when Vasquez got out of San Quentin, he formed his bandit gang, which used the Joaquin Rocks-Cantua Creek section of the project area as a rendezvous. There may have even been veterans of the Murrieta gang among the Vasquez band.

Vasquez and his group also used other parts of the Mexican-Californio homeland as hideouts, and robbed nearby Anglo- American settlements, including Fresno and Kingston. Like the Murrieta group, Vasquez was admired by the "common man" of his ethnic group. As one historian later put it: "Undoubtedly, however, the ability of this man to escape justice for so many years was due to the admiration he received from hundreds of Mexicans in all parts of the state" (Winchell, 1933). This fact, combined with the remote setting of the Coast Range, made it difficult for the law to catch Vasquez. One Fresno County historian stated that Vasquez selected Cantua Canyon

> ... as a retreat and refuge. It was once the favorite camp and shelter of Murrieta. In the hills here, Vasquez was comparatively safe. White settlers were few, and the native Californians almost to a man aided and befriended him, largely through fear. He was known to have appeared openly at the New Idria Mine on various occasions. The law-abiding were prevented from doing anything towards bringing him to justice, fearing the consequences. It is probable that the Mexicans there would have resisted any attempt at an arrest. One superintendent permitted Vasquez from motives of policy to come to the mine as long as he committed no depredation there and Vasquez never did trouble the miners or cast covetous eye on their horses. Several attempts at capture were made by Sheriff Adams of Santa Clara, but on every occasion and in spite of disguise and the utmost secrecy, so Vasquez stated, he was apprised of Adams' movements and designs before half the journey was made (Vandor, 1919).

After a Vasquez raid, the parties sent out in pursuit of the bandits invariably went to the key locales of the Mexican-Californio homeland: California Ranch, Cantua Creek, Panoche and New Idria (Winchell, 1933). The Coast Range hills, where many of the canyon mouths reportedly had small settlements of Mexicans, were the most frequent center of the pursuers' attentions. After the November 10, 1873 robbery at Jones Store (near Millerton), for example, a posse led by Sheriff Ashman of Fresno County rode to the Coast Range in the project area and reportedly questioned both Vasquez' sister and, "at the Cantua," a woman named Mariana who claimed to be Joaquin Murrieta's widow. It was later found that Vasquez and his partners were safely hidden in a nearby side canyon while the Sheriff and posse were looking for them nearby (Winchell, 1933).

Only after the State legislature passed a bill offering $15,000 for the capture of Tiburcio Vasquez, dead or alive, was this bandit finally apprehended and tried. He was convicted of murder at a trial in San Jose and hung in March 1875 (Winchell, 1933).

The Murrietas and Vasquez were both examples of what might be termed social bandits. Both used the Cantua Creek-Joaquin Rocks region of the project area as a hiding place, for there they were free from the control of the Anglo-Americans. While these social bandits were successfully suppressed by the Anglo-American authorities, their memory remained strong among the Mexican-Californio population of this part of California. Rebellion against the Anglo-Americans was still popular, and during the late 1870s and early 1880s it took on a religious form when a leader of a religious revival appeared in the Cantua Creek-Joaquin Rocks section of the Mexican-Californio homeland. The revival was apparently popular due to the disruption of the lives of many Hispanics who lived in the Los Juntas-California Ranch area, and perhaps other parts of the Central Valley, due in turn to the arrival of the railroad and the extension of Anglo-American power during the early and mid-1870s. Whatever the immediate causes of this religious revival, it had direct roots in the past, for the leader was a woman named Mariana Martinez or Mariana "La Loca" who claimed to be the widow of Joaquin Murrieta. To make

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the connection with the past complete, Mariana held her revival at an encampment in the Urruttia Canyon area a few miles north of Joaquin Rocks (Wood, 1970).

Mariana had lived in the Cantua Creek-Joaquin Rocks area for several decades prior to the beginning of her revival in the late 1870s. She may even have been one of the three women with the Murrieta horse gang that Captain Harry Love encountered in mid-July 1853. Whatever the true story of her early life, by the 1870s Mariana was apparently the common-law wife of a sheepherder named Martinez who had his headquarters at Martinez Spring about two miles northeast of Joaquin Rocks (Wood, 1970). One of the posses chasing Vasquez in late 1873 found Mariana "at the Cantua" and questioned her as they ate the tortillas and dried meat she offered them (Winchell, 1933).

Mariana's religious revival began in 1879 or 1880 and continued for at least three and possibly as long as six years. Mariana called on the religious people of the area to give up all their earthly possessions and move to her encampment near the base of Joaquin Rocks. A chapel or temple built from adobe bricks was constructed at this encampment, and this was used for the services which reportedly attracted up to 500 people, mostly Hispanic, but also including a few Portuguese and French (Wood, 1970). The revival apparently hit its peak in the spring of 1883 when it attracted the attention of Fresno newspapers, the Fresno County sheriff, who was worried about gatherings of Mexican-Californios, and high officials of the Catholic diocese of San Francisco. The latter contented that Mariana was a false preacher with false predictions and concluded that "... the whole affair is a fraud, an imposition and a witchcraft..." (Wood, 1970). Mariana's revival continued off and on for a number of years at encampment locations around Joaquin Rocks. Mariana was killed by a Santa Fe railroad train while walking on this company's railroad tracks in April 1902 (Wood, 1970).

Ranchers, the Railroad and the End of the Mexican- Californio Homeland, ca. 1860s to 1890s

Demand for meat – especially in San Francisco, the great metropolis of the Pacific Coast – began to attract ambitious ranchers to the study area and environs during the early 1860s. The remote and dry region was best suited to grazing, especially sheep, but cattle could also be raised in the better watered areas. The Homestead Act of 1862, allowing 160 acres to be claimed by a man for the cost of the filing fee and five years residence, was also an inducement to settle. During the 1860s to 1890s period, both large and small landowners came into the Mexican-Californio homeland. The most ambitious of these new settlers was Henry Miller, a German immigrant wholesale butcher who, in 1858, formed a partnership with a fellow German butcher named Charles Lux. Within a few decades, they became the most important landowners in the region. Miller and Lux began by acquiring Mexican land grants in Merced County (e.g., as early as 1863 they purchased the Santa Rita grant on the west bank of the San Joaquin River). This was the beginning of an empire which eventually amounted to one million acres in three states, as well as hundreds of thousands of cattle and sheep, slaughter houses, banks, stores and hotels (Clark, 1973; Vandor, 1919). While the Miller-Lux holdings were both widespread and enormous, its core was in Merced and Fresno Counties. At one time the firm owned over 268,000 acres in Fresno County alone – a domain stretching from the Coast Range on the west to the Central Pacific Railroad on the east (Vando, 1919). While most of the Miller-Lux lands lay outside the study area – in the better watered regions nearer the San Joaquin River – the sheer size and economic power

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of this empire influenced the entire region, including the project area environs. There were several ways in which this influence was felt. One was through the monopolization of land and water resources, facts which prevented at least some small ranchers and farmers from successfully living on the land. By gaining ownership of areas that had previously been in the public domain, Miller and Lux also forced many Mexican-Californios to leave their homes. During the 1870s, for example, when Miller and Lux acquired the land on which Pueblo de las Juntas stood, the settlers still living in this pioneer Hispanic settlement were forced to move (Hoover et al., 1966). Evidently many Hispanic vaqueros also went to work for Miller, who handled the ranching side of the Miller-Lux team.

Another source of Miller-Lux influence was through training the brightest and most ambitious among their employees, many of whom eventually went on to establish their own ranches. Some later paid tribute to Miller's influence on them. One of these was Adolph Domengine, who owned the Domengine Ranch near Joaquin Rocks. Domengine was of French-Basque ancestry, born in California in 1856. During the early 1870s, at a young age, he began running sheep for his father in the region in and around the study area. He then worked for Miller and Lux, taking charge of their sheep operation on the west side of the San Joaquin Valley, undoubtedly including part of the project area. He later wrote about Miller's influence on him:

> I very often think of Henry Miller. While I feared him, I had a great admiration and respect for him. I feel under obligation to him for what little success I have had in life and for the training he gave me, as well as the business knowledge I acquired while in his employ for eight and one-half years. He taught me how to work, practice economy, and use judgment--the three points essential to success. I shall always prize his remembrance as one of my dearest assets (Latta, 1949).

A final means by which Miller and Lux controlled life in their section of the San Joaquin Valley was by monopolizing water resources. With their great economic power they purchased water rights and during the 1870s completed the San Joaquin and Kings River Canals (the Outside and Main Canals). These canals were hand dug, using gangs of Chinese, Mexican and Euro-American labor. Labor camps existed on the banks of these canals to house and feed these employees (Shallat, 1978).

If the Miller-Lux partnership was the key one in terms of big ranches on the West Side of the San Joaquin Valley, there were nevertheless a number of small ranches in and around the project area. These were mainly located on lands only marginally suited to agriculture due to their mountainous or dry nature. Many of these small ranches were originally settled by Mexican-Californios during the 1850s or even earlier. For example, when W. J. Stockton arrived in the Los Banos area, in 1872, there were a few large cattle and sheep ranches on the plains, but back in the hilly Coast Range were hundreds of Hispanics living on small ranchos in a self-sufficient manner. As one historian who interviewed Stockton later put it:

> The West Side, when Mr. Stockton arrived, was a country of a few large stock ranches for cattle and sheep, as the big grants would indicate. Back in the hills on the east slope of the Diablo Range, where was a population, he estimates, of 400 or 500 people of Spanish or Mexican blood. They appear to have lived on ranchitos and to have kept a few head of stock, including of course the ever necessary saddle horses, raising, we may imagine, their frijoles and chilis, getting their wood and their venison from the country, and finding employment in season at the rodeos and sheep-shearing on the large ranchos. There were some very large families of them; the Alvarados, up near the head of Los Banos Creek, had

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> nineteen children, and there were the Soto, Piso, Gonzales, and Merino families, to name only a few (Outcalt, 1925).

In contrast to the large number of Mexican-Californios in the area, as late as 1875 there were only a reported ninety men on the entire West Side eligible for jury duty (Outcalt, 1925). Most of these men were undoubtedly Anglo-Americans.

These Anglo-Americans and other immigrants began to take up ranches and small farms in the project area in the 1860s, 1870s, and 1880s. They were mostly sheep and, to a lesser extent, cattle ranchers. Field crops and hand-tilled gardens were also planted where the land was level and well watered. Most of these ranches were short lived since it was difficult to make a living on a few hundred acres of land in this remote and dry area. After a dry year or two, these ranchers typically sold out to a larger or more prosperous rancher. The history of the Domengine Ranch, whose headquarters was located in the Big Blue Hills within the project area, is perhaps typical of this process. This ranch was reportedly settled in the early 1860s by George L. Hoffman, who hauled lumber from Stockton to build the first cabin at the site. Hoffman reportedly sold to Bertram Yribarren about 1868 who, in turn, sold out to Peter (Pedro) Etchegoin about 1872. Etchegoin expanded the ranch by claiming more land to the west, closer to Joaquin Rocks, in an area that had good springs for the thousands of sheep he ran on this ranch. Adolph Domengine purchased the Etchegoin Ranch when he quit working for Miller in September 1883. At the same time he also bought 3,200 head of sheep and associated equipment from Etchegoin. Domengine added to the ranch by purchasing and homesteading additional lands until he owned about 10,000 acres. By 1919 he was also leasing another 5,000 acres and his range was scattered over a distance of twelve miles in the Joaquin Rocks area east to the Valley. By 1912 Domengine had sold his sheep and brought in Durham cattle, and in 1919 he reportedly had 1,000 head of cattle on his ranch (Vandor, 1919). This ranch, like others in this region and throughout the west, consisted of a house, barn, and water tanks (Vandor, 1919).

Other small sheep ranchers later diversified into wheat farming on the west Valley plains. The experience of the Erreca family represents as example of this phenomenon. Martin, Peter and Jean B. Erreca were brothers who immigrated from the Basque country of Southern France during the 1893 to 1902 period. They had experience in sheep raising and so gravitated to the West Side-Coast Range country of the study area. About 1902, the brothers went into partnership raising sheep and were very successful. Martin then went into grain (wheat and barley), farming about 3,000 acres on the West Side plains along Panoche Creek (Outcalt, 1925). Peter stayed in the sheep business, purchasing the Gastambide Ranch, about ten miles southwest of Los Banos, in the early 1920s. By 1925, Peter Erreca had about 3,000 head of French Merino sheep on this ranch, located on Carrisalito Creek (adjacent to Los Banos Creek and the project area) within the boundaries of the 1844 Panoche de San Juan y Los Carrisalitos land grant (Outcalt, 1925)

These are examples of the dominant land use in the project area and environs during the 1860s to 1890s era. Sheep-raising in the region was so successful that by the late 1870s the Southern Pacific Railroad ran a line into the area to supply a shipping point for this wool and mutton. This line was completed in 1877 and the railroad termination point became the town of Huron, close to the southern part of the

study area. During the 1877 to 1887 period, sheepmen and homesteaders came to Huron from miles around for supplies and mail (Fresno County Centennial Committee, 1956). By the 1890s, considerable grain was being grown around Huron and the town had about 150 inhabitants. A small country school with one teacher also existed at the place (Ziegenfuss, 1891; The Lewis Publishing Company, 1892; Fresno County Board of Education, 1891).

Two areas were tributary to Huron during this, the heyday of stock-raising. The first and smaller area was the region around the mouth of Cantua Creek where homesteaders had established one or more small ranches near Murrieta's headquarters site. In 1891, a school with one teacher existed here, as well as a post office and the previously discussed ranches (Thompson, 1891; Fresno County Board of Education, 1891). Attempts at growing field crops were also being made during this period and by December of 1890, a dam was under construction in Cantua Canyon to supply water for irrigation (The Lewis Publishing Company, 1892).

Also tributary to Huron during the 1880s was the region around Coalinga, including the stock-raising country of Pleasant Valley, east and north of present-day Coalinga. The first Anglo-American settlers came to the area in the early 1870s. By the mid-1870s the Gustave Kreyenhagen family had established the first store in the Pleasant Valley-Poso Chane region, apparently located at the site of today's Pleasant Valley Ranch. At nearby Poso Chane (around the junction of Los Gatos and Jacalitos Creeks), the Kreyenhagens also set up a large, public sheep-shearing establishment (Latta, 1949). At shearing time this location became crowded with sheepmen. One historian later described such events as follows:

> Dozens of sheepmen collected there from the West Side at shearing time, and the place became periodically crowded with Basque, French, Spanish, and Portuguese sheepmen and hundreds of Californian, Mexican, and Indian shearers. They bought clothing, groceries, and other supplies at the Kreyenhagen store. Emil Kreyenhagen hauled these supplies from Fresno by mule team and hauled back the wool from the shearing pens (Latta, 1949).

The Pleasant Valley area was, in general, known as a "flourishing settlement" based on stock-raising. The place also had a school as early as 1882 (Elliot, 1882). The ranching and homesteading activities in this, the southern section of the study area, were soon, however, to be overshadowed by the discovery of large amounts of oil. Coal had been located in the hills outside the project area to the west of Coalinga and this mining activity helped to encourage the Southern Pacific Railroad to build a line to Alcalde in 1887 (Fresno County Centennial Committee, 1956). This further opened up the area around Coalinga to men working in the relatively new field of oil drilling. With the railroad nearby, their product could be more cheaply shipped to market and equipment and supplies more easily brought in.

The 1860s to 1890s era had seen an influx of non-Hispanic people into the project area and its environs and much of the best land in this region was taken out of the public domain by large and small ranchers during this period. Conversely, the Mexican and Californio people who initially settled the region began to be displaced and the project area and environs had ceased to be a Mexican-Californio homeland by the 1890s. These circumstances, combined with the discovery of oil, meant that a new period in the regional history was about to begin.

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Discovery of Oil and the Evolution of the Pioneer Petroleum Business, ca. 1890 to 1912

The southern tip of the study area – north and northwest of today's Coalinga – was the site of one of California's biggest early oil booms. This boom resembled the frantic activity of a gold rush. It began during the last decade of the nineteenth century, reaching a peak during the first years of this century. This activity resulted in the rapid industrialization of this part of the project area and the creation of modern Coalinga.

The story of petroleum in the Coalinga area goes back for hundreds of years. The Indians of the region, who lived in a large village at Poso Chane ("Udjiu")[3] near the junction of Los Gatos and Jacalitos Creeks, gathered asphaltum in the canyons north of this village and used it to waterproof their baskets and to trade with other Indians. Poso Chane saw the first exchange of goods for oil products, for this is where the trading took place, as Indians from outside areas were not allowed to dig the asphaltum from the ground (Latta, 1949).

The oil business was still in its infancy in the 1860s and 1870s, but by the end of the 1870s, oil prospectors (oil production came under the mining laws and claims were held like mining claims) had entered the area. Evidently they had heard of the asphaltum seeps and coal seams in the area and saw these as having potential. In this early period, picks and shovels were used in attempting to dig oil wells. One man later reported to historian Frank Latta his experience west of Coalinga and in what later became known as Oil Canyon, about 8 miles north of Coalinga:

> In the late 1870s I helped dig out and develop two of the old oil seepages in the Coalinga district. The first of these was in a canyon midway between Warthan and White Creeks, west of Coalinga. The other was near Oil City, where an early hole was drilled by Thomas Creighton and Hugh Mooney of Visalia.
>
> The men for whom I worked, and who financed this development were Josiah, John and William Worswick. It was all pick and shovel work. We dug out the old accumulation of oil and dust and the bones of animals trapped in the seepages. When the pits filled with oil, it was baled out. Although Worswick brothers tried hard to make a business success of the enterprise, they were too early and nothing came of the venture (Latta, 1949).

While such early attempts failed, it was clear that once adequate demand, technology, and transportation were available, the Oil Canyon-Coalinga region would be a prime locale for oil development. It took well over a decade for these conditions to be fulfilled. In 1887, a year in which the California State Mining Bureau found only four oil companies in the entire State, the Southern Pacific Railroad extended its line to and beyond Coalinga (Latta, 1949). At the same time that transportation improved, technology was also improving. Speculators willing to finance development on their oil claims were also becoming involved. In 1890, Milton McWhorter succeeded in bringing in the first significant oil well at what was becoming known as Oil Canyon. A few years later, the first big well was brought in by C. A. Canfield and Joseph H. Chanslor (Latta, 1949; Fresno Republican, 1897). By 1898, the location for this oil boom activity was known as Oil City.

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The boom at Oil City in the late 1890s stimulated drilling all around the Coalinga area. Many oil claims were established around Oil City. Especially successful were the ones to the southwest and southeast. Due to the uncertainty of such claims, in these early days, oil claims often had to be held by possession and force. As historian Frank Latta expressed it:

> In the face of such uncertainty, all oil claims were actually held by right of might. This might was exhibited in the form of mineral filings, strong talk, barbed wire fences, Colt and Smith and Wesson revolvers, Winchester and Marlin rifles. This list of exhibits is no figment of the imagination of the writer. Those identical items appear in the criminal and civil record of the various counties of the Joaquin, with the addition of identifying serial numbers, sworn to by the vendors of the guns.
>
> The records mentioned above are in the nature of suits for the recovery of personal and property damages, action by the state of California against various individuals for murder and attempt at murder, and the inquests held over the dead bodies of those killed. They are illuminating and convincing (Latta, 1949).

In the late 1890s, a pipeline was run from Oil City southward to near Coalinga where it linked up with the Southern Pacific Railroad. The oil was then shipped in tank cars to the outside world. As new fields were discovered, and big outside investors like Standard Oil Company became prominent in the area, large pipelines were constructed to take the oil directly across the Coast Range to the Pacific Ocean ports and other transportation facilities. This access to markets allowed further development of the Coalinga area oil fields, which was not long in coming. The immediate Oil City area was the pioneer region, and saw a number of great gushers during 1899. The next decade saw wells open southwest of Oil City and to the west and northwest of Coalinga. Most important was the opening of a large oil field region to the southeast of Oil City. Development during the 1900 to 1910 decade centered in Sections 21, 22, 27, 28, and 34 T 19S R 15E (Vandor, 1919). By 1912, each of these sections had at least a dozen buildings, and Section 28 had several dozen (United States Geological Survey, 1912). This oil camp was one of the largest in the world during the first decade of this century (Levick, n.d.).

During the same 1900 to 1910 period, Coalinga boomed from a town with a few dozen shacks and saloons to a modern city of over 5,000. One historian described this development as follows:

> An enthusiastic write up in 1910 likened to a fairy story the tale of the growth of the little city of Coalinga in the foothills bordering on the semi-arid sagebrush plains. A few years before, the name stood for a wretched village in the crudest stage, little more than a hurried thrown together mining settlement, surrounded by black oil "rigs," many on land of doubtful productive value, settlement overrun with wreckless (sic) men and worse women, gambling resorts, saloons or deadfalls rather, wild with money excitement and the smell of petroleum all pervading. In 1910 there was a rich proven oil field and there had blossomed a modernized city of 5,500 people, a bustling business community supported by one of the greatest and latest proven oil fields in the world, a city the abode of substantial well to do people and one marked by modern steel buildings, banks and business ventures of magnitude and everyone prosperous and content (Vandor, 1919).

The main part of this boom came between 1905 and 1909, a period when oil prices rose spectacularly. By 1910, another 4,000 people lived and worked in the nearby oil fields, making the estimated population of the Coalinga district about 10,000 (Vandor, 1919). This boom created an oil field that was one of the biggest producers in the entire world, with well over one thousand wells and a

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production (near the peak of the boom in 1911) of nearly twenty million barrels of oil per year (Levick, n.d.). By 1912 the rush for oil was mostly over and yearly production was stabilizing. Oil development had become a business run by big companies like Standard Oil Company of California (White, 1962).

Rise of Irrigation and Large Scale Diversified Agriculture, ca. 1915 to Present

Recent times in the study area have been characterized by a continuation of the ranching characteristic of the 1860s to 1890s and the oil development of the 1890 to 1912 period, along with the introduction of large farms practicing diversified agriculture through irrigation.

The plains immediately to the east of the Coast Range, lying between the Coast Range and the San Joaquin River, are known today as the West Side of the San Joaquin Valley or the West Side. Once the better watered areas of the east side of the San Joaquin Valley and along the river were occupied, the attention of farmers turned to the arid and undeveloped West Side. Due to the lack of surface water, this region, which contains over one-half million acres of potentials farmland, was slow to be developed because irrigation was beyond means of the average settler. Without large-scale irrigation, dry years could and did wipe out many farmers who attempted to grow crops in this region. One such dry spell in the late 1890s caused many farmers to abandon their land on the West Side and a traveler reported, as follows, on a trip he took into the southern part of the project area in 1899:

> West of Kings River the plains are given up to desolation. Eight or 10 years ago large crops of wheat were raised on this land, which was all located, and farmhouses built on nearly every quarter section. West of the river is the little old desiccated town of Huron, now almost empty of inhabitants. Nine miles beyond Huron is the first inhabited farm. But not a spear of anything green grows on the place this year. The same desolation extends southwards for 30 miles. A little Tularee in the low places, a scanty growth of greasewood is all that keeps the country from being an utter desert.
>
> The houses of the former inhabitants are empty, the doors swing open or shut with the wind. Drifting sand is piled to the top of many fences. The windmills with their broken arms, swing idly in the breeze. Like a veritable city of the dead, vacant residences on every side greet the traveler by horse team as he pursues his weary way across these seemingly endless plains. Climatic conditions is (sic) the cause of all this. For the soil is good; the silt of the bottom of that older Tulare Lake that occupied a much larger area than the one that exists in the memory of man. Hundreds of feet above the lake's surface this sediment covers the Kettleman Plains, the Sunflower Valley, and Pleasant valley, which is the westernmost extention (sic) of the broadest part of the San Joaquin Valley.
>
> This silt, containing what appears to be fresh water mollusks of the recent lake, covers the Kettleman hills that are at least a 1,000 feet higher than the lower parts of the plains. it is soft when it is wet. It is softer when it is dry: and the traveler wishes he were out of a country where the very hills appear to be interminable mud banks. The rapid drying of the lake has been preceded by the rapid upheaval of its western margin.
>
> Given a good climate with 6 inches rain fall every winter, and the West Side would be the most fertile part of California. It is at present almost entirely given up to sheep-raising (Latta, 1949).

Such settlers had, nevertheless, by 1915 taken up all the land on the West Side; by then, no more was available for homesteading. Wells were being developed, either using windmills to bring the water up, or more rarely, steam or electric pumping plants. Development of these lands was expensive, however;

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as one writer expressed it in 1915: "These lands are not for the poor farmer" (Clausen, 1915). That year it reportedly cost at least $5,000 to begin to develop a farm on the West Side (Clausen, 1915). This fact meant that the area was best suited to large farms, although with Federal and State government sponsored and paid for irrigation projects, medium and small sized farms could also be successfully developed. Such government irrigation projects were slow to be developed, even though ideas and plans for such projects existed as early as 1919 when the Marshall Plan for a Central Valley Project was first developed by Robert B. Marshall, the chief hydrographer for the U. S. Geological Survey (Shallat, 1978). During the Depression year of 1933, a similar plan was passed in a statewide vote, but since the State lacked the money to carry out such a massive project (involving two major dams, five canals, hydroelectric power plants, and transmission lines), the Federal government took over the project a few years later. Part of this project carries Sacramento River water south through the Delta-Mendota Canal, which runs through part of the northern section of the project area (Shallat, 1978). The California Aqueduct, a Federal-State canal named for former Governor Edmund G. Brown, was completed in 1973 (Hornbeck, 1983). It runs through the eastern part of the study area.

These irrigation canals have allowed the West Side region to develop into a highly diversified agricultural region mainly characterized by large farms. In 1983, crops common to the Valley section of the project area included cotton, almonds, tomatoes, melons, carrots, lettuce, wheat, and sugar beets. Beef cattle, sheep, hogs, and dairy cattle are also raised in this region (Hornbeck, 1983). The opening of the West Side through irrigation has helped make Fresno County the number one agricultural producing county in the United States, with over two billion dollars in farm revenue in 1980 (Hornbeck, 1983).

Potential for Historic Resources

Today, the project area is characterized by diversified agriculture, ranching, oil and gas extraction, and recreation at locations such as Los Banos Creek Recreation Area. Some regional history is still celebrated; for example, there is an annual observance every July 25 near the Cantua Creek site of the Joaquin Murrieta headquarters, put on by a local group dedicated to preserving the tradition of the Mexican Cowboy. This site is also the only California State Historical Landmark (Number 344) within the study area. While the realities of distance, land, climate, and resources have conspired to limit the number of historically significant sites in this isolated region, archival research has shown that various areas have good potentials for historic site occurrence. The Joaquin Murrieta headquarters and camps were located in the Cantua Creek area, early wooden oil rigs and features were located in the Coalinga and Guijarral oil fields, and 19th century ranch features, structures, and historic archaeological deposits could be located in the vicinity of any of the drainages that the project corridor will cross. In this regard, the Domengine Ranch in the Big Blue Hills area and the Pleasant Valley Ranch in the Los Gatos Creek area are examples of potential resource locations. These historic resources sensitivities are greater for the Western Corridor and its Alternative Segments than for the Eastern Corridor Alternative for the same reason given for prehistoric resources sensitivities.

Mention has been made of the early transportation route "El Camino Viejo a Los Angeles," which passed through the general study area. Researched materials indicate that the alternative routes avoid the "El Camino" alignment, which closely corresponded to that of I-5.

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1858-1880 Survey Plat.

1998 Master Title Plat.

1853-1997 Historical Index.

Township No. 12 South, Range No. 10 East, Mount Diablo Meridian.

1853-1880 Survey Plat.

1993? Master Title Plat.

1853-1986 Historical Index.

Township No. 12 South, Range No. 11 East, Mount Diablo Meridian.

1854-1855 Survey Plat.

2001 Master Title Plat.

1853-1981 Historical Index.

Township No. 13 South, Range No. 10 East, Mount Diablo Meridian.

1858-1880 Survey Plat.

illeg. Master Title Plat.

1853-1986 Historical Index.

Township No. 13 South, Range No. 11 East, Mount Diablo Meridian.

1854-1855 Survey Plat.

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4. The Master Title Plat shows land which has been patented to private ownership, the patent numbers, and the reservations to the United States. The Historical Index provides a chronological narrative of all past and present actions which affect the use of or title to public lands and resources.

5. Last date modified.

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1854-1880 Survey Plat.

1969 Dependent Resurvey Plat.

2001 Master Title Plat.

1853-1986 Historical Index.

Township No. 13 South, Range No. 12 East, Mount Diablo Meridian.

1854-1855 Survey Plat.

2001 Master Title Plat.

1853-1967 Historical Index.

Township No. 14 South, Range No. 11 East, Mount Diablo Meridian.

1871 Survey Plat.

1969-1970 Dependent Resurvey Plat.

2000 Master Title Plat.

1853-1991 Historical Index.

Township No. 14 South, Range No. 12 East, Mount Diablo Meridian.

1854-1855 Survey Plat.

1854-1913 Survey Plat.

2001 Master Title Plat.

1853-1984 Historical Index.

Township No. 14 South, Range No. 13 East, Mount Diablo Meridian.

1853-1855 Survey Plat.

2001 Master Title Plat.

1853-1927 Historical Index.

Township No. 15 South, Range No. 12 East, Mount Diablo Meridian.

1854-1855 Survey Plat.

1854-1881 Survey Plat.

1969-1970 Dependent Resurvey Plat.

1997 Dependent Resurvey Plat.

2001 Master Title Plat.

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Township No. 15 South, Range No. 13 East, Mount Diablo Meridian.

1853-1855 Survey Plat.

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2001 Master Title Plat.

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Township No. 16 South, Range No. 12 East, Mount Diablo Meridian.

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1858-1880 Survey Plat.

1995 Master Title Plat.

1853-2001 Historical Index.

Township No. 16 South, Range No. 13 East, Mount Diablo Meridian.

1855 Survey Plat.

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2001 Master Title Plat.

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1853-1855 Survey Plat.

1853-1880 Survey Plat.

2001 Master Title Plat.

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1853-1855 Survey Plat.

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2001 Master Title Plat.

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Township No. 18 South, Range No. 14 East, Mount Diablo Meridian.

1881 Survey Plat. [poor quality reproduction and earliest plat available].

illeg. Master Title Plat.

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Township No. 18 South, Range No. 16 East, Mount Diablo Meridian.

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Township No. 19 South, Range No. 15 East, Mount Diablo Meridian.

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Township No. 19 South, Range No. 16 East, Mount Diablo Meridian.

1853-1855 Survey Plat.

2001 Master Title Plat.

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Township No. 19 South, Range No. 17 East, Mount Diablo Meridian.

1853-1855 Survey Plat.

2001 Master Title Plat.

1853-1927 Historical Index.

Township No. 20 South, Range No. 16 East, Mount Diablo Meridian.

1853-1855 Survey Plat.

2001 Master Title Plat.

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Abbreviations

ca. about

FR-02015

illeg. illegible date

n.d. no date

v.d. various dates

N.P. no publisher noted

n.p. no place of publisher noted

Abbreviated Phrases

CHRIS/CCIC, CSU Stanislaus is used for material on file at the California Historical Resources Information System, Central California Information Center, California State University, Stanislaus located in Turlock. This CHRIS is responsible for Merced County.

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 located in Bakersfield. This CHRIS is responsible for Fresno County.

FE-02015.

STATE OF CALIFORNIA -- THE RESOURCES AGENCY ARNOLD SCHWARZENEGGER, *Governor*

DEPARTMENT OF WATER RESOURCES
DIVISION OF ENVIRONMENTAL SERVICES
ENVIRONMENTAL COMPLIANCE AND EVALUATION BRANCH
1725 23RD STREET
SACRAMENTO CA 95816

May 12, 2004

Ms. Adele Baldwin, Coordinator
Southern San Joaquin Valley Information Center
California State University, Bakersfield
9001 Stockdale Highway
Bakersfield, CA 93311

Dear Ms. Baldwin:

Enclosed for your files is a copy of the Negative Archaeological Survey Report for four areas proposed to be used as borrow sites for the Arroyo Pasajero Flood Control Improvement Project by the California Department of Water Resources (DWR) and the United States Bureau of Reclamation (BOR). The project is located in southwest Fresno County, just east of the town of Huron. No cultural resources were identified during the course of the field study.

Please contact me at (916) 445-6478 or janiso@water.ca.gov if you have any questions regarding this document.

Sincerely,

Janis Offermann
Senior Environmental Planner
Division of Environmental Services

Enclosure

Southern San Joaquin Valley
Archaeological Information Center
9001 Stockdale Highway
Bakersfield, CA 93311-1099

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MAY 14 2004

Department of Water Resources

NEGATIVE ARCHAEOLOGICAL SURVEY REPORT

I. PROJECT LOCATION AND DESCRIPTION

County:	Cost Object Number:	Name of Project:
Fresno	CO# S.7197.CA55.930 S.7197.US45.930	Arroyo Pasajero Flood Control Improvement Project

The California Department of Water Resources (DWR) and the Bureau of Reclamation (BOR) constructed the San Luis Canal (SLC) in 1967. The canal traverses the distal end of the Arroyo Pasajero alluvial fan on the west side of the San Joaquin Valley just east of the town of Huron in Fresno County. The SLC effectively forms a dam that impedes the natural flow of floodwater. In order to alleviate potential overtopping of the SLC during flood events, the Arroyo Pasajero Westside Detention Basin (WSDB) was developed (Map 1). This included purchase of approximately 3177 acres and the construction of several training dikes and levees to route flood flows, and to capture and impound floodwater. The original flood control design capacity of the WSDB was approximately 16,500 acre feet. Following construction, flood events deposited a silt layer more than 10 feet in the basin, reducing the capacity of the WSDB to 6000 acre feet by 1995. Flood events subsequent to 1995 have further reduced that capacity.

The current project proposes improvements to increase the capacity of the facility in order to accommodate a 100-year flood event, including raising the height of existing embankments up to six feet by using sediments from within the WSDB. Four borrow sites (Maps 2, 3 and 4) have been identified within the WSDB to provide the fill material for increasing the height of the embankments. Although, cumulatively, a much larger area has been delineated, the maximum area of disturbance at these borrow sites combined will be approximately 26 acres; the depth of excavation will range from three to twelve feet. This document reports on the archeological survey of the borrow areas described below.

Wastewater Treatment Plant (WWTP) Borrow Site (23 acres): The WWTP site is located directly north of, and adjacent and parallel to, the railroad tracks about ½ mile northeast of Huron. It is essentially bounded by Siskiyou Avenue on the west and Madera Avenue on the east. The borrow site is about 150 feet north of the railroad. It measures approximately 50 feet wide and 4700 feet long. It is primarily covered with very short annual forbes and grasses. Excavation may be up to 11 feet deep in this area.

Railroad Borrow Site (49 acres): This borrow site is situated just south of the railroad, east of Madera Avenue, and about 200 feet west of the SLC western embankment. It is about 1.75 miles northeast of Huron. The site configuration is trapezoidal. Excavation may reach 11 feet in depth. This area supports a virtually impenetrable vegetation cover of mulefat and cockleburr.

Gale Avenue Borrow Site (15 acres): The Gale Avenue site is located about two miles southeast of Huron. It is just north of Gale Avenue and about 1750 feet west of the SLC. The borrow area is trapezoidal in shape. It is bounded on the north, east and south by cottonwood trees and willow. Vegetation within the footprint of the borrow area is sparse, consisting largely of sunflower, mustard and Russian thistle. Excavation will be up to 11 feet deep at this site.

Arroyo Pasajero Channel Borrow Site (1 acre): This borrow site is located directly within the Arroyo Pasajero channel just east of State Route 269 (Lassen Avenue) and 1.5 miles north of the town of Huron. The borrow area measures 50 feet wide and 1000 feet long. The channel is annually cleared of deposited materials, much of which is used to build up side levees to control water when the stream is flowing. Because of the annual excavation of soils, no vegetation grows within the channel. Soils will be excavated to a depth of about three feet.

Southern San Joaquin Valley

[illegible] Center

9001 Stockdale [illegible]

Bakersfield, CA 93311-1099

MAY 1 2 2004

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II. STUDY FINDINGS

No cultural resources were identified within any of the proposed borrow areas. Should cultural resources be uncovered while conducting activities associated with the proposed project, all work should temporarily cease in the vicinity of the finds until they can be assessed by a qualified archaeologist and an appropriate course of action can be determined in consultation with the State Historic Preservation Officer.

III. INTRODUCTION

a. Name(s) of Surveyors	Qualifications	Date(s) of Fieldwork
Janis Offermann	MA in Anthropology, University of California, Davis; 29 years archaeological experience in California.	April 7, 2004
Robert Orlins	BS in Anthropology, California State University, San Francisco; PhD. Program, University of California, Davis; 42 years archaeological experience in California	

b. Present Environment

The project area is located on the southwestern portion of the Arroyo Pasajero alluvial fan which originates in the Diablo Coast Range along the west edge of the San Joaquin Valley. The Arroyo Pasajero, itself, is an ephemeral drainage. There are no permanent water courses in the near vicinity of the borrow areas (disregarding the SLC). The terrain is gently sloping down to the east and the borrow areas are located between 325 and 350 feet above mean sea level. The area is almost exclusively agricultural, supporting primarily row crops and some orchards. With the exception of the Arroyo Pasajero Channel Borrow Site, all of the borrow areas have been extensively farmed in the past. At present, the land within the borrow areas has been left fallow and a variety of introduced and native plant species have established themselves. (see Project Location and Description, above).

c. Ethnographic Setting

The project area lies within the territory historically occupied by the Tachi, one of the numerous Yokuts tribes that occupied the southern San Joaquin Valley (Wallace 1978). Two Tachi ethnographic villages have been recorded west of the town of Huron; no villages have been identified within the DWR project area.

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IV. SOURCES CONSULTED

a. Literature Research

- California Historical Resources Information System: A records search was conducted by the staff of the Southern San Joaquin Valley Information Center, California State University, Bakersfield on April 30, 2004 (see Attachment 1). The search encompassed a ¼-mile radius around the entire project area.
- National Register of Historic Places – Listed and Eligible Properties (1988, Computer Listings through January 2004 by National Park Service)
- California Register of Historical Resources (2003)
- California Inventory of Historic Resources (1976)
- California Points of Historical Interest (1992)
- California Historical Landmarks (1996)
- Historic Property Data File for Fresno County (2004).

b. Public Participation and Native American Consultation

The Native American Heritage Commission (NAHC) was contacted in November 10, 2003. Two members of the Native American community, identified by the NAHC, were contacted by letter to solicit input about the project. A letter was also sent to the Fresno City and County Historical Society regarding any concerns they may have pertaining to cultural resources within the project area. Please see Attachment 2 for all related correspondence.

c. Results of Sources Consulted

The records search at the Southern San Joaquin Valley Information Center indicated that eight cultural resource investigations have been conducted within the entire project area and two surveys have occurred within ¼ mile. Of these studies, two were located along State Route 269 (Lassen Avenue) adjacent to the Arroyo Pasajero Channel Borrow Site (California Department of Transportation 1995, 1998), and two were located adjacent to the WWTP and the Railroad Borrow Sites (CRM TECH 2002a, 2002b). No cultural resources have been recorded within the record search area.

The Native American Heritage Commission conducted a search of the Sacred Lands File and reported that no Native American cultural resources are known to exist within the project area. The NAHC provided a list of local Native American representatives who could be contacted regarding their possible knowledge of resources within the project area. To date, no responses have been received from the Native American representatives contacted. The letter to the Fresno City and County Historical Society was returned to DWR without a forwarding address.

V. FIELD METHODS

WWTP Borrow Site: One zig-zag pedestrian transect was walked the length of the borrow site. Ground surface visibility was very good to excellent.

Railroad Borrow Site: Extremely dense vegetation made this parcel impossible to survey. However a road had been bladed through the center of the parcel and the exposed surface was examined.

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Gale Avenue Borrow Site: Four zig-zag pedestrian transects were walked across this parcel in roughly a north-south direction. Ground surface visibility was excellent.

Arroyo Pasajero Channel Borrow Site: The borrow site was visited, but survey wasn't conducted due to it's location in a regularly active, but seasonal, stream bed and because the arroyo is annually excavated.

VI. REMARKS

All of the borrow sites have been subject to significant past disturbance, either tilling and cropping for agricultural purposes (WWTP, Railroad Borrow, Gale Avenue) or annual clearing and excavation (Arroyo Pasajero). The entire detention basin has been subjected to flooding which has, in some cases, resulted in up to 13 feet of silt deposition.

VII. CERTIFICATION

PREPARER: Janis Offermann **Title**: Senior Environmental Planner – Cultural Resources

Signature: Janis Offermann **Date**: May 12, 2004

VIII. MAPS

U.S.G.S. QUADRANGLE NAME(S) AND DATE(S):
Huron 7.5-minute Quadrangle, 1956, photrevised 1971.

LIST OF ATTACHED MAPS:
MAP 1: PROJECT VICINITY
MAP 2: BORROW SITE VICINITY MAP
MAP 3: ARROYO PASAJERO BORROW SITES
MAP 4: ARROYO PASAJERO BORROW SITES

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1998 *Negative Archaeological Survey Report, 06-FRE-269, PM 0.0/12.75.* Report number FRE 00253 on file at the Southern San Joaquin Valley Information Center of the California Historical Resources Information System, California State University, Bakersfield.

FR-02027

California, State of
1976 *California Inventory of Historic Resources.* Department of Parks and Recreation, Sacramento.

1992 *California Points of Historical Interest.* Department of Parks and Recreation Sacramento.

1996 *California Historical Landmarks.* Department of Parks and Recreation, Sacramento.

2001 *California Register of Historical Resources.* Department of Parks and Recreation, Sacramento.

CRM TECH
2002a Historic Property Survey Report: Cross Valley Rail Corridor Project between the Cities of Visalia and Huron, Tulare, Kings, and Fresno Counties, California. Report number FRE 1794 on file at the Southern San Joaquin Valley Information Center of the California Historical Resources Information System, California State University, Bakersfield.

2002b Archaeological Survey Report: Cross Valley Rail Corridor Project between the Cities of Visalia and Huron, Tulare, Kings, and Fresno Counties, California. Report number FRE 1795 on file at the Southern San Joaquin Valley Information Center of the California Historical Resources Information System, California State University, Bakersfield.

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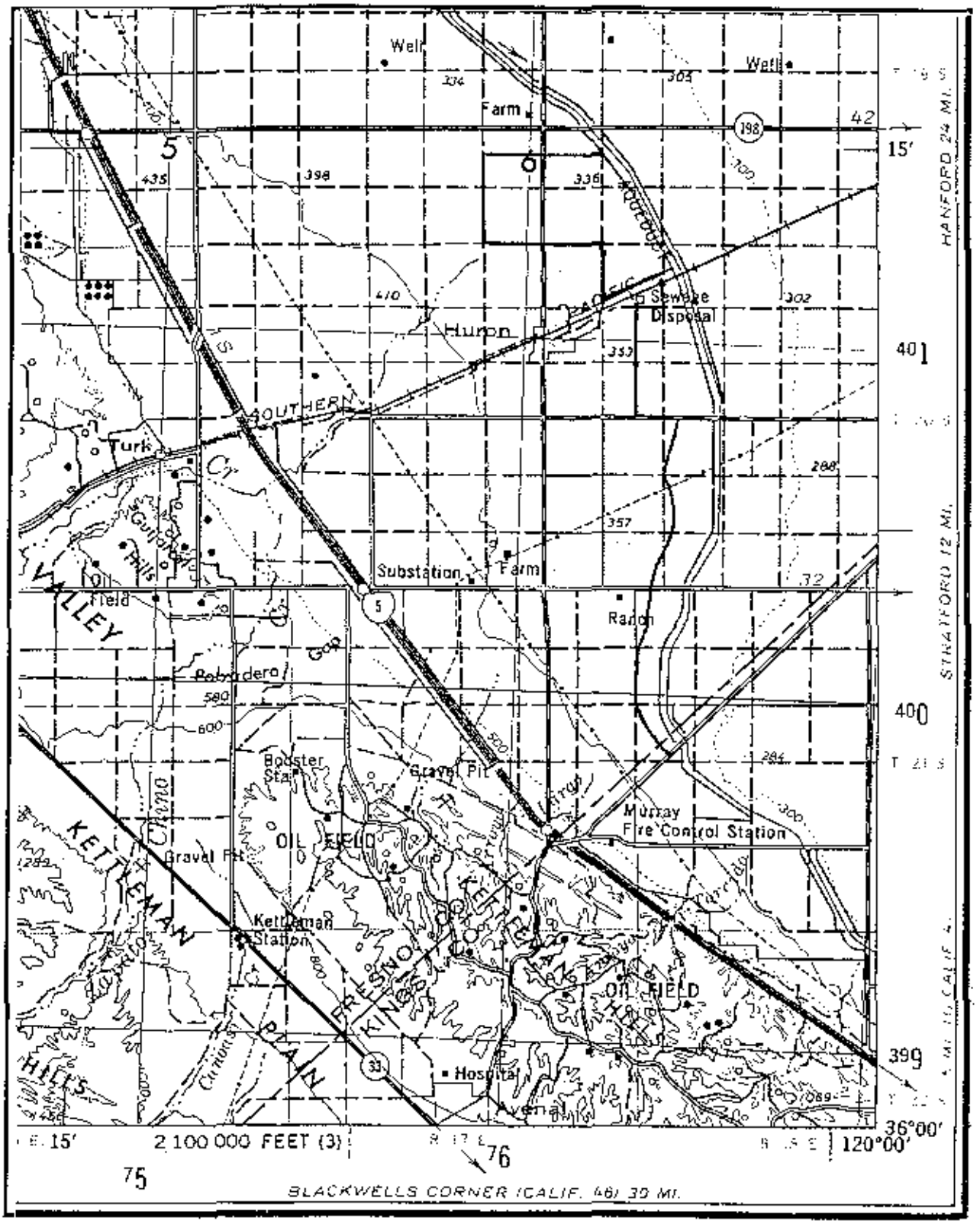
Wallace, W. J.
1978 Southern Valley Yokuts. In *California*, edited by R. F. Heizer, pp. 448-461. Handbook of North American Indians, vol. 8, W.C. Sturtevant, general editor. Smithsonian Institution, Washington, D. C.

MAP 1



PROJECT VICINITY

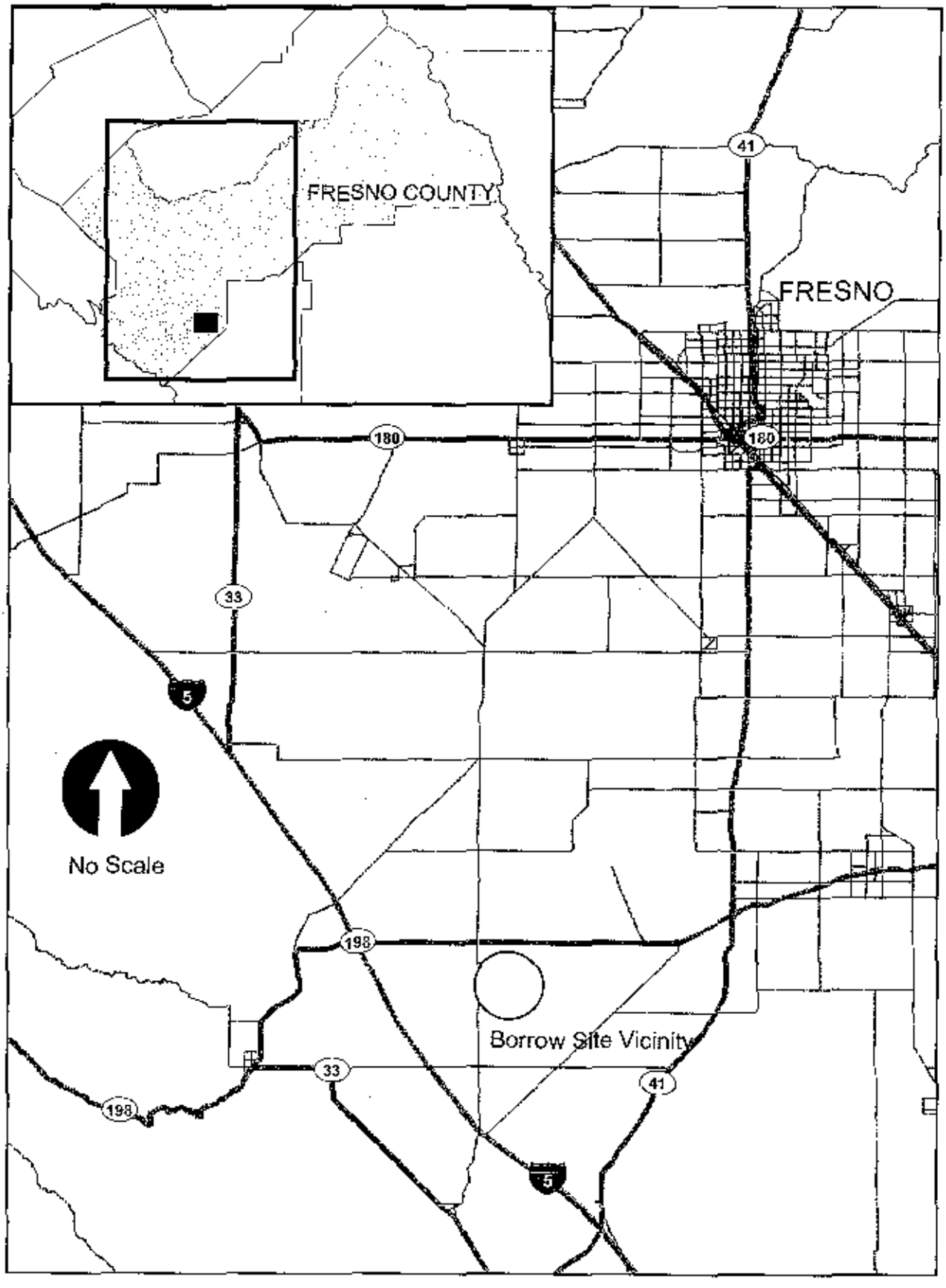
SAN LUIS CANAL/ARROYO PASAJERO FLOOD CONTROL IMPROVEMENT PROJECT

Fresno County

USGS Monterey 1:250,000

FR- 02027

MAP 2: Borrow Site Vicinity Map



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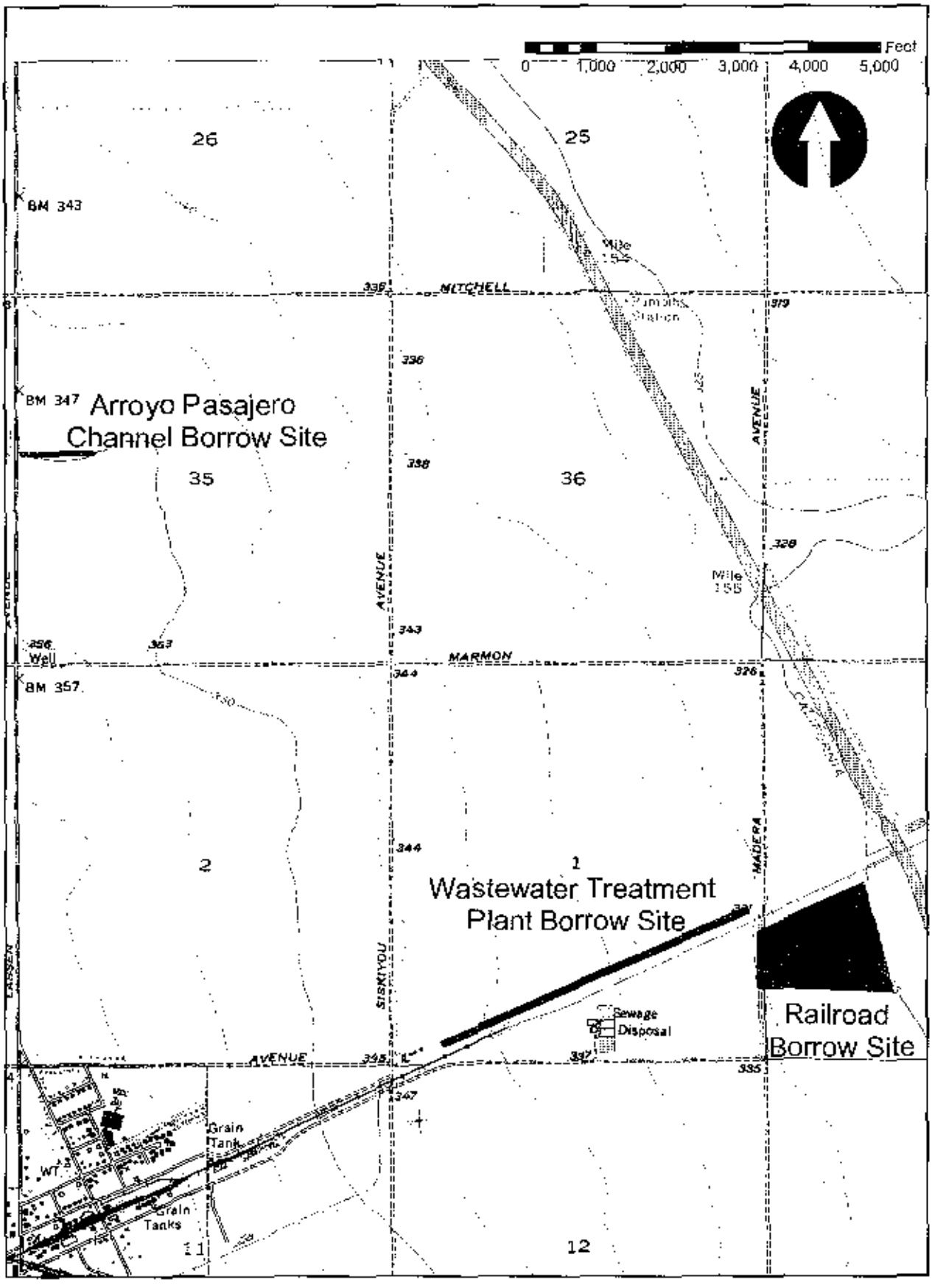
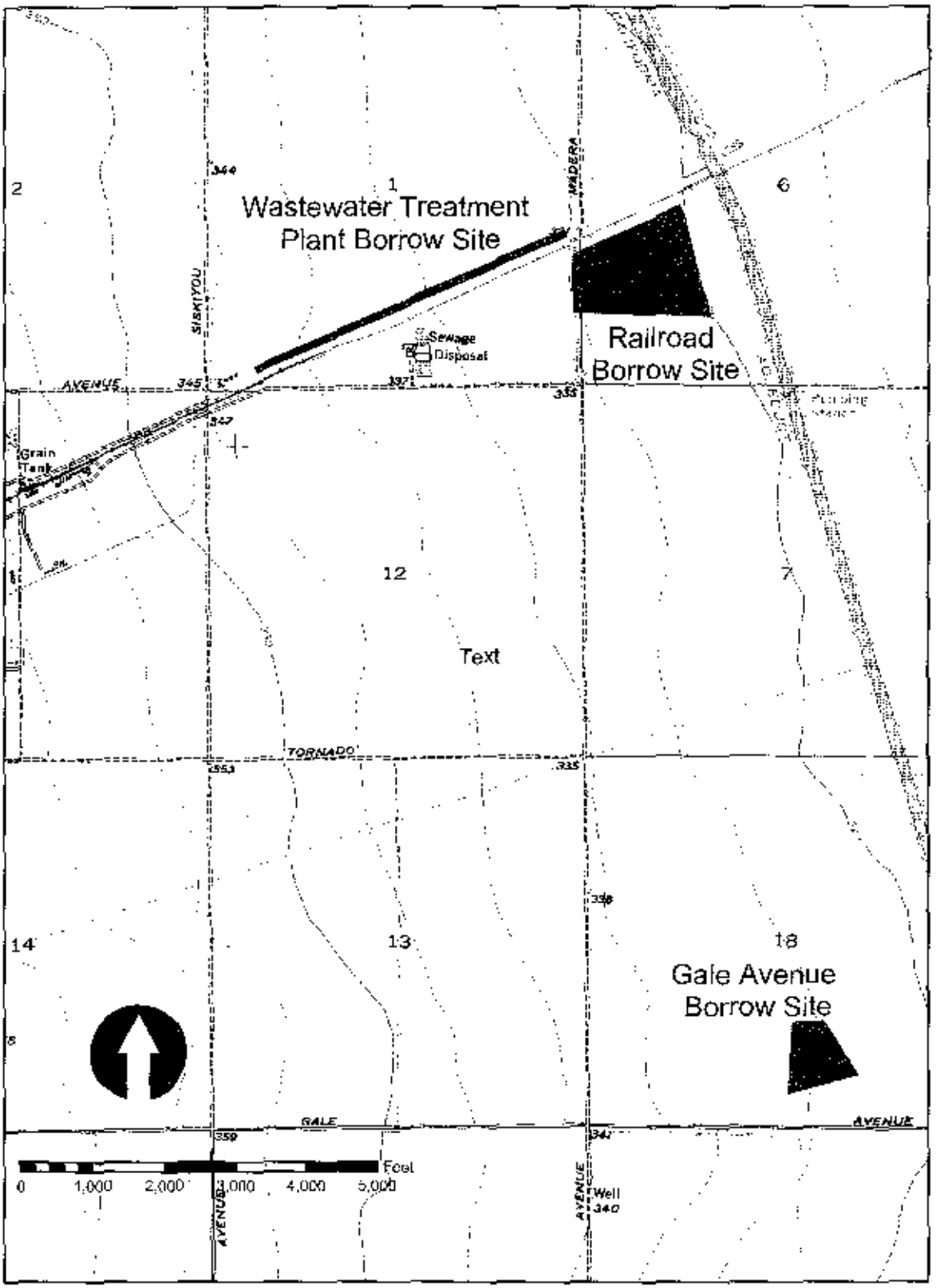
MAP 3: Arroyo Pasajero Borrow Sites



Huron USGS 7.5' topographic quadrangle 1956 (photorevised 1971)

FK-020274

MAP 4: Arroyo Pasajero Borrow Sites



Huron USGS 7.5' topographic quadrangle 1956 (photorevised 1971)

FR- 02027

STATE OF CALIFORNIA – THE RESOURCES AGENCY ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF WATER RESOURCES
DIVISION OF ENVIRONMENTAL SERVICES
ENVIRONMENTAL COMPLIANCE AND EVALUATION BRANCH
1725 23RD STREET
SACRAMENTO, CA 95816

March 18, 2004

Ms. Adele Baldwin, Coordinator
Southern San Joaquin Valley Information Center
California State University, Bakersfield
9001 Stockdale Highway
Bakersfield, CA 93311

Dear Ms. Baldwin:

The California Department of Water Resources (DWR) and the United States Bureau of Reclamation (BOR) are proposing to improve the capacity of the existing Westside Detention Basin (WSDB) which is located immediately adjacent to and west of the San Luis Canal (SLC) near the town of Huron, Fresno County. The current WSBD covers approximately 3177 acres and extends for about five miles along the canal, from the training dike located ½ mile south of Arroyo Pasajero south to Gale Avenue. DWR and BOR are proposing to increase the capacity of the flood basin by purchasing a flood easement on an additional 2400 acres directly south of the existing WSDB and adjacent to the SLC between Gale Avenue and Avenal Cut-off Road (Kings County). The entire project area is depicted on the Huron and La Cima 7.5' USGS topographic quadrangles (see attached maps).

Please conduct a search of your records and inform us of any known cultural resources or cultural resource surveys performed within a 0.25-mile radius of the project location. If cultural resources are identified, please provide copies of the site records. For surveys within the designated area, please provide copies of the report title pages. Your results can be sent to me at the address shown below. This record search is requested under Standard Agreement #4600003354 between DWR and California State University, Bakersfield.

Thank you for giving this matter your prompt attention.

Sincerely,

Original signed by

Janis Offermann
Senior Environmental Planner
Department of Water Resources
Division of Environmental Services
1725 23rd Street, Suite 220
Sacramento, California 95816

Enclosures

FR- 02027

CALIFORNIA HISTORICAL RESOURCES INFORMATION SYSTEM

FRESNO
KERN
KINGS
MADERA
TULARE

Southern San Joaquin Valley Information Center
California State University, Bakersfield
9001 Stockdale Highway
Bakersfield, California 93311-1099
661/664-2289 FAX 661/664-2415
Email: abaldwin@csub.edu

TO: Janis Offermann, Sr. Environmental Planner **(RS# 04-101)**
California Department of Water Resources
Environmental Services Office
1725 23rd Street, Suite 220
Sacramento, CA 95816

DATE: April 30, 2004

RE: San Luis Canal/Arroyo Pasajero Flood Control Improvement Project

County: Fresno and Kings

Map(s): Huron, & La Cima 7.5's

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 on the Historic Property Data File, (4/16/04), 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 PROJECT AREA AND A ¼ MILE RADIUS

According to the information in our files, there have been (8) eight cultural resource studies conducted within the project area. There have been (2) two cultural resource studies conducted within a ¼ mile radius, FR-229 (KI-62) and FR-433. See the enclosed maps for survey locations.

KNOWN CULTURAL RESOURCES WITHIN PROJECT AREA AND A ¼ MILE RADIUS

There are no recorded cultural resources within the project area or within a ¼ mile radius.

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(RS # 04-101)

There are no cultural resources within the project area or a ¼ mile radius that are listed in the National Register of Historic Places, The California Register, California Inventory of Historic Resources, California State Historic Landmarks, or the California Points of Historical Interest.

COMMENTS

Enclosed are copies of all the title pages of all survey reports referenced above. If you have any questions or need additional information, please don't hesitate to contact me at (661) 664-2289.

By

Adele Baldwin
Assistant Coordinator

Date: April 30, 2004

Fee: $120.00/hr.

Invoice # A2563

Standard Agreement # 4600003354

FR-02027

STATE OF CALIFORNIA – THE RESOURCES AGENCY
ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF WATER RESOURCES
DIVISION OF ENVIRONMENTAL SERVICES
3251 S STREET
SACRAMENTO, CA 95816-7017

November 18, 2003

Ms. Debbie Pilas-Treadway
Native American Heritage Commission
915 Capitol Mall, Room 364
Sacramento, CA 95814

Dear Ms. Pilas-Treadway:

The California Department of Water Resources (DWR) and the United States Bureau of Reclamation (BOR) are proposing to improve the capacity of the existing Westside Detention Basin (WSDB) which is located immediately adjacent to and west of the San Luis Canal (SLC) near the town of Huron in Fresno County. The current WSBD covers approximately 3177 acres and extends for about five miles along the canal, from the training dike located ½ mile south of Arroyo Pasajero south to Gale Avenue.

The SLC was constructed in 1967. The WSDB, which covers approximately 3177 acres, was also constructed at that time to prevent overflooding of the canal from water run-off down the Arroyo Pasajero and its alluvial fan. Extreme flood events in 1968 and 1965 severely diminished the holding capacity of the WSBD and contributed to accelerated obsolescence of the basin. Consequently, the original 50-year design storage capacity of the WSDB has been reduced to a capacity that is insufficient to handle a 10-year flood event.

In order to restore the capacity of the WSBD, DWR and BOR are proposing to increase the height of the embankments by up to six feet, using sediment from the basin. Furthermore, a flood easement will be purchased on an additional 2400 acres between Gale Avenue and Avenal Cutoff Road directly south of the existing WSDB and adjacent to the SLC.

The WSDB and its proposed southern extension are found on the Huron and La Cima USGS 7.5' quadrangles. Additional locational information includes the following:

T19S, R17E: Sections 25, 26, 27, 34, 35, and 36;
T19S, R18E: Section 31;
T20S, R17E: Sections 1 and 2;
T20S, R18E: Sections 6, 7, 18, 19, 30, and 31;
T21S, R18E: Sections 6, 7, and 18.

Please notify me if any sacred lands are recorded within the project area. Early identification of these properties will insure their consideration during the project.

FR- 02027

planning phase. Please also provide an updated list of Native American contacts for the area. Your response may be sent to me at the address provided below, or you may fax the information to (916) 445-6507. If we do not receive a response to this inquiry within 30 days, we will assume that you are not aware of any sacred lands within the project area.

Thank you for giving this matter your prompt attention.

Sincerely,

Original signed by

Janis Offermann
Senior Environmental Planner
Department of Water Resources
Division of Environmental Services
1725 23rd Street, Suite 220
Sacramento, CA 95816
(916) 445-6478
janiso@water.ca.gov

enclosures

CC: Karen Dulik, San Joaquin District

FR- 02027

STATE OF CALIFORNIA Arnold Schwarzenegger, Governor

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-4082
Fax (916) 657-5390
Web Site www.nahc.ca.gov

December 9, 2003

Janice Offerman
Department of Water Resources
1725 23rd Street, Suite 220
Sacramento, CA 95816

Sent By Fax: 916-445-6507

Number of Pages: 2

RE: Proposed improvement of the capacity of the existing Westside Detention Basin, near the town of Huron, Fresno County

Dear Ms. Offerman:

A record search of the sacred lands file has 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 indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Enclosed is a list of Native Americans individuals/organizations who may have knowledge of cultural resources in the project area. The Commission makes no recommendation or preference of a single individual, or group over another. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated, if they cannot supply information, they might recommend others with specific knowledge. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at (916) 653-4040.

Sincerely,

Rob Wood
Environmental Specialist III

NATIVE AMERICAN CONTACTS
Fresno County
December 8, 2003

Santa Rosa Rancheria
Clarence Atwell, Chairperson
P.O. Box 8
Lemoore , CA 93245
(559) 924-1278
(559) 924-3583 Fax

Tache
Tachi
Yokut

Table Mountain Rancheria
Lee Ann Walker Grant, Chairperson
P.O. Box 410
Friant , CA 93626-0
(559) 822-2587
(559) 822-2693 FAX

Yokut

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 regards to cultural resources assessment for the proposed improvement of the capacity of the existing Westside Detention Basin, near the town of Huron, Fresno County.

02027

STATE OF CALIFORNIA – THE RESOURCES AGENCY ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF WATER RESOURCES
DIVISION OF ENVIRONMENTAL SERVICES
3251 S STREET
SACRAMENTO, CA 95816-7017

December 10, 2003

Mr. Clarence Atwell, Chairperson
Santa Rosa Rancheria
P.O. Box 8
Lemoore, CA 93245

Dear Chairperson Atwell:

The California Department of Water Resources (DWR) and the United States Bureau of Reclamation (BOR) are proposing to improve the capacity of the existing Westside Detention Basin (WSDB) which is located immediately adjacent to and west of the San Luis Canal (SLC) near the town of Huron in Fresno County. The current WSBD covers approximately 3177 acres and extends for about five miles along the canal, from the training dike located ½ mile south of Arroyo Pasajero south to Gale Avenue.

The SLC was constructed in 1967. The WSDB, which covers approximately 3177 acres, was also constructed at that time to prevent overflooding of the canal from water run-off down the Arroyo Pasajero and its alluvial fan. Extreme flood events in 1968 and 1985 severely diminished the holding capacity of the WSBD and contributed to accelerated obsolescence of the basin. Consequently, the original 50-year design storage capacity of the WSDB has been reduced to a capacity that is insufficient to handle a 10-year flood event.

In order to restore the capacity of the WSBD, DWR and BOR are proposing to increase the height of the embankments by up to six feet, using sediment from the basin. Furthermore, a flood easement will be purchased on an additional 2400 acres directly south of the existing WSDB and adjacent to the SLC between Gale Avenue and Avenal Cut-off Road. Avenal Cut-off Road is located in Kings County, immediately south of the Fresno/Kings County line.

The WSDB and its proposed southern extension are found on the Huron and La Cima USGS 7.5' quadrangles. Additional locational information includes the following:

T19S, R17E: Sections 25, 26, 27, 34, 35, and 36;
T19S, R18E: Section 31;
T20S, R17E: Sections 1 and 2;
T20S, R18E: Sections 6, 7, 18, 19, 30, and 31;
T21S, R18E: Sections 6, 7, and 18.

02027

The Native American Heritage Commission indicated that members of the Santa

Rosa Rancheria might have knowledge about cultural resources within the proposed project vicinity. The early identification of heritage sites (including plant collection locations) within the immediate project areas will insure their consideration during the project planning phase. If any heritage sites are located at or near any of the locations identified on the attached maps, please notify us by sending a response to me at the address provided below, or by calling or e-mailing me directly. If we do not receive a response to this inquiry within 60 days, we will assume that you are not aware of any sacred lands within the project area. If you plan to respond, but it will take longer than 60 days, please let me know.

Thank you for giving this matter your prompt attention.

Sincerely,

Original signed by

Janis Offermann
Senior Environmental Planner
Department of Water Resources
Division of Environmental Services
1725 23rd Street, Suite 220
Sacramento, CA 95816
(916) 445-6478
janiso@water.ca.gov

enclosures

CC: Karen Dulik, San Joaquin District

STATE OF CALIFORNIA – THE RESOURCES AGENCY ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF WATER RESOURCES
DIVISION OF ENVIRONMENTAL SERVICES
3251 S STREET
SACRAMENTO, CA 95816-7017

December 10, 2003

Ms. Lee Ann Walker Grant, Chairperson
Table Mountain Rancheria
P.O. Box 410
Friant, CA 93626

Dear Chairperson Grant:

The California Department of Water Resources (DWR) and the United States Bureau of Reclamation (BOR) are proposing to improve the capacity of the existing Westside Detention Basin (WSDB) which is located immediately adjacent to and west of the San Luis Canal (SLC) near the town of Huron in Fresno County. The current WSBD covers approximately 3177 acres and extends for about five miles along the canal, from the training dike located ½ mile south of Arroyo Pasajero south to Gale Avenue.

The SLC was constructed in 1967. The WSDB, which covers approximately 3177 acres, was also constructed at that time to prevent overflooding of the canal from water run-off down the Arroyo Pasajero and its alluvial fan. Extreme flood events in 1968 and 1985 severely diminished the holding capacity of the WSBD and contributed to accelerated obsolescence of the basin. Consequently, the original 50-year design storage capacity of the WSDB has been reduced to a capacity that is insufficient to handle a 10-year flood event.

In order to restore the capacity of the WSBD, DWR and BOR are proposing to increase the height of the embankments by up to six feet, using sediment from the basin. Furthermore, a flood easement will be purchased on an additional 2400 acres directly south of the existing WSDB and adjacent to the SLC between Gale Avenue and Avenal Cut-off Road. Avenal Cut-off Road is located in Kings County, immediately south of the Fresno/Kings County line.

The WSDB and its proposed southern extension are found on the Huron and La Cima USGS 7.5' quadrangles. Additional locational information includes the following:

T19S, R17E: Sections 25, 26, 27, 34, 35, and 36;
T19S, R18E: Section 31;
T20S, R17E: Sections 1 and 2;
T20S, R18E: Sections 6, 7, 18, 19, 30, and 31;
T21S, R18E: Sections 6, 7, and 18.

The Native American Heritage Commission indicated that members of the Table

Mountain Rancheria might have knowledge about cultural resources within the proposed project vicinity. The early identification of heritage sites (including plant collection locations) within the immediate project areas will insure their consideration during the project planning phase. If any heritage sites are located at or near any of the locations identified on the attached maps, please notify us by sending a response to me at the address provided below, or by calling or e-mailing me directly. If we do not receive a response to this inquiry within 60 days, we will assume that you are not aware of any sacred lands within the project area. If you plan to respond, but it will take longer than 60 days, please let me know.

Thank you for giving this matter your prompt attention.

Sincerely,

Original signed by

Janis Offermann
Senior Environmental Planner
Department of Water Resources
Division of Environmental Services
1725 23rd Street, Suite 220
Sacramento, CA 95816
(916) 445-6478
janiso@water.ca.gov

enclosures

CC: Karen Dutlik, San Joaquin District

STATE OF CALIFORNIA – THE RESOURCES AGENCY ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF WATER RESOURCES
DIVISION OF ENVIRONMENTAL SERVICES
3251 S STREET
SACRAMENTO, CA 95816-7017

November 18, 2003

Fresno City and County Historical Society
PO Box 2029
Fresno, CA 93718

Dear Society members:

The California Department of Water Resources (DWR) and the United States Bureau of Reclamation (BOR) are proposing to improve the capacity of the existing Westside Detention Basin (WSDB) which is located immediately adjacent to and west of the San Luis Canal (SLC) near the town of Huron. The current WSBD covers approximately 3177 acres and extends for about five miles along the canal, from the training dike located ¼ mile south of Arroyo Pasajero south to Gale Avenue.

The SLC was constructed in 1967. The WSDB, which covers approximately 3177 acres, was also constructed at that time to prevent overflooding of the canal from water run-off down the Arroyo Pasajero and its alluvial fan. Extreme flood events in 1968 and 1969 severely diminished the holding capacity of the WSBD and contributed to accelerated obsolescence of the basin. Consequently, the original 50-year design storage capacity of the WSDB has been reduced to a capacity that is insufficient to handle a 10-year flood event.

In order to restore the capacity of the WSBD, DWR and BOR are proposing to increase the height of the embankments by up to six feet, using sediment from the basin. Furthermore, a flood easement will be purchased on an additional 2400 acres between Gale Avenue and Avenal Cutoff Road directly south of the existing WSDB and adjacent to the SLC.

Please review your files and let us know if there are any historical structures or sites within the project areas. Early identification of these properties will insure their consideration during the project planning phase. Your response may be sent to me at the address provided below or you may contact me by email, phone or fax at (916) 445-6507. If we do not receive a response to this inquiry within 30 days, we will assume that you know of no historical properties within the project area.

Thank you for giving this matter your prompt attention.

Sincerely,

Original signed by

Janis Offermann
Senior Environmental Planner
Department of Water Resources
Division of Environmental Services
1725 23rd Street, Suite 220
Sacramento, CA 95816
(916) 445-6478
janiso@water.ca.gov

enclosures

CC: Karen Dulik, San Joaquin District

020274

United States Department of the Interior

BUREAU OF RECLAMATION
Mid-Pacific Regional Office
2800 Cottage Way
Sacramento, California 95825-1898

MAY 2 0 2004

IN REPLY
REFER TO:
MP-153
ENV-3.00

MAY 2 4 2004

Dr. Stephen Mikesell
State Historic Preservation Officer
California Department of Parks and Recreation
P.O. Box 942896
Sacramento, California 94296-0001

Subject: San Luis Canal/Arroyo Pasajero Flood Control Improvement Project, Central Valley Project/State Water Project, Fresno and Kings Counties, California Consultation under Section 106 of the National Historic Preservation Act

Dear Dr. Mikesell:

The San Luis Canal (SLC) was constructed in 1967 as a joint-use facility of the California State Water Project and the Central Valley Project. It is that portion of the California Aqueduct owned by the Bureau of Reclamation and operated by the California Department of Water Resources (DWR). The SLC traverses the distal end of the Arroyo Pasajero alluvial fan on the west side of the San Joaquin Valley. The canal effectively forms a dam which impedes the natural flow of floodwater from the Arroyo Pasajero which is fed by Los Gatos, Warthan, Jacalitos, and Zapato Chino Creeks originating in the Diablo Coast Range. In order to alleviate potential overtopping of the SLC during flood events, Reclamation and DWR constructed the Westside Detention Basin (WSDB) to capture floodwater. The original flood control capacity of the WSDB was approximately 16,500 acre-feet in 1968. Following construction, flood events have deposited more than 10 feet of silt across the basin, reducing the capacity of the WSDB to less than 6,000 acre-feet. Hydraulic models show that the present storage capacity of the WSDB is insufficient to safely handle a 10-year flood event. Without structural improvements to the WSDB, the SLC and surrounding areas will be subject to damage and flooding.

Reclamation and DWR propose the Arroyo Pasajero Flood Control Improvement Project to increase the capacity of the WSDB to accommodate a 100-year flood event by raising the height of existing embankments up to 6 feet using sediments from within the WSDB. At present, the WSDB covers approximately 3,177 acres. An additional 2,400 acres, located directly to the south, would be purchased for flood easements as the result of the proposed project. Other proposed actions include the installation of flow control gates and improvements to existing aqueduct drain inlets, and armoring the San Joaquin Valley Railroad embankment. The proposed project constitutes an undertaking subject to Section 106 of the National Historic Preservation Act and implementing regulations at 36 CFR 80

FR 02052

To provide your office with background information, we have enclosed portions of the *San Luis Canal/Arroyo Pasajero Flood Control Improvement Project Draft Initial Study/Environmental Assessment and Draft Mitigated Negative Declaration* (2003), including the sections describing the proposed project and detailing previous cultural resources investigations. We believe the Area of Potential Effect (APE) for the proposed undertaking includes the footprint of the existing WSDB (3,177 acres) and the proposed easement expansion to the south (2,400 acres) for a total of 5,577 acres. The WSDB and the proposed southern easement are depicted on the enclosed maps and are located on the Huron and La Cima 7.5' USGS quadrangles in Township 19, 20, and 21 South, Range 17 and 18 East in Fresno and Kings Counties. Project activities will largely involve modifications to the existing facilities, and the primary ground disturbing action will be the excavation of fill material, consisting of flood-deposited sediments from within the WSDB, for the purpose of increasing the height of the embankments.

Four borrow sites have been identified within the WSDB to provide the fill material for increasing the height of the embankments. Although the delineated borrow areas encompass a larger area, the maximum area of disturbance by these borrow sites will be approximately 26 acres, and the maximum depth of excavation will be 11 feet. All of the borrow sites have been subject to significant past disturbance, consisting of agricultural tilling and annual clearing and excavation of drainage channels. The entire WSDB has been subjected to flooding which has, in some cases, resulted in up to 13 feet of silt deposition. Due to the amount of recent silt deposition across the WSDB, it is highly unlikely that cultural resources could be identified on the ground surface of the basin. Additionally, ground disturbance will be primarily confined to the borrow sites, and the fill removed from these sites will consist of recently deposited flood sediments. For this reason, we believe the project has only minimal potential to affect historic properties and field inventory efforts focused on the four borrow site locations.

Enclosed please find a *Historic Property Survey Report Negative Findings, San Luis Canal/Arroyo Pasajero Flood Control Improvement Project* (Offermann 2003) and a *Negative Archaeological Survey Report, Arroyo Pasajero Flood Control Improvement Project* (Offermann 2004) prepared by DWR as part of the cultural resources studies for the proposed project. The former details two previous investigations in portions of the WSDB, both of which failed to identify any cultural resources. The latter documents a recent records search conducted through the California Historical Resources Information System which encompassed the entire APE plus a ¼-mile radius around the project boundaries, as well as the results of an archaeological reconnaissance of the four borrow areas. The records search indicates that while a total of eight cultural resource studies have been conducted within the APE, no cultural resources have been recorded within the APE or within a ¼-mile radius. Additionally, no cultural resources were identified during the inventory of the borrow sites. The locations of the four borrow areas are shown in the *Negative Archaeological Survey Report*.

At this time, we would appreciate your comments on our efforts to delineate the APE and identify historic properties under 36 CFR 800.4(a) and (b). We also request your concurrence on a "no historic properties affected" determination for the proposed undertaking pursuant to 36 CFR 800.4(d)(1). Please contact Ms. Anastasia Leigh at 916-978-5568 (aleigh@mp.usbr.gov) if you have any questions about the proposed project or require additional information.

Sincerely,

G. James West
Regional Archeologist

Enclosures - 5

References:

California Department of Water Resources and United States Bureau of Reclamation
2003 *San Luis Canal/Arroyo Pasajero Flood Control Improvement Project Draft Initial Study/Environmental Assessment and Draft Mitigated Negative Declaration.* Department of Water Resources, Sacramento, and Bureau of Reclamation, South-Central California Area Office, Fresno.

Offermann, J.
2003 *Historic Property Survey Report - Negative Findings, San Luis Canal/Arroyo Pasajero Flood Control Improvement Project.* State of California, Department of Water Resources, Sacramento.

2004 *Negative Archaeological Survey Report.* State of California, Department of Water Resources, Sacramento.

cc: Ms. Janis Offermann
Senior Environmental Planner
California Department of Water Resources
Environmental Compliance and Evaluation Branch
1725 23rd Street
Sacramento, California 95816
(w/o encl)

FR 02052 -

STATE OF CALIFORNIA – THE RESOURCES AGENCY ARNOLD SCHWARZENEGGER, *Governor*

OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
P.O. BOX 942896
SACRAMENTO, CA 94296-0001
(916) 653-6624 Fax: (916) 653-9824
calshpo@ohp.parks.ca.gov
www.ohp.parks.ca.gov

15 June 2004

In Reply Refer To
BUR040524A

G. James West
Regional Archeologist
Mid-Pacific Regional Office
Bureau of Reclamation
United States Department of the Interior
2800 Cottage Way
Sacramento, California 95825-1898

RE: MP-153, ENV-3.00 [SECTION 106 CONSULTATION ON THE **ARROYO PASAJERO FLOOD CONTROL IMPROVEMENT PROJECT**, FRESNO AND KING COUNTIES, CALIFORNIA]

Dear Dr. West,

This letter is a response to the Bureau of Reclamation's (Reclamation) submission of documentation to evidence the agency's compliance with 36 CFR Part 800, the regulations that implement Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. 470f), as amended, as part of the agency's planning process for the subject undertaking. I comment on the documentation here in accordance with the Part 800 regulations.

Reclamation's letter of 20 May 2004 asks that I

1) comment on the agency's determination of the undertaking's area of potential effects (APE) and on its effort to identify historic properties pursuant, respectively, to 36 CFR §§ 800.4(a) and (b), and
2) concur with the agency's finding, pursuant to 36 CFR § 800.4(d)(1), that the implementation of the undertaking, as presently proposed, will affect no historic properties.

On the basis of the documentation that Reclamation provides, I concur, pursuant to 36 CFR §§ 800.4(a) and (b), that the agency's determination of the undertaking's APE is appropriate, and its effort to identify historic properties is adequate.

I further concur, pursuant to 36 CFR § 800.4(d)(1), that the implementation of the undertaking, as presently proposed, will affect no historic properties

Please direct any questions or concerns that you may have to Project Review Unit archaeologist Mike McGuirt at 916.653.8920 or at mmcguirt@ohp.parks.ca.gov.

Sincerely,

Stephen D. Mikesell
Acting State Historic Preservation Officer

SDM:mdm

FR 02052 -

Department of Water Resources
HISTORIC PROPERTY SURVEY REPORT - NEGATIVE FINDINGS

1. PROJECT DESCRIPTION AND LOCATION

COUNTY	COST OBJECT NUMBER	PROJECT NAME
Fresno	M.7197.3000.930	San Luis Canal/Arroyo Pasajero Flood Control Improvement Project

The California Department of Water Resources (DWR) and the Bureau of Reclamation (BOR) constructed the San Luis Canal (SLC) in 1967. The canal traverses the distal end of the Arroyo Pasajero alluvial fan on the west side of the San Joaquin Valley in Fresno County. The SLC effectively forms a dam that impedes the natural flow of floodwater. In order to alleviate potential overtopping of the SLC during flood events, several flood control features were constructed, including a training dike to route flood flows, the Arroyo Pasajero Westside Detention Basin (WSDB) to capture and impound floodwater, 12 inlet gates located at the south end of the WSDB adjacent to Gale Avenue, and an eastside evacuation culvert. The original flood control design capacity of the WSDB was approximately 16,500 acre feet covering approximately 3177 acres (see attached maps). Following construction, flood events deposited a silt layer more than 10 feet in the basin, reducing the capacity of the WSDB to 6000 acre feet by 1995. Flood events subsequent to 1995 have further reduced that capacity.

The current project proposes improvements to increase the capacity of the WSDB to accommodate a 100-year flood event. At present, the WSDB covers approximately 3177 acres. An additional 2400 acres, located directly to the south, will be purchased for flood easements as the result of the proposed project (see attached maps). Other proposed improvements consist of raising the height of existing embankments up to six feet, using sediments from within the WSDB; installing flow control gates and making improvements to existing aqueduct drain inlets; and armoring the San Joaquin Valley Railroad embankment.

Four borrow sites have been identified within the WSDB to provide the fill material for increasing the height of the embankments (see attached map). Although the delineated borrow areas encompass 49 acres, the maximum area of disturbance by these borrow sites will be 26 acres; the maximum depth of excavation will be 10 feet. The borrow areas include the Huron Wastewater Treatment Plant (WWTP) Borrow Site (23 acres), the Railroad Borrow Site (10 acres), the Gale Avenue Borrow Site (15 acres) and the Arroyo Pasajero Channel Borrow Site (1 acre).

2. AREA OF POTENTIAL EFFECTS (APE)

Description: The APE includes the entire foot print of the existing WSBD (3177 acres) and the proposed easement expansion to the south (2400 acres), for a total of 5577 acres. The Training Dike, located ½ mile south of State Highway 198 and built in conjunction with the original project, marks the northern limits of the WSBD while the southern end of the new extension is at Avenal Cut-off Road in Kings County just below the Fresno/Kings County line. The eastern boundary measures approximately 11 miles in length and is delineated by the SLC. The western boundary of the WSBD varies considerably, ranging from 1 mile west of State Route 269 (and 2 ½ miles west of the SLC) in the north to 1 ½ miles west of the SLC at Gale Avenue. The western boundary of the flood easement area between Gale Avenue and Avenal Cut-off Road follows the 327 -foot contour (see attached map).

The WSDB and its proposed southern extension are found on the Huron and La Cima USGS 7.5' quadrangles. Additional locational information includes the following:

T19S, R17E: Sections 25, 26, 27, 34, 35, and 36;
T19S, R18E: Section 31;
T20S, R17E: Sections 1 and 2;
T20S, R18E: Sections 6, 7, 18, 19, 30, and 31;
T21S, R18E: Sections 6, 7, and 18.

3. SOURCES CONSULTED

National Register of Historic Places	April 2003
California Register of Historic Resources	2002
California Historical Landmarks	1996
California Points of Historical Interest	1992
Local Historical Societies: Fresno City & County Historical Society	November 2003
Native American Consultation: Native American Heritage Commission, Santa Rosa Rancheria, Table Mountain Rancheria	November/December 2003
Other: Southern San Joaquin Valley Information Center of the California Historical Resources Information System, California State University, Bakersfield	1986

4. RESUME OF SURVEY

Negative Archaeological Survey Report (Attachments 1 & 2)	(X)	Yes	( )	No	( )	N/A
Bridge Evaluation Sheet	( )	Yes	( )	No	(X)	N/A
Historic Architectural Evaluation	( )	Yes	( )	No	(X)	N/A
Historic Research Evaluation Report	( )	Yes	( )	No	(X)	N/A
Native American Input (see Attachment 3) — Native American Heritage Commission, Santa Rosa Rancheria, Table Mountain Rancheria	(X)	Yes	( )	No	( )	N/A
Other (Specify) (see Attachment 3) — Fresno City and County Historical Society	(X)	Yes	( )	No	( )	N/A

5. DETERMINATION

(X) A. No cultural resources are present within or adjacent to the project's APE.

( ) B. Cultural resources within or adjacent to the project's APE do not possess any historical, architectural, archaeological or cultural value.

Cultural studies are complete and satisfactory. The requirements of 36 CFR 800 have been completed.

Janis Offermann, Senior Environmental Planner

Dec 11, 2003
Date

FR 02052

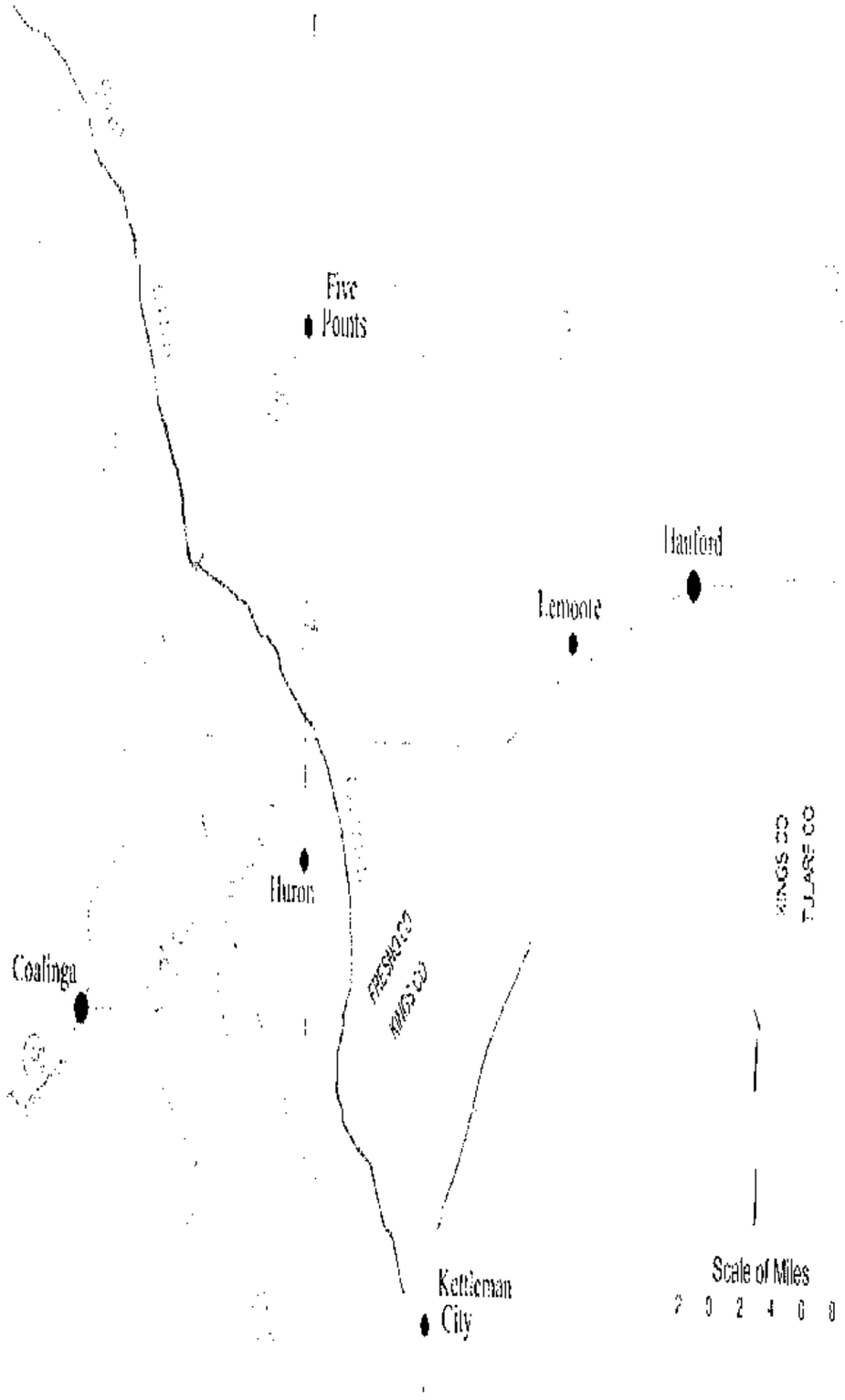
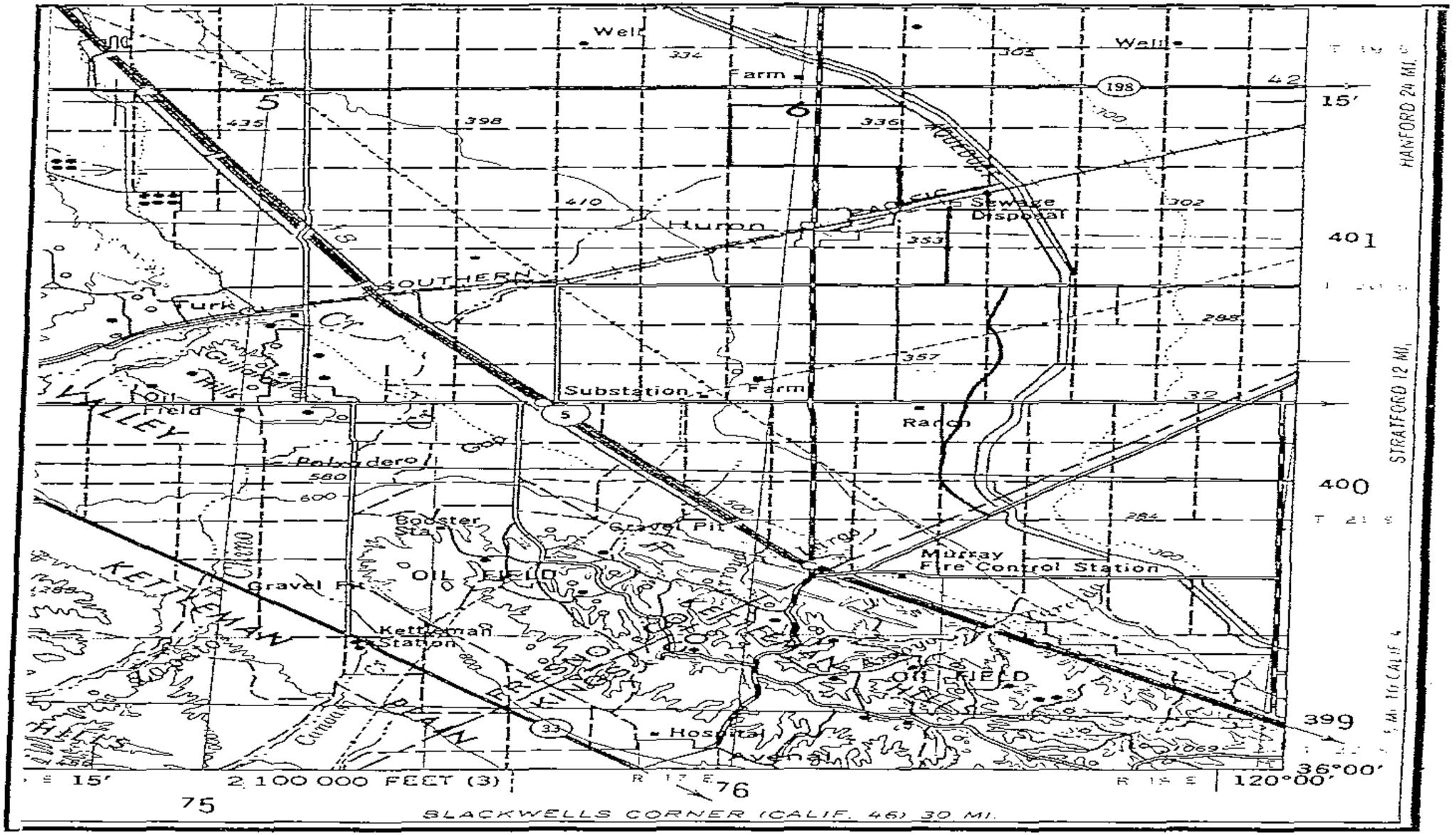
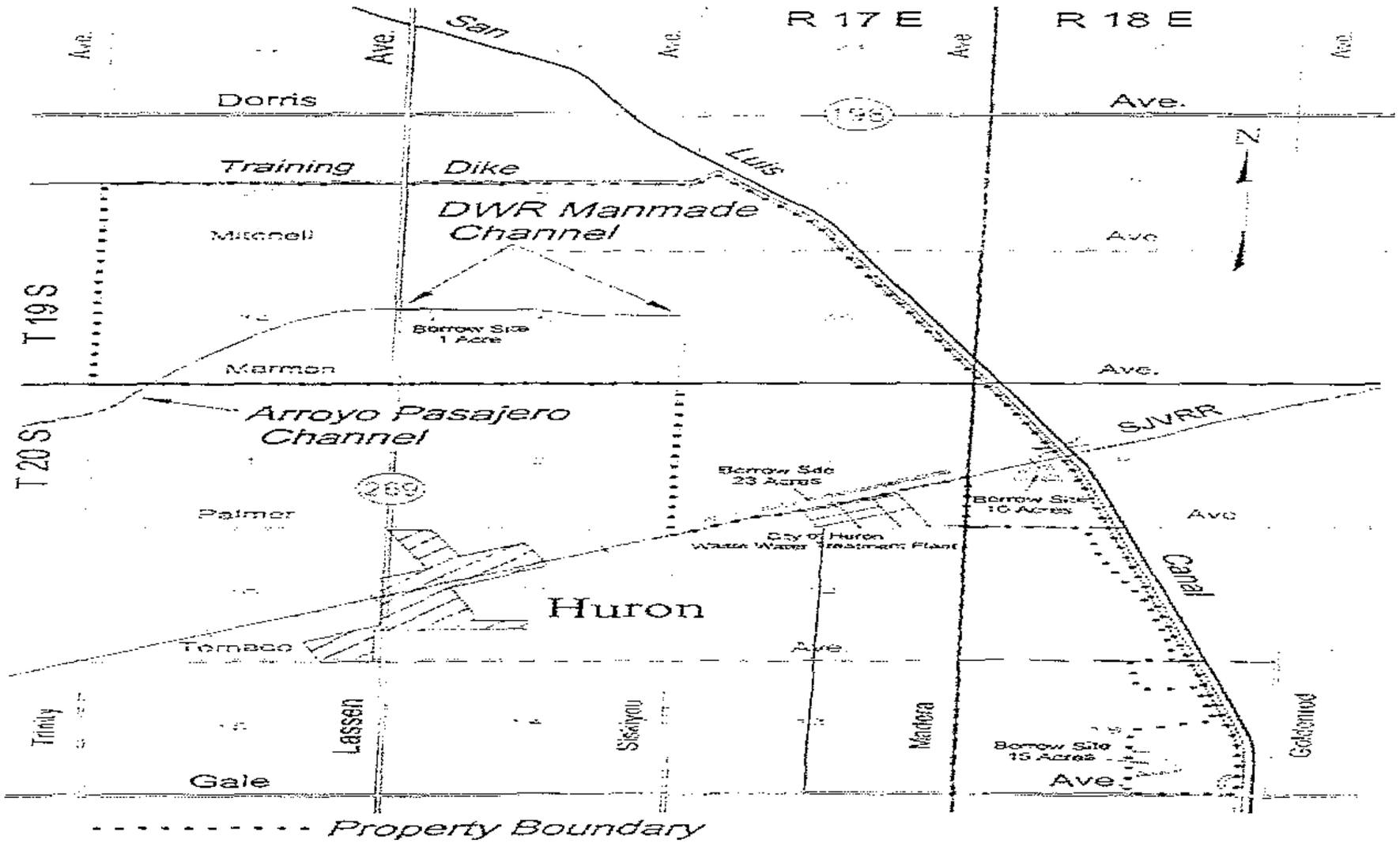


Figure 1. Project Area Location Map

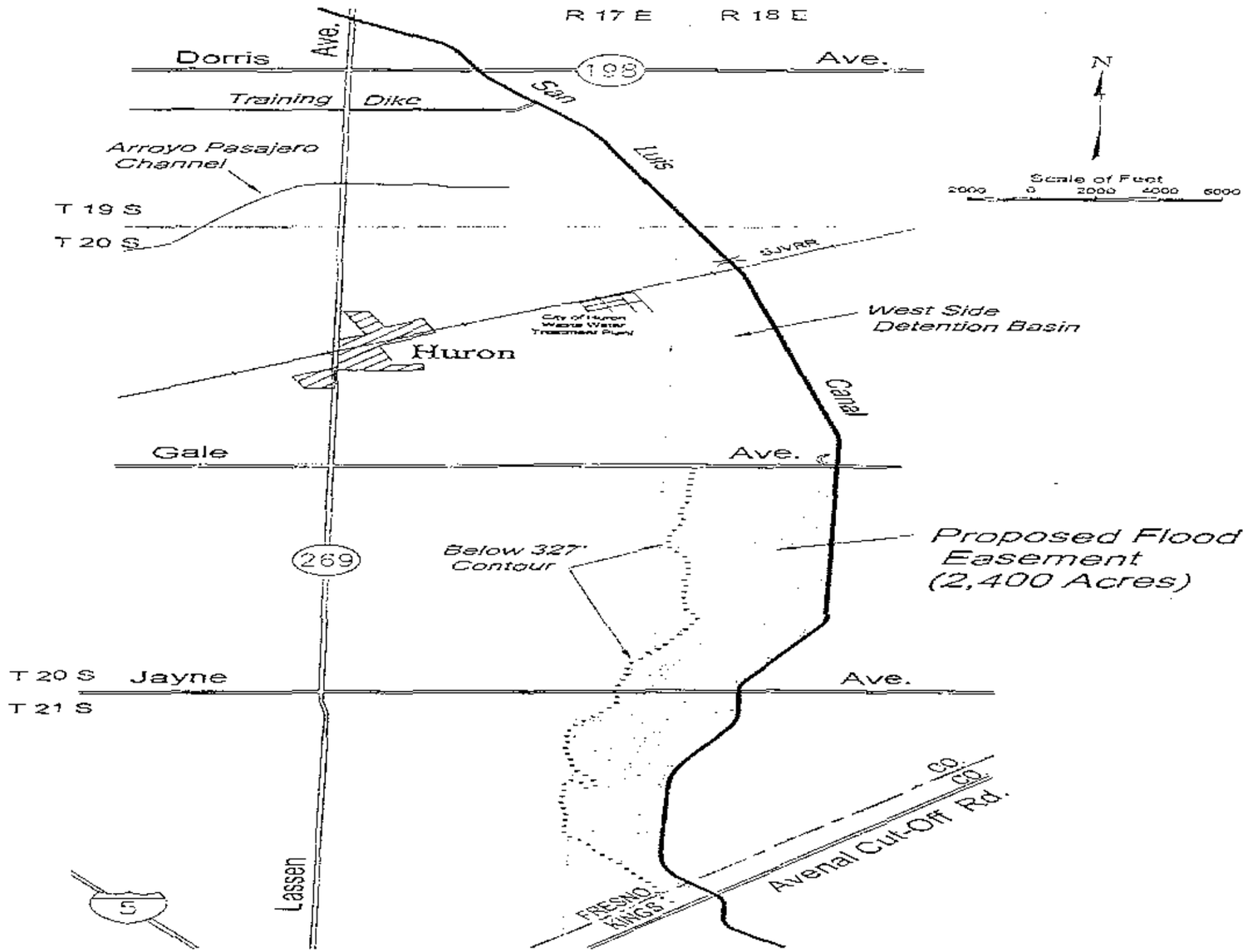


PROJECT VICINITY
SAN LUIS CANAL/ARROYO PASAJERO FLOOD CONTROL IMPROVEMENT PROJECT
Fresno County
USGS Monterey 1:250,000

FR 02052



WSDB Internal Roads and Associated Features


R 17 E
R 18 E
Dorris Ave.
198
Ave.
Training Dike
San Luis Canal
Arroyo Pasajero Channel
T 19 S
T 20 S
SJVRR
City of Huron Waste Water Treatment Plant
West Side Detention Basin
Huron
Gale Ave.
269
Below 327' Contour
Proposed Flood Easement (2,400 Acres)
T 20 S Jayne Ave.
T 21 S
Lassen
5
FRESNO KINGS
Co.
Avenal Cut-Off Rd.
N
Scale of Feet
2000 0 2000 4000 6000

FR 02052

ATTACHMENT 1
(included as a separate volume)

Arroyo Pasajero
An Archaeological Study

By Donald G. Wren, California State University, Fresno Foundation
June 1987

ATTACHMENT 2

MEMORANDUM: Cultural Resources Survey at Drill Hole Locales, Western Tulare Lakebed Flood Storage and Westside Detention Basin

By Robert I. Orlins, Department of Water Resources
January 2002

From: Robert/Melva Orlins [rmorlins@calweb.com]
Sent: Monday, January 14, 2002 5:58 PM
To: Glick, Frank
Cc: Squires, John; Vance, Julie; Offermann, Janis
Subject: Fw: Westlake Farms Cultural Resources Survey

----- Original Message -----
From: "Robert/Melva Orlins" <rmorlins@calweb.com>
To: <glick@water.ca.gov>
Cc: <jsquires@water.ca.gov>; <jvance@water.ca.gov>; <janiso@water.ca.gov>
Sent: Monday, January 14, 2002 5:29 PM
Subject: Westlake Farms Cultural Resources Survey

MEMORANDUM

Subject: Cultural Resources Survey at Drill Hole Locales, Western Tulare Lakebed Flood Storage and Westside Detention Basin

A cultural resources survey was conducted on January 9-10 by Robert I. Orlins, ESO, Associate Environmental Planner accompanied by John Squires, DoE, Environmental Scientist, Mark Pagenkopp, Steve Belluomini, Geologists, Mike Driller, Engineer and Julie Vance and Karen Dulik, San Joaquin District, Environmental Scientists. The two parcels surveyed, cited above, are components of the Arroyo Pasajero Floodwater Storage Project in Fresno County.

The survey was conducted to identify any cultural resources that could potentially be effected by drill hole boring operations on the subject parcels. The survey was an on-foot reconnaisance that covered an approximate 75-foot radius at each drill hole location. Three to four transects were used to inspect the ground surface at each locale and a trowel was used to inspect surface soils.

The Western Tulare Lakebed Flood Storage parcel was flat and treeless fallow agricultural land. Surface soils were primarily rock free silt loam with sand loam in the southwest sector of the parcel. The drill holes along the dam centerline at the east boundary of the project were designated, from south to north, Drill Holes RA-01, C-01 through C-10, and LA-01. The Drill Holes along the north, northwest, and southwest boundary (Blakeley Canal) were designated Drill Holes BC-01 through BC-14.

One quarter to one half of the surface of each drill hole locale had been disced and cleared of groundcover vegetation. Otherwise, grasses and annuals were low (6-8 inches) and stands of the dominant shrub (Brassica sp.?) were dead and penetrable. Ground surface visibility was generally 75-100 percent, good to

excellent. Drill Holes BC-11 through BC-14 were located on the shoulder of the levee road along Blakeley Canal, all fill material.

No cultural resources of any type were identified at the drill hole locales at the Western Tulare Lakebed Flood Storage Project.

The Westside Detention Basin parcel drill holes were all situated on the shoulder of the levee road adjacent to the San Luis Canal and on top of the embankment along the south shoulder of Gale Avenue. Only one drill hole, WS-6, was on grade.

The drill holes adjacent to the canal, from south to north, starting at the San Joaquin Valley Railroad Gap, were designated Drill Holes WS-1 through WS-3, situated near the control gates just south of Gale Avenue. Drill Holes WS-4 through WS-6 were on the Gale Avenue Embankment. Drill Holes WS-1 through WS-5 were one levee or embankment fill material. Drill Hole WS-6 was between the edge of an orchard and the Gale Avenue road shoulder. The locale was flat and clear of vegetation; ground surface visibility was excellent.

No cultural resources of any type were identified during the survey of the drill hole locales at the Westside Detention Basin parcel.

In summary, the record search conducted for the project in 2001 at the Southern San Joaquin Information Center, CSU, Bakersfield, indicated that no cultural resources were known at the drill hole locales. Additionally, no cultural resources were identified during the field survey. The drill hole locales have low sensitivity; the potential for finding intact significant cultural resources is nil to low.

Robert I. Orlins
Assoc. Environmental Planner (Archaeology) Ret. Annuit.

DRAFT

ARROYO PASAJERO
ALLUVIAL FAN

Discharged WSDB

SJVRR
Railroad Gate

WS-1
WS-2
WS-3
WS-4
WS-5
WS-6

Gale Avenue

San Luis Canal Embankment
Raised to Elevation 334

Gale Avenue Embankment
Raised to Elevation 334

Westside
Detention Basin

Huron

Lassen Avenue

SJVRR

5

EXPLANATION

Proposed Drill Hole
Location and Number

DRAWING SCALES

2000 - 0 1000 4000 6000 8000

Scale in Feet

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
DIVISION OF ENGINEERING
PROJECT GEOLOGY SECTION
STATE WATER FACILITIES

Work Proposed

California Aqueduct
San Luis Canal Reach
WESTSIDE DETENTION BASIN
AND WEIR
Proposed Drill Hole Locations

SHEET No. 1 of 1

PLATE 2

FR02052

ATTACHMENT 3

Record Search Correspondence
and
Request for Information Letters

STATE OF CALIFORNIA -- THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
DIVISION OF ENVIRONMENTAL SERVICES
3251 S STREET
SACRAMENTO, CA 95816-7017

ARNOLD SCHWARZENEGGER, Governor

November 25, 2003

Ms. Debbie Pilas-Treadway
Native American Heritage Commission
915 Capitol Mall, Room 364
Sacramento, CA 95814

Dear Ms. Pilas-Treadway:

The California Department of Water Resources (DWR) and the United States Bureau of Reclamation (BOR) are proposing to improve the capacity of the existing Westside Detention Basin (WSDB) which is located immediately adjacent to and west of the San Luis Canal (SLC) near the town of Huron in Fresno County. The current WSBD covers approximately 3177 acres and extends for about five miles along the canal, from the training dike located ½ mile south of Arroyo Pasajero south to Gale Avenue.

The SLC was constructed in 1967. The WSDB, which covers approximately 3177 acres, was also constructed at that time to prevent overflooding of the canal from water run-off down the Arroyo Pasajero and its alluvial fan. Extreme flood events in 1968 and 1965 severely diminished the holding capacity of the WSBD and contributed to accelerated obsolescence of the basin. Consequently, the original 50-year design storage capacity of the WSDB has been reduced to a capacity that is insufficient to handle a 10-year flood event.

In order to restore the capacity of the WSBD, DWR and BOR are proposing to increase the height of the embankments by up to six feet, using sediment from the basin. Furthermore, a flood easement will be purchased on an additional 2400 acres directly south of the existing WSDB and adjacent to the SLC between Gale Avenue and Avenal Cut-off Road. Avenal Cut-off Road is located in Kings Countly, immediately south of the Fresno/Kings County line.

The WSDB and its proposed southern extension are found on the Huron and La Cima USGS 7.5' quadrangles. Additional locational information includes the following:

T19S, R17E: Sections 25, 26, 27, 34, 35, and 36;
T19S, R18E: Section 31;
T20S, R17E: Sections 1 and 2;
T20S, R18E: Sections 6, 7, 18, 19, 30, and 31;
T21S, R18E: Sections 6, 7, and 18.

Please notify me if any sacred lands are recorded within the project area. Early

FR 02052

identification of these properties will insure their consideration during the project planning phase. Please also provide an updated list of Native American contacts for the area. Your response may be sent to me at the address provided below, or you may fax the information to (916) 445-6507. If we do not receive a response to this inquiry within 30 days, we will assume that you are not aware of any sacred lands within the project area.

Thank you for giving this matter your prompt attention.

Sincerely,

Original signed by

Janis Offermann
Senior Environmental Planner
Department of Water Resources
Division of Environmental Services
1725 23rd Street, Suite 220
Sacramento, CA 95816
(916) 445-6478
janiso@water.ca.gov

enclosures

CC: Karen Dulik, San Joaquin District

FR 02052

STATE OF CALIFORNIA — Arnold Schwarzenegger, Governor

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-4082
Fax (916) 657-5390
Web Site www.nahc.ca.gov

December 9, 2003

Janice Offerman
Department of Water Resources
1725 23rd Street, Suite 220
Sacramento, CA 95816

Sent By Fax: 916-445-6507

Number of Pages: 2

RE: Proposed improvement of the capacity of the existing Westside Detention Basin, near the town of Huron, Fresno County

Dear Ms. Offerman:

A record search of the sacred lands file has 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 indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Enclosed is a list of Native Americans individuals/organizations who may have knowledge of cultural resources in the project area. The Commission makes no recommendation or preference of a single individual, or group over another. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated, if they cannot supply information, they might recommend others with specific knowledge. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at (916) 653-4040.

Sincerely,

Rob Wood
Environmental Specialist III

FR 02052

NATIVE AMERICAN CONTACTS
Fresno County
December 8, 2003

Santa Rosa Rancheria
Clarence Atwell, Chairperson
P.O. Box 8
Lemoore , CA 93245
(559) 924-1278
(559) 924-3583 Fax

Tache
Tachi
Yokut

Table Mountain Rancheria
Lee Ann Walker Grant, Chairperson
P.O. Box 410
Friant , CA 93626-0
(559) 822-2587
(559) 822-2693 FAX

Yokut

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 regards to cultural resources assessment for the proposed improvement of the capacity of the existing Westside Detention Basin, near the town of Huron, Fresno County.

ER 02052

STATE OF CALIFORNIA – THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
DIVISION OF ENVIRONMENTAL SERVICES
3251 S STREET
SACRAMENTO, CA 95816-7017

ARNOLD SCHWARZENEGGER, Governor

December 10, 2003

Ms. Lee Ann Walker Grant, Chairperson
Table Mountain Rancheria
P.O. Box 410
Friant, CA 93626

Dear Chairperson Grant:

The California Department of Water Resources (DWR) and the United States Bureau of Reclamation (BOR) are proposing to improve the capacity of the existing Westside Detention Basin (WSDB) which is located immediately adjacent to and west of the San Luis Canal (SLC) near the town of Huron in Fresno County. The current WSBD covers approximately 3177 acres and extends for about five miles along the canal, from the training dike located ½ mile south of Arroyo Pasajero south to Gale Avenue.

The SLC was constructed in 1967. The WSDB, which covers approximately 3177 acres, was also constructed at that time to prevent overflooding of the canal from water run-off down the Arroyo Pasajero and its alluvial fan. Extreme flood events in 1968 and 1985 severely diminished the holding capacity of the WSBD and contributed to accelerated obsolescence of the basin. Consequently, the original 50-year design storage capacity of the WSDB has been reduced to a capacity that is insufficient to handle a 10-year flood event.

In order to restore the capacity of the WSBD, DWR and BOR are proposing to increase the height of the embankments by up to six feet, using sediment from the basin. Furthermore, a flood easement will be purchased on an additional 2400 acres directly south of the existing WSDB and adjacent to the SLC between Gale Avenue and Avenal Cut-off Road. Avenal Cut-off Road is located in Kings Countly, immediately south of the Fresno/Kings County line.

The WSDB and its proposed southern extension are found on the Huron and La Cima USGS 7.5' quadrangles. Additional locational information includes the following:

T19S, R17E: Sections 25, 26, 27, 34, 35, and 36;
T19S, R18E: Section 31;
T20S, R17E: Sections 1 and 2;
T20S, R18E: Sections 6, 7, 18, 19, 30, and 31;
T21S, R18E: Sections 6, 7, and 18.

The Native American Heritage Commission indicated that members of the Table

Mountain Rancheria might have knowledge about cultural resources within the proposed project vicinity. The early identification of heritage sites (including plant collection locations) within the immediate project areas will insure their consideration during the project planning phase. If any heritage sites are located at or near any of the locations identified on the attached maps, please notify us by sending a response to me at the address provided below, or by calling or e-mailing me directly. If we do not receive a response to this inquiry within 60 days, we will assume that you are not aware of any sacred lands within the project area. If you plan to respond, but it will take longer than 60 days, please let me know.

Thank you for giving this matter your prompt attention.

Sincerely,

Original signed by

Janis Offermann
Senior Environmental Planner
Department of Water Resources
Division of Environmental Services
1725 23rd Street, Suite 220
Sacramento, CA 95816
(916) 445-6478
janiso@water.ca.gov

enclosures

CC: Karen Dulik, San Joaquin District

ER 02052

STATE OF CALIFORNIA -- THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
DIVISION OF ENVIRONMENTAL SERVICES
3251 S STREET
SACRAMENTO, CA 95816-7017

ARNOLD SCHWARZENEGGER, Governor

December 10, 2003

Mr. Clarence Atwell, Chairperson
Santa Rosa Rancheria
P.O. Box 8
Lemoore, CA 93245

Dear Chairperson Atwell:

The California Department of Water Resources (DWR) and the United States Bureau of Reclamation (BOR) are proposing to improve the capacity of the existing Westside Detention Basin (WSDB) which is located immediately adjacent to and west of the San Luis Canal (SLC) near the town of Huron in Fresno County. The current WSBD covers approximately 3177 acres and extends for about five miles along the canal, from the training dike located ½ mile south of Arroyo Pasajero south to Gale Avenue.

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The WSDB and its proposed southern extension are found on the Huron and La Cima USGS 7.5' quadrangles. Additional locational information includes the following:

T19S, R17E: Sections 25, 26, 27, 34, 35, and 36;
T19S, R18E: Section 31;
T20S, R17E: Sections 1 and 2;
T20S, R18E: Sections 6, 7, 18, 19, 30, and 31;
T21S, R18E: Sections 6, 7, and 18.

The Native American Heritage Commission indicated that members of the Santa

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Thank you for giving this matter your prompt attention.

Sincerely,

Original signed by

Janis Offermann
Senior Environmental Planner
Department of Water Resources
Division of Environmental Services
1725 23rd Street, Suite 220
Sacramento, CA 95816
(916) 445-6478
janiso@water.ca.gov

enclosures

CC: Karen Dulik, San Joaquin District

FR02052

STATE OF CALIFORNIA -- THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
DIVISION OF ENVIRONMENTAL SERVICES
3251 S STREET
SACRAMENTO, CA 95816-7017

ARNOLD SCHWARZENEGGER, Governor

November 25, 2003

Fresno City and County Historical Society
PO Box 2029
Fresno, CA 93718

Dear Society members:

The California Department of Water Resources (DWR) and the United States Bureau of Reclamation (BOR) are proposing to improve the capacity of the existing Westside Detention Basin (WSDB) which is located immediately adjacent to and west of the San Luis Canal (SLC) near the town of Huron. The current WSBD covers approximately 3177 acres and extends for about five miles along the canal, from the training dike located ½ mile south of Arroyo Pasajero south to Gale Avenue.

The SLC was constructed in 1967. The WSDB, which covers approximately 3177 acres, was also constructed at that time to prevent overflooding of the canal from water run-off down the Arroyo Pasajero and its alluvial fan. Extreme flood events in 1968 and 1965 severely diminished the holding capacity of the WSBD and contributed to accelerated obsolescence of the basin. Consequently, the original 50-year design storage capacity of the WSDB has been reduced to a capacity that is insufficient to handle a 10-year flood event.

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Please review your files and let us know if there are any historical structures or sites within the project areas. Early identification of these properties will insure their consideration during the project planning phase. Your response may be sent to me at the address provided below or you may contact me by email, phone or fax at (916) 445-6507. If we do not receive a response to this inquiry within 30 days, we will assume that you know of no historical properties within the project area.

Thank you for giving this matter your prompt attention.

Sincerely,

Original signed by

Janis Offermann
Senior Environmental Planner
Department of Water Resources
Division of Environmental Services
1725 23rd Street, Suite 220
Sacramento, CA 95816
(916) 445-6478
janiso@water.ca.gov

enclosures

CC: Karen Dulik, San Joaquin District

FR02052

STATE OF CALIFORNIA - THE RESOURCES AGENCY

ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF WATER RESOURCES
DIVISION OF ENVIRONMENTAL SERVICES
ENVIRONMENTAL COMPLIANCE AND EVALUATION BRANCH
1725 23RD STREET
SACRAMENTO, CA 95816

December 11, 2003

Ms. Anastasia Leigh
U.S. Bureau of Reclamation
Mid-Pacific Region
2800 Cottage Way, MP-153
Sacramento, California 95825

Dear Ms. Leigh:

Enclosed please find documentation intended to satisfy the requirements of Section 106 of the National Historic Preservation Act, as amended, regarding the status of cultural resources within the area of potential effects for the proposed improvements of the Arroyo Pasajero Westside Detention Basin and its proposed southern extension. The documentation includes a Historic Property Survey Report—Negative Findings and attachments that report the results of an archaeological survey for an earlier (1986) Arroyo Pasajero project that involved the WSDB and the results of a spot survey conducted in 2000. Given that no archaeological resources were identified during these two investigations and the fact that in excess of ten feet of silt has been deposited in the WSDB since it was originally constructed, it is proposed that no historic properties will be affected by the current project pursuant to 36CFR800.4(d)(1).

If you have any questions or require further information regarding these documents, please contact me at (916) 445-6478

Sincerely,

Janis Offermann
Senior Environmental Planner
Environmental Compliance and Evaluation

Enclosure

cc: Karen Dulik
San Joaquin District (w/ attachments)
3374 East Shields Avenue
Fresno, California 93726-6990

MAR 0 1 2004

MP-153
ENV-3.00

Ms. Janis Offermann
Senior Environmental Planner
California Department of Water Resources
Environmental Compliance and Evaluation Branch
1725 23rd Street
Sacramento, California 95816

Subject: San Luis Canal/Arroyo Pasajero Flood Control Improvement Project

Dear Ms. Offermann:

Thank you for forwarding the Historic Property Survey Report and cultural resources documentation for the Arroyo Pasajero Flood Control Improvement Project. The Bureau of Reclamation (Reclamation) is responsible for compliance with Section 106 of the National Historic Preservation Act, as amended, for this undertaking. Based on the information provided, the project area has been subject to very little previous inventory for cultural resources. We understand that the area has very little potential for surface cultural resources due to the heavy silt deposition which has occurred since the Westside Detention Basin was constructed. The Department of Water Resources (DWR) proposes that no historic properties will be affected pursuant to 36 CFR 800.4(d)(1). In general, Reclamation agrees with this determination, however, as we discussed in our recent phone conversations, some additional documentation is necessary to take this determination to the State Historic Preservation Officer (SHPO) for concurrence.

Given that we have been unable to find supporting documentation to show the amount of silt deposition at the specific areas which will be subject to ground disturbance, Reclamation requests a field survey be conducted at the locations of the borrow sites. These areas appear to have the greatest potential to sustain impacts to cultural resources, if any are present. We recognize that it is unlikely cultural resources will be identified in these areas given the silt deposition, however, we feel that this effort will facilitate concurrence from SHPO on a "no historic properties affected" determination. Additionally, we feel that an updated record search through the California Historical Resources Information System is also necessary, as the last record search of the area was conducted in 1986 and may be out of date. Reclamation will initiate this record search and forward a copy to you for DWR's files. Once we receive the

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results of the record search and your field survey results, we will be able to take an affects assessment to the SHPO for concurrence.

If you have any questions regarding this letter or need any additional information, please contact me at 916-978-5568 or *aleigh@mp.usbr.gov*.

Sincerely,

/S/ Anastasia T. Leigh

Ms. Anastasia T. Leigh
Archeologist

cc: Ms. Karen Dulik
Environmental Scientist
California Department of Water Resources
San Joaquin District
3374 East Shields Avenue
Fresno, California 93726

bc: SCC-411 (D. Young)

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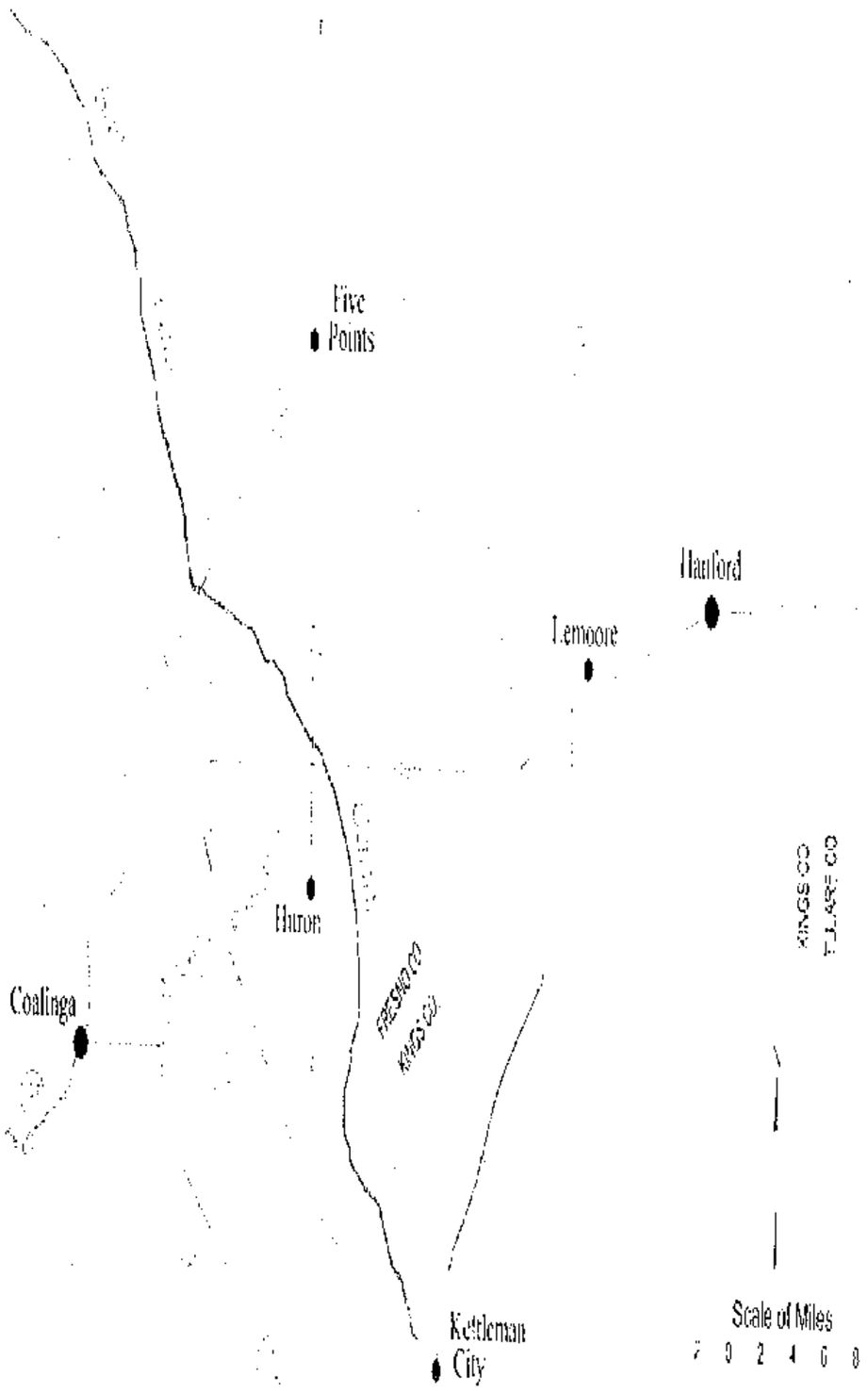

Figure 1. Project Area Location Map

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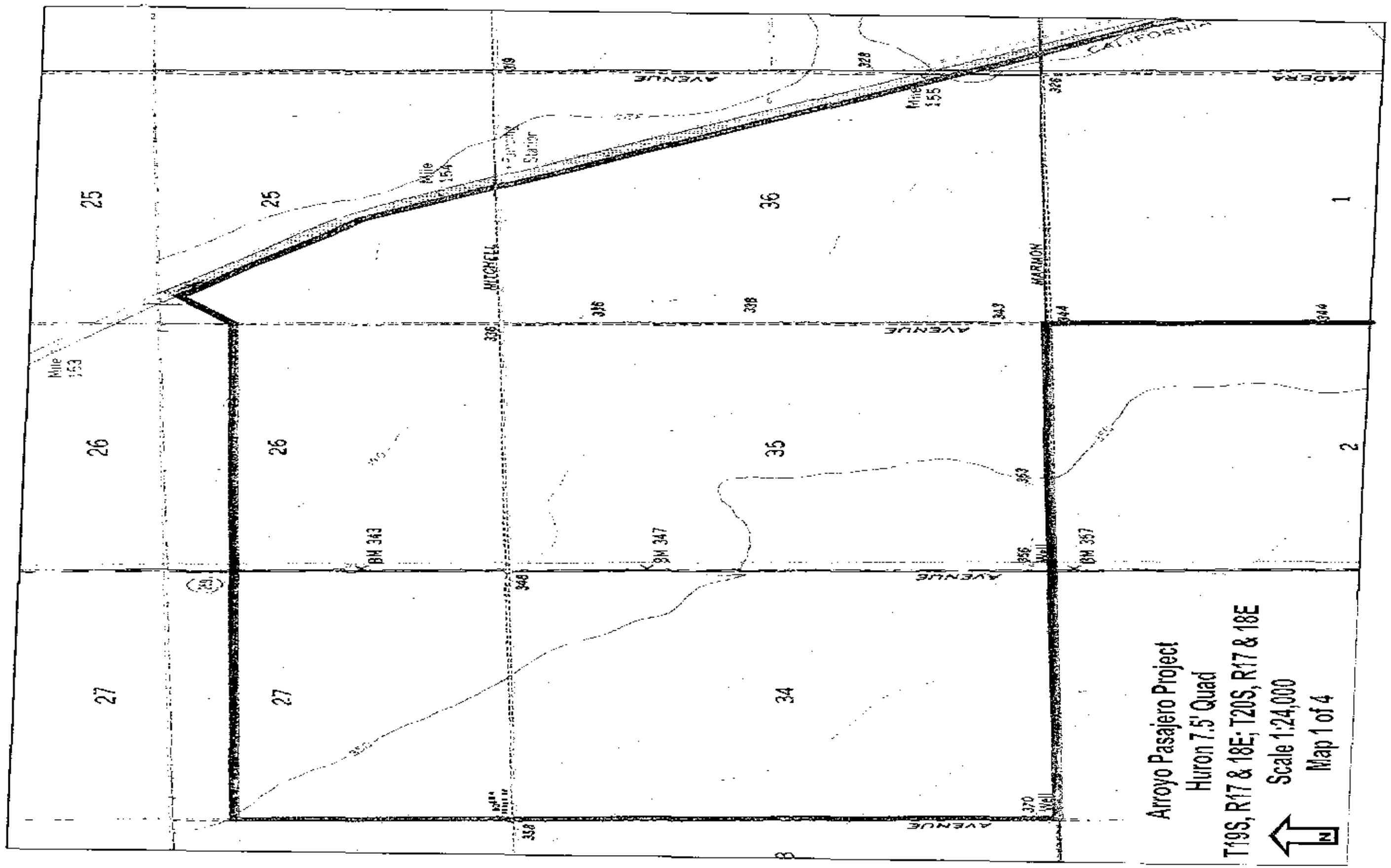
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Mile 153
BM 363
BM 347
BM 357
Well
Arroyo Pasajero Project
Huron 7.5' Quad
T19S, R17 & 18E; T20S, R17 & 18E
Scale 1:24,000
Map 1 of 4
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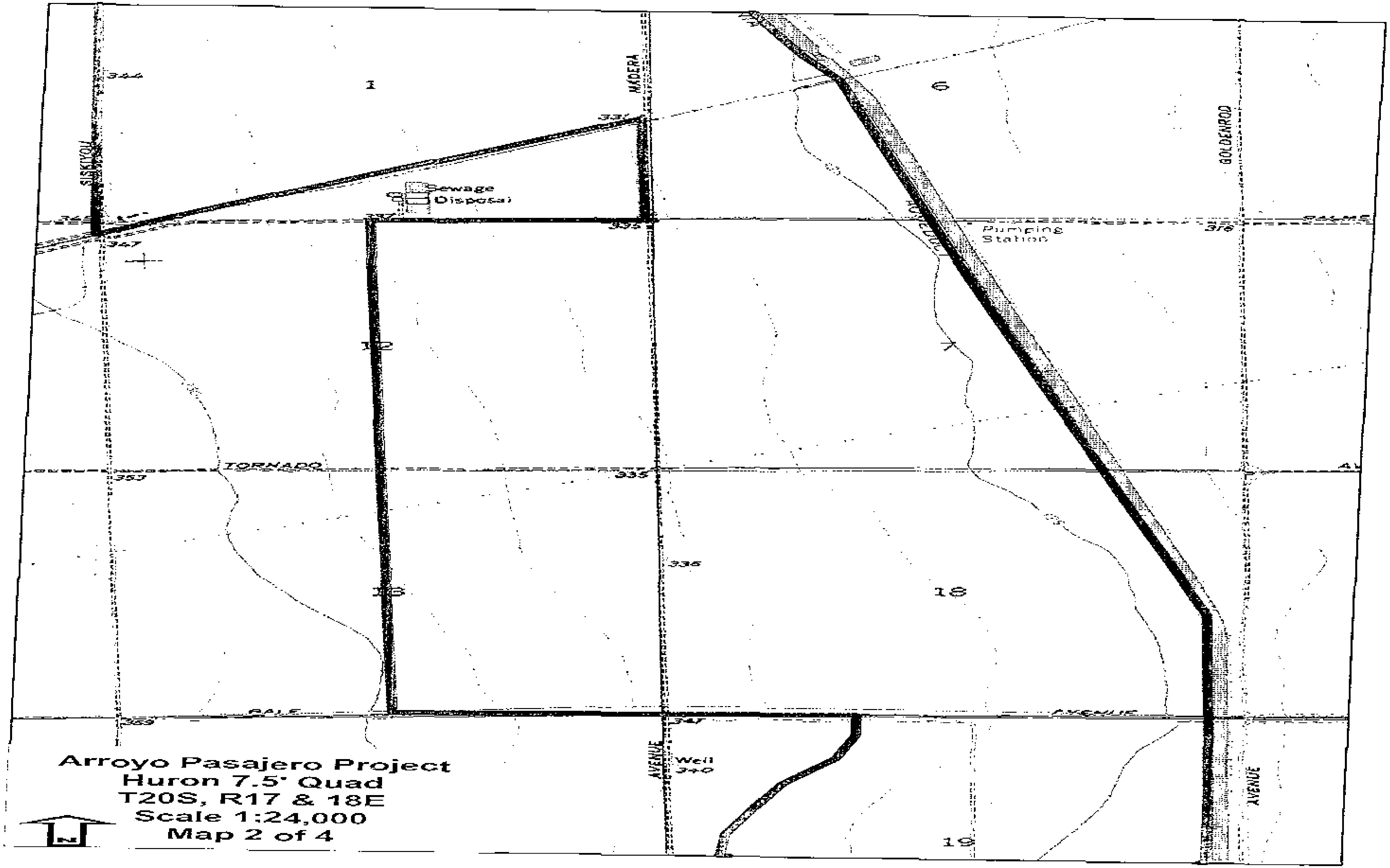

Arroyo Pasajero Project
Huron 7.5' Quad
T20S, R17 & 18E
Scale 1:24,000
Map 2 of 4

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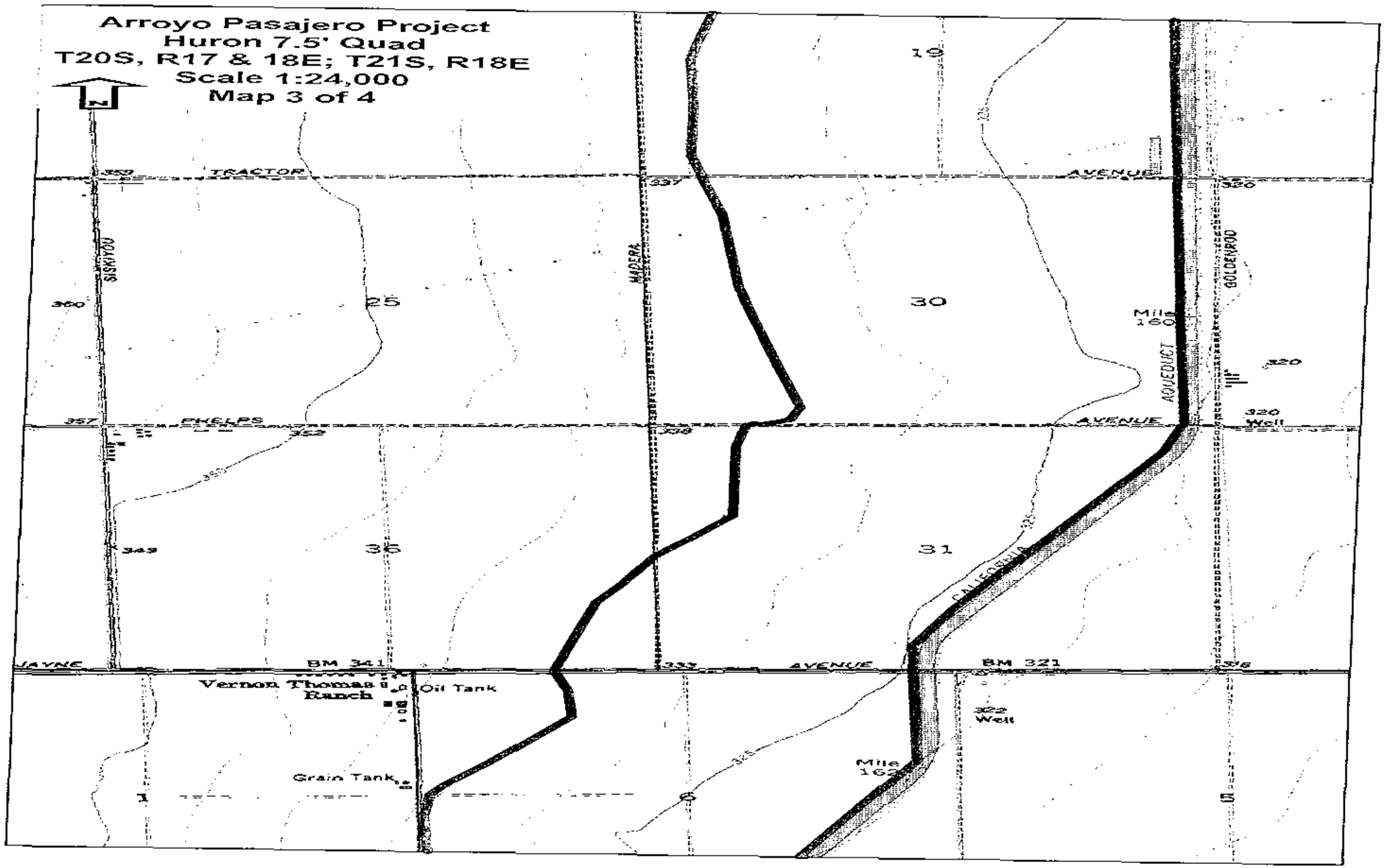
Arroyo Pasajero Project
Huron 7.5' Quad
T20S, R17 & 18E; T21S, R18E
Scale 1:24,000
Map 3 of 4



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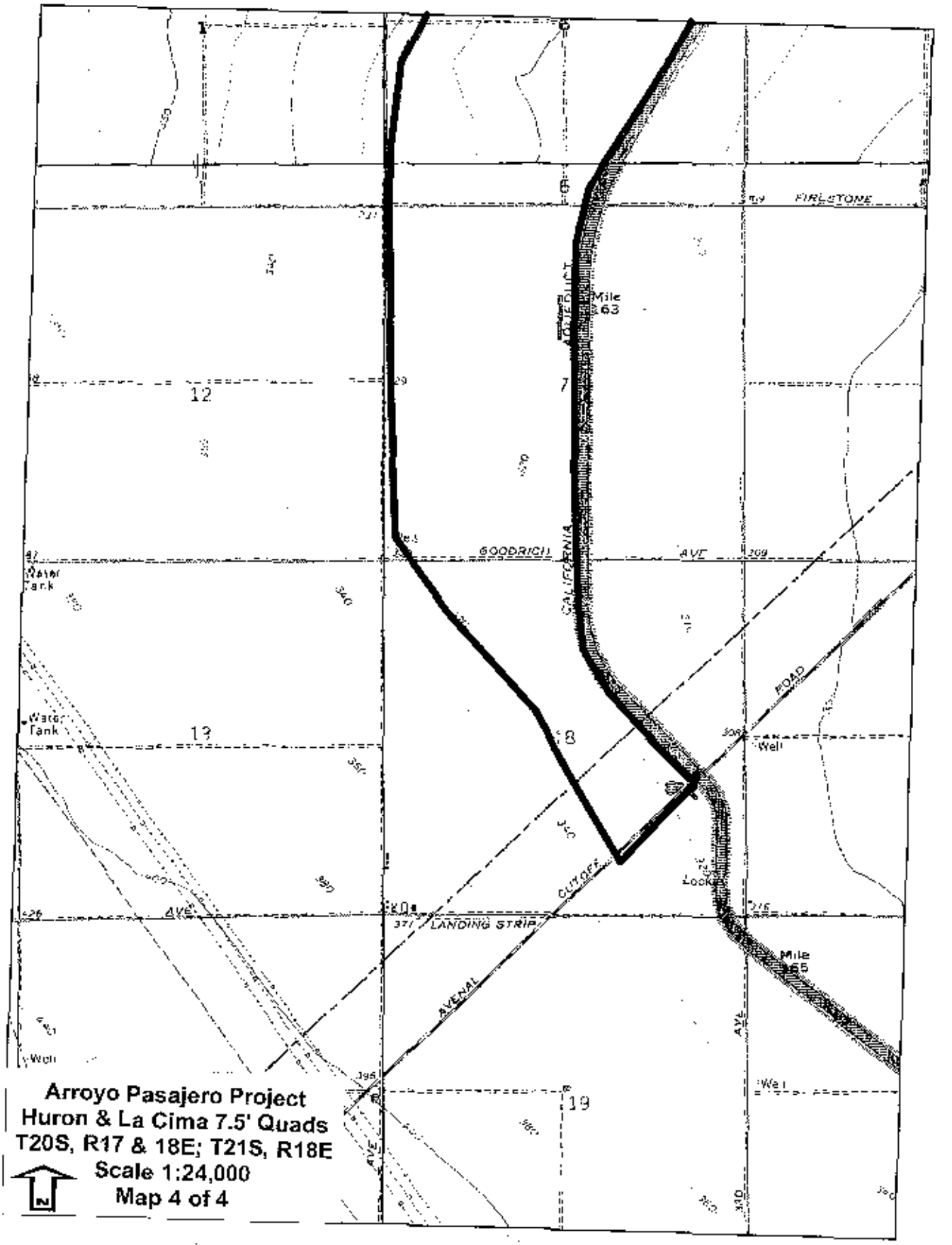

Arroyo Pasajero Project
Huron & La Cima 7.5' Quads
T20S, R17 & 18E; T21S, R18E
Scale 1:24,000
Map 4 of 4

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